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CONTENT

PREFACE	11
CHALLENGES AND OPPORTUNITIES IN ONLINE SOCIAL CAPITAL NETWORKS SITES AND THE CONCEPT OF SOCIAL MEDIA	
Kamil Andrzejewski, Grzegorz Chodak	13
WORK EFFICIENCY OF LOCAL GOVERNMENT	
Arkadiusz Babczuk, Marian Kachniarz, Zbigniew Piepiora	20
GENDER OF CHAIRMAN OF THE BOARD AND FINANCIAL PERFORMANCE OF POLISH COOPERATIVE BANKS - EMPIRICAL EVIDENCE	
Rafał Balina, Marta Idasz-Balina	29
THE ANALYSIS OF STATE AID GRANTED IN POLAND IN YEARS 2008-2014	
Bartosz Bartniczak	40
INPUT-OUTPUT ANALYSIS OF THE SELECTED SLOVAK INDUSTRIES	
Ľudmila Bartóková	48
PARTICIPATORY BUDGETING IN POLAND - FINANCE AND MARKETING SELECTED ISSUES	
Dorota Bednarska-Olejniczak, Jarosław Olejniczak	55
TESTING AN IMPLIED FOCAL PRICING BEHAVIOR IN THE POLISH WHOLESALE GASOLINE MARKET	
Sylwester Bejger	68
REVEALED TRADE ADVANTAGE OF THE SLOVAK AND CZECH REPUBLICS IN VEHICLES IN COMPARISON TO THE EU28	
Michal Beňo	76
INSTRUMENTS PROVIDING FOR BETTER ACCESS TO THE LABOUR MARKET WITHIN THE EUROPEAN UNION	
Gabriela Bérešová	85
ENERGY DISTRIBUTION IN AGENT-BASED ECONOMIC MODEL	
Petr Blecha, Petr Tučník	94
INFLUENCE OF THE RISK IMPORTANCE AND THE METHOD OF A RISK MEASUREMENT ON THE COMPOSITION OF THE INVESTMENT PORTFOLIO	
Adam Borovička	102
FISCAL REGIME SWITCHES IN SLOVAK ECONOMY: MS-VAR APPROACH	
Jakub Buček	113
INTERNET AND SOCIAL NETWORKS AS A SUPPORT FOR COMMUNICATION IN THE BUSINESS ENVIRONMENT – PILOT STUDY	
Miloslava Černá, Libuše Svobodová	120
THE IMPACT OF RECODIFICATION ON THE SQUEEZE-OUT IN A COMPARATIVE PERSPECTIVE	
Eva Daniela Cvik, Radka MacGregor Pelikánová, Aleš Hes	127
NOTE ON THE KNAPSACK PROBLEM WITH RANDOM DATA	
Michal Černý, Miroslav Rada, Jan Pelikán	137
RANKINGS OF THE EU COUNTRIES ACCORDING TO MATERIAL CONDITIONS OF THEIR RESIDENTS	
Hanna Dudek, Joanna Landmesser, Mariola Chrzanowska	145
OFFSHORING AND LABOUR DEMAND: IMPLICATIONS FOR THE SLOVAK REPUBLIC	
Júlia Ďurčová	153

THE CHINESE ETS – ANY LESSONS LEARNED FROM THE EU ETS? Anders Ekeland	160
MODERN TRENDS IN PROJECT PORTFOLIO MANAGEMENT Petr Fiala	169
CHANGES OF FOOD SAFETY IN POLAND IN THE YEARS 2001-2014 Krzysztof Firlej, Mateusz Mierzejewski	177
THE PROTECTION OF INDUSTRIAL PROPERTY IN POLISH VOIVODESHIPS IN THE POST-ACCESSION PERIOD Krzysztof Adam Firlej	191
PERFORMANCE IN FAMILY SMALL AND MEDIUM-SIZED COMPANIES: EVIDENCE FROM THE CZECH REPUBLIC Zuzana Fraňková, Lenka Bílková, Ladislava Míková	199
VIRAL VIDEO AS AN EFFICIENT TOOL OF MODERN MARKETING Dagmar Frendlovská, Ondřej Kusovský	206
MODELLING THE ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM DIFFUSION WITH THE USE OF LOGISTIC REGRESSION Barbara Fura	213
TAX AUDIT IN POLISH COMPANIES Lukasz Furman	220
ECONOMIC EFFICIENCY OF CULTURAL INSTITUTIONS Małgorzata Gałęcka, Katarzyna Smolny	226
A SEM RESEARCH ON SUBJECT FACTORS OF TACIT KNOWLEDGE LEARNING AND ENTERPRISE INNOVATION PERFORMANCE Peng Gao	238
AGRICULTURAL RESOURCES IN REGIONS OF THE EUROPEAN UNION (ATTEMPT TO ASSESS THE DIFFERENCES AND CONSISTENCY) Marta Guth, Katarzyna Smędzik-Ambroży	248
ESTONIAN TAX SYSTEM ANALYSIS Ladislav Hájek	255
ENTREPRENEURSHIP AS THE MAIN FORM OF INCOME IN THE CZECH REPUBLIC – PILOT RESEARCH Eva Hamplová, Hana Skalská, Eva Tichá	263
THE IMPACT OF INSTITUTIONAL INVESTOR HETEROGENEITY ON ENVIRONMENTAL INFORMATION DISCLOSURE Shaozhen Han, Ying Pan, Hui Li, Lei Zhong	272
MORTGAGES FOR INDIVIDUALS, BUSINESSES AND MUNICIPALITIES IN THE CZECH REPUBLIC Martina Hedvičáková, Libuše Svobodová	279
ANALYSIS OF THE CHANGES IN TRANSACTION PRICES OF AGRICULTURAL LAND IN POLAND Maria Hełdak, Agnieszka Stacherzak, Anatoliy Kucher	287
ASSESSMENT OF THE DCF METHOD IN COMPANY VALUATION Irena Honková	296
ANALYZE AND PREDICTIONS FOR MARKETING ON SOCIAL MEDIA Jan Hruška, Petra Marešová	303

THE DYNAMIC EVOLUTION OF THE DISTRIBUTION OF THE QUALITY OF ECONOMIC GROWTH IN CHINA: 1998-2014	
Xiaojing Chao	310
HUMAN CAPITAL AS AN IMPORTANT GROWTH FACTOR OF REGIONS IN THE CZECH REPUBLIC	
Denisa Chlebounová	318
STANDARD OF LIVING IN SELECTED COUNTRIES IN CENTRAL EUROPE IN THE PERIOD 2000-2014	
Mariola Chrzanowska, Hanna Dudek, Joanna Landmesser	325
RECENT OPTIMIZATION PACKAGES AND THEIR COMPARISON	
Josef Jablonský	332
ALTERNATIVE DISPUTE RESOLUTION	
Eva Jaderná, Alena Srbová	339
EVALUATION OF ICT USER SATISFACTION IN PUBLIC ADMINISTRATION: CASE OF USE LIKERT SCALE AND NET PROMOTER SCORE IN LIBEREC CITY HALL	
Martin Januška, Petr Janeček	348
EDUCATIONAL FARMS AS AN EXAMPLE OF THE POLISH AGRITOURISM FARMS SPECIALIZATION	
Anna Jęczyżyk, Małgorzata Bogusz	356
ENVIRONMENTAL POLICY IN CAR TAXATION	
Vít Jedlička, Pavel Jedlička	363
FINANCIAL DEVELOPMENT, INCOME STRUCTURE AND URBAN RESIDENTS' CONSUMPTION STRUCTURE IN CHINA	
Ge Jing, Wang Mancang	372
LACK OF SOFT SKILLS AMONG NEWLY RECRUITED EMPLOYEES	
Jaroslav Kacetl, Ilona Semrádová	383
BUILDING A DATABASE SYSTEM FOR MANAGEMENT OF RAIL LOADING PROCESSES SUPPORT	
Martin Kogut, Arkadiusz Kowalski	389
COOPERATIVES' MARKET ACTIVITIES IN THE SPHERE OF SALES MARKETING: AN EXAMPLE OF HOUSING COOPERATIVES FROM ŚWIĘTOKRZYSKIE PROVINCE	
Izabela Konieczna	400
AUSTRALIA: IS IT TIME FOR TAX REFORM?	
Zlatica Konôpková	407
PRINCIPLES OF INDIRECT TAX HARMONIZATION IN THE EU	
Jaroslav Korečko, Alžbeta Suhányiová, Ladislav Suhányi	414
TRENDS IN CONSUMPTION OF SELECTED FOOD COMMODITIES IN VISEGRAD COUNTRIES	
Pavel Kotyza, Josef Slaboch	423
TO THE DESIGN AND USE OF STRATEGIC AND OPERATIONAL PERFORMANCE MANAGEMENT MODEL	
Marcela Kovařová	431
SELECTED ISSUES OF FOREIGN TRADE OF CENTRAL EUROPEAN COUNTRIES	
Jaroslav Kovárník	439
POLISH – CZECH TRADE IN AGRI-FOOD PRODUCTS BEFORE AND AFTER ACCESSION TO THE EUROPEAN UNION	
Anna Kowalska, Agnieszka Tarnowska, Jaroslav Kovárník	449

FINANCIAL SELF-SUFFICIENCY OF TOWNS WITH COUNTY RIGHTS IN POLAND – SYNTHETIC APPROACH	
Agnieszka Kozera	460
DIFFERENTIATION OF EMPLOYMENT IN AGRICULTURE – CASE STUDY THE VISERAD GROUP COUNTRIES	
Magdalena Kozera-Kowalska, Jarosław Uglis	469
MODELLING OF SAVINGS IN DECENTRALISED CASH PROCESSING COSTS IN THE CZECH REPUBLIC	
Martin Král	478
VIDEO RECORDINGS IN EDUCATION	
Markéta Kubálková	486
BANKRUPTCY MODEL CONSTRUCTION AND ITS LIMITATION IN INPUT DATA QUALITY	
Dana Kubíčková, Vladimír Nulíček	494
THE ANALYSIS OF THE POLISH "FAMILY 500+" PROGRAMME EFFECTS USING EUROMOD MICROSIMULATION MODEL	
Joanna Landmesser, Hanna Dudek, Mariola Chrzanowska	506
MANAGEMENT OF GENERATION Y	
Katerina Legnerova	513
ELECTRONIC RECORDS OF SALES – BUREAUCRACY OR A TOOL OF TRANSPARENT ENTREPRENEURIAL ENVIRONMENT	
Věra Levičková, Eva Mičková	520
THE INFLUENCE OF ALLOWANCE ALLOCATION METHODS ON CO2 EMISSION REDUCTION: EXPERIENCES FROM THE SEVEN CHINA PILOTS	
Nan Li, Bei Bei Shi, Anders Ekeland, Rong Kang	528
ANALYZING THE INCOME EFFECT OF THE RCEP ON CHINA WITHIN A CGE FRAMEWORK	
Qiaomin Li	537
A BRIEF ANALYSIS OF THE VCG MECHANISM	
Ruoxin Li	546
ACCESSIBLE TOURISM PRODUCT AS A POSSIBILITY FOR DESTINATION	
Ivica Linderová	555
ANALYSIS ON REGIONAL DIFFERENCE OF GREEN TOTAL FACTOR PRODUCTIVITY OF AGRICULTURE IN CHINA	
Tan Liu	562
ADMIRING CULTURALLY-INCONGRUENT WESTERN ICONIC BRANDS: EVIDENCE FROM CHINA	
Wei Liu	569
ARE STRONGER ENVIRONMENTAL REGULATIONS EFFECTIVE IN AGRICULTURE OF CHINA ?	
Yanni Liu	577
SELECTED MACROECONOMIC FACTORS AND THEIR INFLUENCE ON RETAIL PERFORMANCE	
David Mareš	589
HEALTH AND SAFETY MANAGEMENT IN COMPANIES OF ALL SIZES	
Natália Matkovčíková	597
EVALUATION OF EDUCATION AND ITS APPLICATION IN BUSINESS PRACTICE	
Marta Matulčíková	604
THE IMPACT OF HUMAN RESOURCES ON COMPETITIVE POSITION OF POLISH CREDIT UNIONS	
Małgorzata Matyja, Magdalena Rajchelt, Eva Hamplová	611

INTERCOMPANY COMPARISON OF SELECTED FINANCIAL INDICATORS OF THE SMALL AND MEDIUM ENTERPRISES	
Lucie Meixnerová, Eva Šikorová	620
DECISION MAKING IN AGENT-BASED VIRTUAL ECONOMIC MODEL	
Tomáš Nacházal, Petr Tučník	629
THE INFLUENCE OF SOCIAL NETWORKS ON MACROECONOMIC STABILITY	
Jana Nunvářová, Pavel Bachmann	636
KUZNETS HYPOTHESIS OF INCOME INEQUALITY: EMPIRICAL EVIDENCE FROM EU	
Jarosław Oczi, Joanna Muszyńska, Ewa Wędrowska	643
SIZE AND SEASONALITY OF BUYING OF PIGS FOR SLAUGHTER IN THE COUNTRIES OF THE VISEGRAD GROUP (2005-2015)	
Anna Olszańska, Arkadiusz Piwowar, Małgorzata Olszańska	652
VALUATION OF INTANGIBLE ASSETS	
Jaroslav Pakosta, Simona Činčalová, Josef Pátek	662
DEVELOPMENT DETERMINANTS OF LOCAL GOVERNMENT UNIT'S PROFILES	
Jacek Pasieczny	673
MODELLING THE DEVELOPMENT OF EGGS PRICES IN THE CR	
Marie Pechrová, Ondřej Šimpach	682
THE EFFICIENCY OF LOW WATER RETENTION IN POLISH PROVINCES – SPATIAL ANALYSIS	
Zbigniew Piepiora, Marian Kachniarz, Arkadiusz Babczuk	689
DEVELOPMENT OF RENEWABLE ENERGY IN THE VISEGRAD COUNTRIES - COMPARATIVE ANALYSIS	
Arkadiusz Piwowar, Anna Olszańska, Lukáš Režný	696
EVALUATION OF THE DEGREE OF PUBLIC SUPPORT OF REGIONAL DEVELOPMENT IN CULTURE	
Lucie Plzáková, Lucie Crespo Stupková	706
DYNAMIC LINEAR IS-LM MODEL	
Pavel Pražák	715
NOTE ON USING INPUT-OUTPUT TABLES IN EXAMINING THE STRUCTURE OF THE CZECH ECONOMY AND THE ECONOMIC IMPACT OF INDIVIDUAL SECTORS	
Manuela Raisová	723
HISTORICAL DEVELOPMENT AND CURRENT PROBLEMS OF CZECH HOUSING SECTOR	
Vlastimil Reichel, Jana Gajdošová	730
CURRENT TRENDS IN PERSONNEL STRATEGIES	
Alice Reissová	737
AN ANALYSIS ON GREEN TOTAL FACTOR PRODUCTIVITIES OF CHINESE MANUFACTURING INDUSTRIES	
Bo Shi	744
SEPA INFLUENCE ON THE CZECH BANKING MARKET	
Otakar Schlossberger	750
APPLYING ELEMENTS OF GREEN MANAGEMENT IN SELECTED ACCOMMODATION FACILITIES IN THE PÁLAVA PROTECTED LANDSCAPE AREA ON AN EXAMPLE OF MIKULOV TOWN	
Petr Scholz	760

SELECTED ASPECTS OF THE DEVELOPMENT OF THE VOLUME OF CURRENCY IN THE CZECH REPUBLIC	
Ilja Skaunic	768
CZECH AGRARIAN FOREIGN TRADE RESTRUCTURING BETWEEN 2001 AND 2015	
Luboš Smutka, Michal Steininger, Mansoor Maitah	776
DOUBLE-EDGED SWORD EFFECT OF CULTURAL DIFFERENCE ON INTERNATIONAL ALLIANCE	
Siyuan Song	783
INTERNATIONAL DIMENSION OF NATIONAL TAX POLICY AND ITS IMPACT ON THE ECONOMIC SPHERE	
Michał Sosnowski	795
CHANGES IN AGRICULTURAL LAND PRICES AFTER A PERIOD OF TRANSITIONAL PROTECTION IN POLAND AND THE CZECH REPUBLIC	
Ivan Soukal, Agnieszka Tarnowska, Anna Kowalska	804
THE INCOME SITUATION OF FARMS IN THE EUROPEAN UNION COUNTRIES	
Joanna Średzińska	814
THE PROBLEM OF INDEBTEDNESS OF POLISH COMMUNES	
Aldona Standar	821
THE INCOME OF RURAL HOUSEHOLDS IN POLAND BETWEEN 2004 AND 2015	
Joanna Stanisławska	829
ONLINE MARKETING TRENDS FOR 2017	
Ľubomíra Strážovská, Marcel Ďuriš	838
SIMULATION OF PROCESS STRATEGY MODEL IN SMALL AND MEDIUM-SIZED ENTREPRENEURSHIP	
Veronika Svatošová	845
EUROPEAN LEGISLATION AND FAIRER SUPPORT FOR FARMERS	
Sylva Švejdarová, Jana Borská	863
USE OF INTERNET AND SOCIAL NETWORKS IN THE CZECH MUNICIPALITY ENVIRONMENT	
Libuše Svobodová, Jaroslava Dittrichová	870
LEADER'S MBTI PERSONALITY AND LEADERSHIP EFFECTIVENESS: THE MEDIATING ROLE OF TRANSFORMATIONAL LEADERSHIP	
Le Tan, Po Hao, Chenlu Zhang	877
THE RELATIONSHIP BETWEEN OIL PRICE SHOCKS AND ECONOMIC GROWTH STRUCTURE: EVIDENCE FROM JAPAN	
Hongzhi Tian	887
KPI-BASED REMUNERATION SYSTEM FOR ACADEMIC MANAGEMENT	
Jan Vlachý	896
IS THE RATE OF GROWTH OF SMES RELATED TO THEIR SIZE?	
Jaroslav Vrchota, Petr Řehoř	903
CHINESE URBAN AND RURAL BASIC PUBLIC SERVICE SUPPLY: THE EVOLUTION OF INSTITUTION AND THE JUDGEMENT OF STATUS	
Songji Wang	911
PROBLEMS OF THE GERMAN LABOUR MARKET	
Jarmila Wefersová	919

EMPLOYMENT IN THE SERVICE SECTOR - NATURE OF ITS STRUCTURAL CHANGES	
Grażyna Węgrzyn	926
PROBLEMS OF BUILDING EFFECTIVE TAX SYSTEM IN THE COUNTRIES OF CENTRAL EUROPE	
Arkadiusz Żabiński	936
DOES SLACK RESOURCE REALLY BENEFIT AMBIDEXTROUS INNOVATION?	
THE MODERATING EFFECT OF OUTPUT CONTROL MECHANISIM	
Chenlu Zhang, Le Tan	945
AMBIDEXTERITY IN OPEN INNOVATION: IMPLEMENTING EXPLORATION	
AND EXPLOITATION WITHIN AND ACROSS ORGANIZATIONS	
Jie Zhang	956
FISCAL COMPOSITION OF GOVERNMENT AND ECONOMIC GROWTH	
Petr Zimčík	966
SUSTAINABLE DEVELOPMENT IN THE FUNCTIONING OF SMALL AGRICULTURAL HOLDINGS	
Dariusz Żmija, Katarzyna Żmija	973
FACTORS WITH POSITIVE AND NEGATIVE IMPACT ON LEARNING ORGANIZATION	
Václav Zubr, Hana Mohelská, Marcela Sokolová	980
SUPPORT FOR RURAL TOURISM	
Jana Žlábková	986

PREFACE

Ladies and gentlemen, dear colleagues,

we are pleased to present the proceedings of the 15th international scientific conference Hradec Economic Days 2017, held by the Department of Economics and the Department of Management at the Faculty of Informatics and Management, University of Hradec Králové on 31 January – 1 February, 2017. The aim of the conference is to present research both theoretical and empirical papers in the field of economy, business economics and management. Hradec economic days promote exchange of ideas and contact of academics from the different fields with practitioners.

Since its first year, the 'Hradec Economic Days' conference has undergone dynamic development. In order to continuously increase the quality of the conference articles, the conference papers of 2017 are divided into two types of proceedings. The first type of the proceedings contains the articles written in the Czech, Slovak and Polish language. The second one includes the articles of high quality, written purely in English, and will be submitted for the evaluation to Conference Proceedings Citation Index - Social Science & Humanities evaluation to be indexed in the Web of Science. The Organizing Committee is also enjoying an increasing range of foreign participants from the United States of America, China, Poland and the Czech Republic.

The papers are discussed in five English, one Polish and one Czech section.

- I. Latest issues in the financial markets
- II. Regional development in macroeconomic context
- III. Business economics and management
- IV. Agribusiness
- V. Modern trends in management
- VI. Ekonomia i zarządzanie regionów, przedsiębiorstw i rolnictwa
- VII. Ekonomika a řízení firem a regionů

Conference proceedings include the total of 132 papers, out of which 123 are written in English, 9 in Czech, Slovak, or Polish. The authors of the papers come from the Czech Republic, Slovakia, Poland, Norway and China. Foreign participants are in the majority. In terms of home institutions, the participants represent 17 Czech, 12 Slovak, 16 Polish universities or institutions, and one Norway, China and Mexico institution.

I would like to thank all conference organizers for their good job, as well as the authors for their trust and loyalty.

Hradec Králové, January 5, 2017

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CHALLENGES AND OPPORTUNITES IN ONLINE SOCIAL CAPITAL NETWORKS SITES AND THE CONCEPT OF SOCIAL MEDIA

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Keywords:

social capital – e-trust – e-commerce – mobile devices – social networking

JEL classification: F6, A1, P5

Abstract:

The concept of social networks sites is topic for many company executives for new trend of economy. On the definition of social capital networks provide a classification of social networks, which groups' applications currently subsumed under the generalized term into more specific categories by trust characteristic. This means collaborative projects, blogs, content communities, social networking sites, virtual game, and virtual social networks. Social capital and social networking method is operative and unique for economic growth. The method used mobile device users to meet others people and permission basis. The determination of whether a given pair of mobile device users are introduced depends on whether the server determines they are in intellectual for trust social capital is typically function of one or more factors. User's build social capital direct way of reciprocal networking objective. Economic growth nature of the industry in which the user's. Build relations social capital level within the management of his or her company for a function of users and company.

Introduction

Today science of economy operates a large variety of micro and macro enterprises, under which millions of people work together. Between them there is a large number of interpersonal interaction and connections. Employees provide work for the company, manage, buy and sell, help those in need within the company and not only. The main purpose of the interaction is the production of goods and services, meeting the diverse needs and demand. There are common goals in the form of building trust between people. These are the rules for the discharge of obligations and mutual interaction. The increase in transaction costs is also one of the reasons for the intensification of research looking for their reduction. Most of the authors writing about social capital raises the issue of its beneficial effect on the reduction of transaction costs. Article indicates economic aspects of social capital through the use of social media and mobile devices. Article contains an analysis of research listed issues of building social capital through new media. Implementation so the task set requires research and analysis of the

literature in the context of economic theory, learning about the media and management. Due to the limited volume of the article the authors chose only the more important considerations for that subject.

1. Social capital - literature overview

Definitions and the concept of social capital have presented in his books the two American authors: R. Putnam in *Democracy in action* and F. Fukuyama in *Trust: social capital and the road to prosperity*. R. Putnam, by defining social capital says, that is productive, it allows, in fact, the achievement of certain objectives, which could not be accomplished if it ran out. For example, a group whose members demonstrate that they are worthy of trust and trust others will be able to achieve much more than a comparable group in which there is a lack of confidence (Putnam, 1995). Spontaneous cooperation is so much easier with social capital (Fukuyama, 2007). In contrast of word of F. Fukuyama write social capital can be the easiest way to define as a set of formal values and ethical standards common to the members of the specified group and to enable them effective interaction (Fukuyama, 2007). In the further part of the considerations, F. Fukuyama points out that the trust acts as a lubricant, which increases the efficiency of the functioning of each group or institution (Fukuyama, 2007). The author, who first introduced to scientific circulation concept of social capital, was James Coleman. Social capital as defined by Coleman is an important resource for individuals, has a significant impact on their ability to perform and on the perceived quality of life. Coleman write very many of the benefits that arise with social capital, is not for those who initiated the action leading to the increase of social capital, but other people, therefore there is no question about it, to increase the pool of social capital may be the interests of the individual. This means that, in the case of most forms of social capital, their production is a by-product of other activities. Many of the resources of social capital appears or disappears regardless of good or bad will of the individual person. Therefore, this form of capital is so poorly recognized in social economic studies (Coleman, 1997). Social capital researchers define this concept mainly by referring them to the social and economic relations between individuals (man-man, employee-employee). However, in the literature also very broad is understanding of the social capital. Famous economists d. North and m. Olson propose the inclusion of social capital is also the category of the State and social economy, as the increase in the value of the whole of society by building trust and relationships (Pogowska, 2004). Such understanding is difficult to definable social category makes it even less comprehensible and from a scientific point of view difficult to accept. Based on these definitions, it can be concluded that social capital create terms such as trust, norms and a binding that can increase the efficiency of society by facilitating coordinated actions. Social capital differs from other forms of human capital that is created and passed through the cultural mechanisms: tradition, the historical origin of the society and is not planned in advance. Robert Putnam attributes the change in building relationships through a very quick

process of creating relationships, generational mostly with fast development of the Internet, as a medium (Putnam, 2004). Two decades ago, the medium was television, was a central element of leisure and related meetings was members of the family, the community. The mobile little screen is used, as strong instrument of communication of information about the world. Now this medium is the Internet and the whole network generation. Whereas today Smartphone connected to a network, you can all 24 hours day to gain information, connect with friends, play online games, solve problems, and conduct meetings in the virtual world. However, it is missing in this case, the human factor of building real relationships and trust based on direct contact and the exchange of experience. Thinking metaphorically, we can imagine the plant (man), which is constantly increase (living, working, family changes). The lack of a system of values and trust creates the prospect that digital media will take over this role of on-line and off-line. Social networking sites are likely in the future battery to meet social needs of their users and would create a good element to build community. The crisis of values and ethical behaviour that makes people are lost. The community creates mutual trust between members, strategies for action and assistance. The same users closed groups can receive support through the creation of capital social in that group or the web portal. Social capital is defined as a resource, active, Manor and is productive. In our opinion, the most constructive concept in the study of social capital is the economic perspective of James Coleman. Starting with the economic theory of rational choice, Coleman developed the concept of social capital, as a mutual productive social system. The researcher had in mind the achievements in the theory of social capital and a basic knowledge of economics. Can fundamental right in addition, that social capital, if productivity has value and can be used together with other resources. Social capital is not the material prices, because it is not the subject of an Exchange is not a subject to valuation in the market, but it has the importance of the intangible. If productivity in the enterprise and is referred to as: resource assets, assets, it may not have a negative impact or negative meaning.

2. Creating of social capital

About the different looks of the Economist on social capital can provide the following quote from the work of K. Arrow social capital and trust very measurable value pragmatic. The possibility of relying on the word business partner allows you to save a lot of problems. Trust and the related loyalty and truthfulness are viable, practical, economic value, which improves the performance of your system and allows you to produce (Arrow, 1974). We can build social capital through building trust. Arrow the Nobel Prize winner in economics clearly highlights the importance of productivity. It follows also that the above mentioned values are unintentional and are, accumulate, as externalities, beneficial for the economy and economics. Inability to exchange, which the author says, is due to lack of money, as the category. Trust and the related value to value and even though it may not be the subject of a transaction, because her condition

is the price. The lack of price points to the way the formation of social capital, namely that it is not the result of conscious investment activities. As a result to the social capital, as the product would have a price, and is formed as a result. Building capital social through social media, thinking about the concept of Robert Putnam, should be based on the strong relationship between entities and deep relationships between people. The process is the relationships that are also mutually between the participants (Kevin, 2012). To consciously promote and publish building of social capital, and create better conditions for its development, the authors propose some suggestions that use digital networks:

- a) to build educational programs for children in building trust through for example. Sports activities, information, economic school group, as well as extracurricular training in terms of opportunities and threats on social media,
- b) to increase financial resources in view of the European funds and grants the Norwegian in 2017-2025 in primary schools on teamwork and building trust through games and fun,
- c) to implement of new items for students in economics, about building social capital with the use of social media. Now even if I get items on social capital, it is no wider on them to discuss the possibility of using social media in this respect.
- d) to build local applications to facilitate communication and to build social capital within the street, district, village, city,
- e) to create knowledge based on mutual trust through the use of social media is becoming an important part of the development of the competitiveness of enterprises by increasing e-training for employees,
- f) to propose monthly events for employees and customers of the company and to use in this case, the mobile app in terms of site selection, meeting time.
- g) technology may be limited in the use of social media during work in the company. Let employees use these media, but on the condition if they participate in closed groups in the media by creating innovation, introducing new ideas.
- h) to introduce of a new application for mobile workers to build learning and social capital.

Modern development of society and mobile devices make that we are now at a time of radical social change, which is made under the influence of the development of information technology (Castelles, 1998). It is effect to create a society of networks based on mutual trust. Network, understood as the links between the elements of the social system or economic, is characterized by connecting distant points, which means that in the Web information capitalism lose the importance of distance and time of day. The existence of the network almost around dawn makes capital works globally, as one, in real time, and the income from it are generated not so much by material production, how much by financial flows (Ortega, Gasset, 2002). The use of modern media and means of transport gives you actually feel the availability of even the furthest corners of the world, the best museums, libraries, exotic cultures. José Ortega looks strong way out from a digital perspective. These days we have opportunity to deal with real surprised

anywhere on Earth. You need desire, trust and the Internet. Digital Europe needs a process of learning and teaching in cooperation with mobile devices (Castro, 2009). Many of the countries is based on the progress of individual traders that can compete with the other through flexible solutions approach to employees, create social relationships. Organizing events on-line and off-line through are used of social networks. In this case, it is the social capital, which is the most important factor of growth to build the competitiveness of organization and development of the country's economy. Social capital is very specific, it's hard to measurable factor in the development of the company. As a soft factor, creating and building competitiveness, as well as affecting the development of the company, works with hard factors (volume of sales on the market, the annual profit, return on investment). In the opinion of K. Hampton digital word is unique different forms of information such as image, sound, voice, have an impact on shaping and speeding up the building of trust between the people (Hampton, 2000). Send letters e-mail to employees, doggie behaviour because they are long and dry, shot message. When you build social capital creates technology interaction among employees in the field (Collins, Montgomery, 1995): 1. The acquisition and adaptation of information, 2. Calculation and implementation in accordance with the procedure 3. Storing information, 4. Transmission of information.

The combination of mobile devices and social media in terms of social capital management builds and creates a perfect system to create the relationship. The economic benefits for the enterprise it is above all an increase in technological processes, management processes and the exchange of information, in the wake of what are innovations and patents, with which the company increases its market value. Internet, computers, smart devices are an essential resource associated with the process of learning and teaching staff based on social capital. Learning technology strategy and information management through the use of mobile devices (smartphone, tablet) and social media will allow for a faster pace of development of the company. Combination of knowledge of all employees, and the sharing of experience, lets you pass the ideas of another, regardless of the location and type of connection and a mobile device. People that are in relationships and interactions within the enterprise, as well as outside of it form the social capital. The dynamics of the development of industries and the economy is based on three levels: the global level-the level of mega, the level of national-level macro, the level of business level of micro (Collins, Montgomery, 1995). At each of these levels there are interactions between people, which can be implemented with the use of social media by using mobile devices. Social capital in the enterprise is used to building the competitiveness of all levels in the process of creating the relationship between people. Events type of on-line and off-line are building social capital in organizations by achieving better results and solutions, the effective use of available resources and products, creating product and administrative support for all (Chlechowicz et al., 2010).

3. Return of investment and social capital valuations

Social Capital represents an investment in social relations with expected returns in the mobile applications marketplace (Nan Lin, 2010). Subject of Social Capital Valuations (SCV) we take this concept creating a predictive model that combines a commonly accepted probability theory in statistics (expected value) with a common approach used by businesses to make informed financial decisions (return on investment - ROI).

Our methodology combines the probability of a positive applications on mobile and applications social program outcome. Based on program evaluations, with the associated benefits that outcome brings (use mobile applications through social media). We then monetize those outcomes. Method expected value Return of Investment is create by Nin Lan. Community is based social and some mobile and health programs have precluded themselves from the benefits of demonstrating their value in financial and economic terms because they don't have perfect information. Expected Value ROI not require perfect information in order to project and monetize program outcomes. Simon the Nobel Prize winning economist hold the opinion the term satisfice of satisfy and suffice to connote a decision making strategy that attempts to meet an acceptability threshold, taking into consideration the cost of obtaining perfect information (Simon, 1997).

The new demands on organizations for sustaining the work they do will require translating outcomes to impact; especially economic impact. Expected Value ROI approach utilizes program outcome information and translates it into a return on investment figure for a variety of employers. Expected Value ROI measures relate the cost savings and dollar gains realized by a mobile programs interventions against the financial cost of operating that social capital in web applications program. Expected Value ROI measures for a social media entry program would include the cost of avoided as a function of successfully assisting for a new employee relations. We would not include the benefits experienced directly by the participant, but only those cost benefits from social mobile applications and social media applications and website.

Conclusion

Building social capital by creating special applications, courses, training on mobile devices can greatly enhance the prospects for the company. Do not deploy to build social capital and mutual trust in the enterprise is an expression of the lack of social responsibility. The effects of the lack of trust leads to low, the quality of our products and services, lower customer satisfaction and employee and consequently fallen down the value of a business and its profits.

Social capital needs strong leadership, commitment, open communication and applications based on mobile devices now popular all over the world. If people do not trust themselves, not to reach success. Building social capital through the use of social

media and mobile devices is the key to motivating people and the achievement of the objectives. This ensures that the entire company or corporation to achieve greater financial benefit. Society is made up of units and creating the network and relationships and community. Social capital calls need to act introduces unit in action, which then are transferred to other units.

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WORK EFFICIENCY OF LOCAL GOVERNMENT

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Abstract:

The specificity of public sector consists in the fact that the implementation of tasks is primarily subject to the assessment of their desirability and legal compliance. Meanwhile, modern management of public sector has to investigate and improve methods and measures allowing the application of procedures for its performance evaluation. The purpose of the presented article is to discuss the instrument useful in work efficiency analysis covering local government units (LGU) i.e. workload audit. It presents the outline of such audit methodology along with an example of the results which could serve as the basis in the process of making managerial decisions.

Introduction

Public sector spending constitutes almost half of Polish GDP, therefore correct management in this sector has the fundamental impact on the entire domestic socio-economic system functioning. The specificity of public sector, however, consists in the fact that the efficiency of managing the available means or the effectiveness of resources implementation does not provide the major criterion for its functioning. Task realization remains the primary objective – the justification of particular expenditure (or employment size) is of lesser importance (Misiąg, 2005).

At the end of the 70s, along with the New Public Management (NPM) trends numerous voices were heard about the need for more extensive control of public funds, including those available for local government units, by means of e.g. efficiency assessment approached as the relationship between outlays (spending) and the obtained results (quantity and quality of the supplied public good) (Osborne 1993), (Zalewski, 2007). It was accompanied by overcoming numerous obstacles hindering the rationalization of expenditure, following the well-established attitude, that overcoming the existing barriers remains utopian (Szewczuk & Ziolo, 2008). Modern approach to public sector management has to search for and improve both methods and measures allowing the

application of procedures for its performance evaluation (Pollitt, Bouckaert 2011). Having assumed that the desirability based on legal compliance does not mean mismanagement, the need arises to control e.g. employment size and to standardize particular clerical positions (Wojciechowski, 2005), (Kachniarz, 2012).

So far, neither any complex evaluation nor standardization systems, referring to the particular working positions in public administration, have been developed. In recent years, however, many concepts, pilot programmes or even more extensive systemic implementations appeared, thus allowing the development of such activity directions. (Information. 2015).

The purpose of the presented article is to discuss the instrument useful in work efficiency analysis covering local government units (LGU) i.e. workload audit. The outline of such audit methodology is presented.

Having focused on this issue the authors put forward two research theses. Firstly, both LGU and the entire public sector are characterised by extensive, however, also insufficiently diagnosed differences in work efficiency of individual employees. Secondly, despite the absence of systemic database there are knowledge resources and research methods allowing the development of a reliable benchmarking system for LGU workload.

The term “workload” is approached in the article as the relationship between average working time, necessary to execute a particular activity correctly, assigned to a given working position and the workload employment basis of an employee. Workload in this understanding remains the primary research component in terms of employee’s work efficiency. For simplicity, however, further in the article these terms will be referred to as synonyms.

1. The outline of workload audit methodology

Workload audit is based on the external evaluation of particular working positions and the functioning of organizational structures. It is a multi-level procedure consisting in the skilful combination of the acquired knowledge in a particular field of expertise and the information collected directly from employees.

The evaluation is performed using a wide base of information sources – from the municipal source documents (statutes, by-laws, plans and reports, scopes of employees’ duties), through knowledge and external database about the functioning of offices and working positions to the data declared by employees in the form of surveys and questionnaires. The first source of data (statutes, by-laws, etc.) allows compiling a formal scheme of tasks and competencies assigned to both the occupied positions and the entire organizational units. As it often happens, these documents are not completed on a regular basis, thus they need to be verified and adjusted to the actual situation.

Such formal scheme should be supplemented by the first diagnostic study covering all employees. In this case a survey supported by a direct interview is an appropriate method. Employees inform about their position in the office structure, their qualifications, education and primarily the scope of actually performed duties. They can also evaluate the rational distribution of tasks and make suggestions of modifications to be introduced.

The next step takes the form of a diagnostic study covering the quantitative structure of duties performed by employees. Its purpose is to evaluate the office as the cluster of carried out processes and not just from the perspective of the system of jobs offering a great deal of freedom to employees in defining the performed processes, moreover, it provides an outlook on their attitude to work. Some of them e.g. show creativity in the process-oriented description of their jobs, others, unfortunately, do not go beyond the “cliché” of an officially set pattern.

Calculations are made for the standard full-time jobs, however, it should be emphasized that the effectiveness of tasks execution depends, to a great extent, on the form of work organization, motivation and psychophysical abilities of individual employees. These components are of great influence on the final work performance. To cover them all the survey cannot be limited to a questionnaire method only – it is also indispensable to carry out structured interviews, direct supervisions of jobs, or even personal audits. Only then it is possible to provide correct interpretation of the collected results, taking employees’ individual personality traits into account.

It is also necessary to specify a model (standard) to use the information about the number of performed tasks to calculate the workload of particular working positions. Comparing the obtained results against the specified model offers the substance for drawing conclusions and presenting interpretations. The problem of an adequate model development is of significant importance for the discussed methodology, therefore it was decided to discuss it in more detail in the next point.

2. The problem of model specification method

The problem of public services standardization is generally focused on two issues. One of them is related to the nature of public services, which should be equally available to all citizens, regardless of their place of residence. The second problem is the adequacy principle realization – i.e. the allocation of resources respectively to the needs in the form of funds and the number of employees. The adequacy principle assumes that along with commissioning such services government administration should transfer adequate funds for their provision. Allocation algorithms are used for this purpose and should be based on the relevant, pre-determined standards. This, in turn, gives grounds for an employment standard – i.e. the scope of services performed within full-time jobs, relevant to the number of carried out procedures. Therefore, one can assume that in

a well-organized administration the number of performed procedures and the need for appropriate full-time jobs financing should justify funds allocation.

The median of working time, indispensable to perform an individual procedure (task, service, decision, etc.), remains the most often used model worldwide, aimed at determining the standards for carrying out public administration tasks. The data used to define such median are usually collected by means of specifying the number of performed tasks at particular working positions in many offices, verified by an additional expert assessment. Such system plays two crucial functions. Firstly, it provides information necessary for allocating public means adequate to the number of carried out procedures. Secondly, it allows LGU management to evaluate the workload of particular working positions and the entire offices. This effect is obtained based on benchmark analysis supporting the positioning of a particular job/office in relation to similar units. This element is of crucial importance for the presented discussion.

Hence, the major condition determining administration work effectiveness is to specify the standard relations between the number of carried out procedures and the size of employment. In many countries such standards are systemically developed for the purposes of public administration operations' rationalization (e.g. England, New Zealand). The English Best Value system of performance indicators can serve as an example as it allows determining not just the workload, but also unit costs of these services provision in individual units (Modzelewski, 2005).

Unfortunately, no systemic solution exists in Poland - instead of standards there is a residual and fuzzy set of data which, as yet, does not offer any systemic knowledge. It makes it difficult, but not impossible to develop such standards. For this reason, however, many database, departmental reports, cross-section performance audit results, the existing outcomes of studies conducted in Poland and the effects of carried out projects have to be explored. However, due to the fact that this information does not create a uniform system of standards for all working positions, they have to be supplemented by research results in a comparative group of local governments. The example of such research covering Lower Silesian counties was presented by Kachniarz (2012). In this way a standard is developed for each provided service as the basis for benchmarking application.

3. Results

After the model has been developed, the data for a particular LGU are compared against an appropriate standard. It can take the form of listing the number of hours necessary for the execution of certain tasks, assigned to a given working position against the number of hours worked full-time at this position. Depending on the needs it can be presented in an annual, monthly or e.g. weekly perspective. The best method to present the results is by the percentage of workload ratio.

It will be discussed based of the example of a clerk who, in accordance with his scope of duties is employed to carry out the population registration procedures. Let's assume that the analysis of his activities showed the annual number of 2000 procedures he performs.

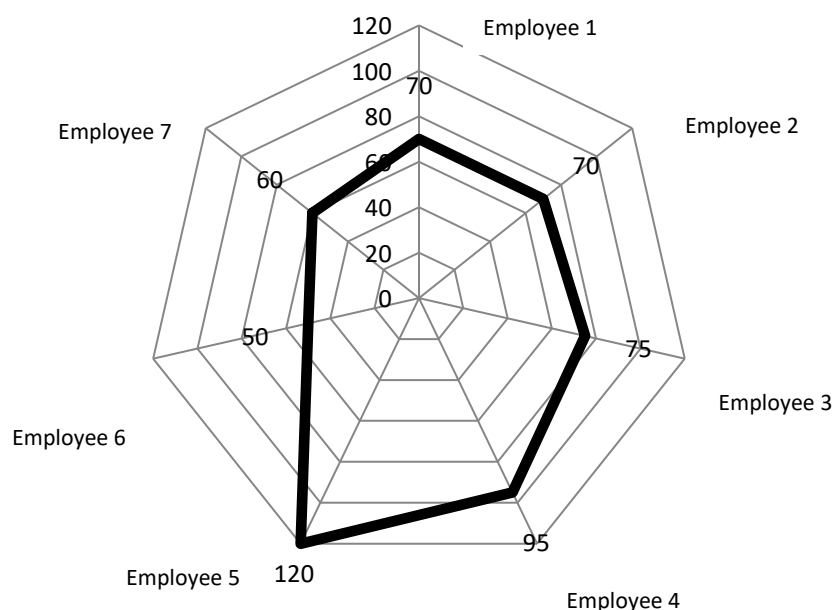
TAB. 1: Table caption (style HED - object caption)

No.	Type of task	The median time of one case (hours)
I	Bureau of Vital Statistics	
1	Preparing civil status documents (birth, marriage, death certificates)	1.38
2	Issuing administrative decisions and orders	3.00
3	Issuing copies of civil status documents (abbreviated, full, on multilingual printed forms)	0.50
4	Issuing certificates, permits and accepting statements	0.70
5	Issuing decisions about first names and surnames	2.99
II	General registry	
1	Residence registration, change of residence, notification of departure for permanent residence, notification of return from permanent residence	0.50
2	Update and verification of data	0.33
3	Decisions regarding residence registration issues	24.00
4	Issuing, changing and cancelling of Polish Resident Identification Number	0.50
5	Providing personal data from the collected residence registrations and records of issued and annulled ID cards	0.39
6	Issuing negative decisions regarding access to personal data	2.00
7	Issuing certificates presenting all personal data of the requested person from the residence registration or the records of issued and annulled ID cards	0.33
III	ID cards	
1	Issuing and ID card	0.75
2	Reporting ID card loss (accepting notifications about a loss or a theft)	0.37
3	Annulled ID cards (except for those annulled due to their expiry and loss)	0.28
4	Decisions regarding ID cards	3.00

Source: Information regarding work related to funding the commissioned tasks within the scope of government administration, Ministry of Finance, Warsaw 2014.

The average time needed to provide one of such services is 0,5 hour (median). If he does not render any other services then his annual time commitment amounts to 1000 hours. If he is employed full-time then his annual workload equals 2000 hours on average (250 working days 8 hours each)¹. This simple analysis shows that the workload assigned to this position amounts to 50% only.

FIG. 1: The graph presenting employees' workload in one of the Municipal Office units in X municipality



Source: (Author's compilation based on X municipality audit.

Fig. 1 illustrates the results of an audit conducted in one of Lower Silesian municipalities (for the needs of this article it is referred to as X municipality). They indicate that out of 7 employees in this unit one of them (employee no. 5) showed an above standard performance (120%), the result of the second one was close to the standard – 95% (employee no. 4), the other ones, however, presented much lower results (60-70%). Employee no. 6 had the lowest workload – 50% of the standard. This example shows how to analyse the workload assigned to particular working positions and also evaluate the performance of entire organizational structures (in our case a Municipal Office unit).

¹Depending e.g. on the days of national holidays the number of working hours can vary in particular years. For example, in 2016 it amounts to 2032 hours. Thus their number adopted for the purposes of audits presents a certain simplification.

4. Discussion

The constraints regarding this article volume prevent a more detailed discussion of the conducted research results, nevertheless, the aforementioned small example proves that workload differences in public administration are significant enough to justify the need for more analyses in this area. The presented results can give grounds for making managerial decisions to level out employees' workload and increase their performance. Therefore it seems that the thesis about extensive differences in the workload of individual organizational units, even in the same Municipal Office, has been confirmed.

The interpretation of results cannot, however, be based on an automatic comparison against the standard. As it has already been indicated, appropriate conclusions require taking the individual personal traits of particular employees into account. Thus expert knowledge is indispensable in this case to evaluate e.g. to what extent the subjective sense of an employee about too many duties to handle results from his/her being actually overworked, from poor work organization in a unit or an employee's poor performance related to his/her chaotic work.

The periodical nature of some procedures or their special accumulation, resulting from e.g. changes in law, remains yet another component which cannot be approached using simple comparisons against the standard. Thus a monthly analysis should be carried out in this case, as it may turn out that in some months an employee is not capable of handling all the procedures, whereas in other months he hardly ever performs them². It is inefficient to adjust the number of jobs to peak situations, without ensuring enough workload in the remaining periods. Such situations require making adequate managerial decisions, as e.g. arranging additional employees to work during high intensity periods and delegating them to different activities in other months.

Conclusion

Despite the fact that, so far, neither effectiveness nor efficiency remained the primary paradigm of public sector, there are attempts to rationalize its functioning. In many countries the systemic background for benchmarking analyses was developed, which allows for the positioning of particular local government units (e.g. Best Value system in England). In Poland such a complex system has not been established as yet, however, fragmentary database are available which, if supplemented by own research (covering e.g. the group of comparable units), allow more detailed workload evaluations of the particular LGU employees. It offers an opportunity for operations' rationalization of the discussed public administration sector.

²The seasonal nature is characteristic for such procedures as e.g. construction permits, decisions about logging, etc. Some tasks (e.g. accounting) result from periodical settlements. Periodical concentration of some procedures also results from e.g. announcements about the planned changes in legislation (vehicle registration, driver's licence).

The presented article discusses the instrument for work efficiency analysis in local government units, i.e. workload audit. Not only its methodology was defined, but also the research effects related to a particular LGU were provided. Moreover, the data interpretation problems and their usefulness in making managerial decisions were identified. Thus the major purpose of this article, specified in its introduction, was accomplished.

The presented example of research results confirms the thesis about an extensive workload diversification, which seems quite natural in the conditions of a missing systemic monitoring tool adequate for this problem. The absence of such complex database makes developing workload audits for particular LGU, along with a reliable benchmarking system, difficult but not impossible. Thus the research hypotheses put forward in the introduction were confirmed.

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GENDER OF CHAIRMAN OF THE BOARD AND FINANCIAL PERFORMANCE OF POLISH COOPERATIVE BANKS - EMPIRICAL EVIDENCE

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Keywords:

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Abstract:

The examination indicated that in the case of Polish co-op banks, women fulfilled the function of bank president in smaller banks than did men. The effectiveness of the examined co-op banks managed by women was decidedly better with regard to ROA, ROE, net profits, cost/income ratio and non-performing loans indicator, than those banks under male management. In addition, by applying advanced statistical modelling, confirmed was that the gender of a co-op bank board of directors' president had significant influence on the bank's effectiveness.

Introduction

In recent years the issue of differentiating statutory entities – in this case financial entities – with regard to gender and the performance of said financial institutions has become relatively popular in Poland. One of the reasons for this attention is the widely considered observation regarding the low membership of women in the highest statutory corporate entities. In many countries around the world, the participation of women in high management positions in corporations continues to lag behind the numbers of men (Amin and Islam, 2014). Over the years this condition has incurred change as more women were appointed to management positions. This change has been a result of certain societal shifts which encouraged modifying women's status in the contemporary world. Additionally it also results from efforts made by various institutions to increase women's engagement in corporate management. Norway, as one of the first to declare by law, requires that corporate management be made to be at least 40% women (Ahern and Dittmar, 2012). Similarly, Spain required an increase of women in management boards and management to a level at least 40% (Adams and Ferreira, 2009). Sweden warned its business community that if corporate management was not at least 25% women, business would feel the legislative consequences. Following Norway, Spain and Sweden were other European states encouraging their business community to increase women's engagement in important management bodies. For example, Poland

already has a “Code of Best Practices for WSE Listed Companies” (2010), which encourages raising women’s presence in the statutory corporations. A similar mechanism was introduced by the Netherlands, France and Germany. These changes are introduced on the conviction that women’s presence in corporate management will have a positive influence on management operations (Adams and Ferreira, 2009). Others indicate that women’s presence in key positions will lead to a better understanding of markets and clientele (Robinson and Dechant, 1997). They further indicate that corporations will also experience greater creativity and innovation. Smith et al. (2006) point to the gains in efficient problem solving, and above all, point out that with women in management, the corporate image improves in the eyes of clientele and stakeholders (Ryan and Haslam, 2007). Besides the benefits of women’s participation in management, literature shows there is a detrimental aspect of this condition. Earley and Mosakowski (2000) point out that one-gender bodies tend to communicate in straight-forward fashion and agree to a consensus more quickly – a most important quality when making decisions. Furthermore, we can observe that ‘male only’ groups are more inclined to cooperation and less frequently suffer conflicts. Many studies show that balanced gender make-up of corporate bodies generate higher friction (Goodstein et al., 1994), extends decision making and significantly interferes with reaching compromise (Knight et al., 1999), and probably induce into higher corporate costs (Cox et al., 1991). Lau and Murnighan (1998) show that mixed corporate bodies have a negative impact on performance – a result of procrastination during decision-making. Not less frequent are benefit/liability studies of women statutory corporate bodies and literature abounds with studies considering gender-varied management and boards of directors’ impact on financial performance where contrasting voices find their venue. A number of studies point to a positive correlation gender-varied corporate management and financial performance. Erhardt et al. (2003) determined that those American corporations where decision making is dominated by women show better ROA and ROI performance than those dominated by men. A study by Carte (2003) on the group of the largest American corporations (638) indicated a positive correlation between women’s presence in management and profitability of total assets, and Tobin’s ‘q’ indicator. Campbell and Minguez-Vera (2008) confirmed the positive correlation between women’s management membership and corporate performance measured Tobin’s ‘q’ for corporations in Spain. In 2011, Lindstaedt and associates (2011) demonstrated a significant positive correlation between ROE, ROA, the corporation’s book value and the percentage of women in corporate management in 160 German corporations. Mahadeo et al. (2012) also demonstrated that women in corporate management positively influence return on assets (ROA). Other studies indicate a negative relation between women’s participation in corporate management and the level of performance. For example, Ahern and Dittmar (2012) demonstrated a negative correlation between women in corporate management and Tobins ‘q’ indicator. Furthermore, Sharader et al. (1997) also demonstrated a negative relation between women in American corporate management and levels of ROE, ROA, ROI and return on sales (ROS). Still other studies indicate

absolutely no correlation between corporate performance and gender ratios in management (Randøy et al. 2006). What becomes apparent when reviewing the referred to international studies is differentiation with regard to sample size, country where the study is carried out, and the commercial activity of selected corporations. Noticeable is that there are few studies examining the financial sector – especially banks – which is a fundamental element of modern economies as confirmed by many studies (Owoputi, 2014; Yilmaz, 2013; Rachdi, 2013). The strong connection between the banking sector and economy exists as well in Poland. The analysis of international material for this article indicates that the issue of women in bank management and their influence on a bank's performance is an issue that has seen scant attention. For the purposes of this examination, a number of pertinent questions were generated which this article attempts to answer: Are the co-op banks managed by women and men comparable with regard to client volume, membership, total assets and total equity? Do Polish co-op banks managed by women gain higher performance levels than banks managed by men? If the president of a co-op bank is a woman, is there an effect on bank performance?

1. Methods, literature overview

The concept of performance can be variously defined e.g. attaining the highest possible result with limited outlay or attaining expected result with lowest outlay (Jaworski and Zawadzka, 2006). Taking into account the unique character of cooperative banking and the usefulness of the analysis to bank management and other interested groups, for this study the definition of 'performance' shall be (Kwiatkowska, 2012; Szustak, 2009): percentage of return on equity (ROE), net income/shareholder equity; percentage of return on assets (ROA), net income/total assets; efficiency ratio (C/I) as the operating costs including amortization to bank income adjusted by other operation income. Applying these measurements enables the presentation of co-op bank operations from the perspective of income performance (ROE, ROA), and cost efficiency i.e. C/I. In the interest of establishing the inclination to undertake risk by women and men who manage co-op banks, an additional indicator has been employed - nonperforming loan (NPL), or contrasting defaulted loans to total loans (Kozak, 2010). The study took advantage of balanced data panels for the years 2010 to 2014, of 40 operating co-op banks in Poland in municipalities of populations less than 50,000 residents. The data was collected in the second half of 2015, during direct interviews with the presidents of the selected banks. Gained information from the interviews was incorporated into the published bank reports in open-access data banks so as to avoid errors and missing data. To test the relationship between the gender of the board of directors' president and the performance of a co-op bank, the following data was used: gender of president (0 – male, 1 – female); net profit (thousands PLN); result of bank activity (thousands PLN); total balance (thousands PLN); non-financial sector total deposits (thousands PLN); non-financial sector total loans (thousands PLN); total own funds (thousands PLN); number of clients; number of bank membership; ROE (%); ROA (%); C/I (%); NPL

(%). In order to determine the differential significance between average co-op bank performance levels relative to president of the board's gender, the 't' test was applied to independent groups (Zimmerman, 1997; Box et al., 2005). In the subsequent phase of the study, panel models were evaluated to determine the correlation between the gender of the co-op bank president and levels of net profit, ROE, ROA, NPL, and C/I (Madala, 2006).

2. Results

Initially a differentiation assessment regarding the sizes of the studied co-op banks in terms of the gender of the person filling the function of president of the board. The results of the analysis showed that women managed decidedly smaller institutions e.g. the total average balance for a bank managed by a woman was close to 211 mln PLN in contrast to 451 mln PLN in a bank managed by a man. The same tendency is observed with regard to amounts of deposits and credits for the non-financial sector in the considered banks i.e. banks managed by women, on average, over 176 mln PLN in deposits and 158 mln in credits where banks managed by men showed 390+ mln PLN and 293 mln PLN. respectively. Furthermore, women filled the most important statutory positions in banks that had only 40% the clientele or membership than banks managed by men. It bears noticing that not only the average values describing the bank aggregate varied, but also the minimum and maximum levels of the discussed characteristics were higher for banks managed by men and lower for women (see Table 1). The differentiation relevance regarding the sizes of banks managed by women and men was also confirmed by the t-test which indicates the validity of average differences in the two populations. Comparing the empirical values of the 't' statistics referenced against critical values, it was apparent that in the cases of total balances, non-financial sector deposits, non-financial sector credits, and clientele and membership numbers, the critical values were lower than the empirical values for the 't' statistics, which allowed rejection of the null hypothesis. Therefore it remains to accept as valid the notion that the size of the bank dictates the gender of the person managing said bank. This may be a consequence of the still functioning stereotype that only men are predestined to fill the highest functions in financial institutions. Nevertheless, regardless of the study results of Poland's co-op banks that women manage smaller banks, the question remains regarding the performance of banks managed by men, and women. Reviewing the relative values which allow establishing bank performance, it was found that women, in comparison to men, attained higher average return (almost one percentage point) on equity capital, and higher average return (in total 0.45 percentage point) on total assets. The 't' test was carried out to determine the statistical significance of these differences, and regarding ROA, the difference was found to be significant; whereas in the case of ROE, insignificant. Nevertheless, the study results indicate that women managers, considering bank performance, managed banks more efficiently as 'their' average returns were generally higher than those banks managed by men.

TAB. 1: Characteristics of the Research Data for Co-op Banks

Specification	Women				Men				't' statistics
	Average	Minimum	Maximum	Standard Deviation	Average	Minimum	Maximum	Standard Deviation	
Net profit (thou. PLN)	2 731.8	895.0	6,971.5	1,721.6	4,368.8	895.0	23,363.0	4,009.9	-6.67
Result for bank activity (thou. PLN)	10.5096	2,967.0	23,019.5	5,907.1	20,414.9	5,848.0	105,118.5	19,777.8	-12.22
Total assets (thou. PLN)	211,830.1	41,069.0	583,779.5	15,479.5	45,166.9	114,447.3	2,451,051.0	50,388.0	-8.02
Total deposits non-financial sector (thou. PLN)	176,746.3	29,424.0	500,425.5	137,561.3	39,057.1	98,734.3	2,079,873.0	43,872.0	-8.94
Total credits non-financial sector (thou. PLN)	158,213.9	31,986.0	509,003.0	123,801.2	29,170.6	64,609.0	1,523,954.5	32,580.4	-7.27
Total own funds (thou. PLN)	20,644.4	5,784.0	48,833.5	12,325.7	37,108.6	9,406.0	177,964.0	39,627.5	-3.6
Client	18,232	6,154.	35,979	9,542.	42,12	14,849	176,410.	36,09	-

GENDER OF BANK PRESIDENT AND ITS FINANCIAL PERFORMANCE

count	.6	0	.0	4	6.7	.7	0	6.5	12.23
Members hip count	1,444. 0	487.0	2,698. 0	701.3	3,823. 6	391.0	34,573.5	7,895. 9	- 94.40
ROE (%)	16.12	6.23	23.95	3.32%	15.18	6.87	27.30	4.43	1.3
ROA (%)	1.75	0.80	3.00	0.50	1.30	0.65	2.21	0.34	7.54
C/I (%)	60.95	52.90	67.56	3.73	63.49	45.04	80.38	8.70	-3.25
NPL (%)	1.84	0.08	6.56	1.60	3.98	0.31	10.56	2.77	-5.08

Source: own research. Critical value for Student's t-test, degree of freedom – 8, significance $\alpha=0.05$ $t^*=3.8325$

Analyzing cost effectiveness in the studied banks, the difference in the C/I indicator for banks managed on the basis of the bank president's gender was not great – it was 2.54 percentage points. The 't' test indicated that this difference had no statistical significance. This may have been the consequence of requirements of administrative entities, oversight entities and demands of clientele regardless of management gender. In connection with this, even though the banks managed by women had better performance results, fulfilling these requirements, the women led banks were burdened with substantial expenditures which, in turn, lowered cost efficiency. Be that as it may, the average value of the C/I indicator for the studied banks led by women gained higher cost efficiency levels than the banks led by men. The last of the factors analyzed was the level of non-performing loans (NPL), which to a certain degree may be treated as a risk assessment and its effectiveness as an index. The analysis results – presented in Table 1 – indicates that banks led by women had a markedly lower NPL index (1.84%). as compared to men led banks (3.98). Further analysis confirming these results were of statistical significance indicating that the banks led by women generated notably lower levels of risk associated with credit operations than the banks led by men (see Table 2).

TAB. 2: Panel Models for Net Profits (thou. PLN), ROE (%), ROA (%), C/I (%) and NPL (%)

Specification	Net profit model		ROA model		ROE model		C/I model		NPL model	
	Regression coefficient	Significance	Regression coefficient	Significance	Regression coefficient	Significance	Regression coefficient	Significance	Regression coefficient	Significance
Constant	568.62 500	** *	0.0143 939	** *	0.1640 03000	** *	0.6652 88000	** *	0.0240 34300	* * *
Total assets (thou. PLN)	0.0200 733	** *	0.0000 00009		0.0000 00389		- 0.0000 0021		0.0000 00236	* * *
Total non-financial sector credits (thou. PLN)	- 0,0025 121		- 0,0000 0001	** *	- 0,0000 0028	** *	0,0000 00282	** *	- 0,0000 0026	* * *
NPL (%)	-1 781,56 00		- 0,0065 614		- 0,3427 3500	** *	- 0,5731 8800	**		
Total own funds (thou. PLN)	- 0.1474 830	** *	- 0.0000 0001		- 0.0000 0334	** *	0.0000 00900		0.0000 00021	
Client count	0.0218 176	** *	- 0.0000 001		0.0000 00202		- 0.0000 0105	**	0.0000 00212	
Membership count	- 0.2288 870	** *	- 0.0000 001		- 0.0000 0572	** *	0.0000 04686	*	- 0.0000 0284	* * *
Gender of bank president	1 051.41 000	** *	0.0039 698	** *	0.0201 69300	** *	- 0.0427 3520	** *	- 0.0095 1949	* *
R-squared	0.9378 47		0.4501 08		0.3795 44		0.3072 71		0.4825 13	

F(51, 168)	49.705 99		2.6963 59		2.0150 71		1.4611 57		3.1515 71	
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Source: own research. Critical value for Student's t-test, degree of freedom – 8, significance $\alpha=0.05$ $t^*=3.8325$

What is important to note is that the lower risk index of the women led banks did not affect the bank's performance index since the average values of ROE, ROA, and C/I in said banks were all higher than those led by men. Pursuing further analysis, the following variables were retained: total assets (thou. PLN), total non-financial sector deposits (thou. PLN), total non-financial sector credits (thou. PLN), NPL (%), total own funds (thou. PLN), client count, membership count, and gender of bank president (0, 1). Next, keeping in mind the specificity of the data used and tools, an estimation panel model was generated for the individual explanatory variables i.e. net profit, ROA, ROE, C/I, and NPL. In the case of the net profit model, five variables were relevant in determining values: total assets, total own funds, client count, membership count, and gender of bank president. In the case of the ROA model, two variables were relevant: total non-financial sector credits and gender of bank president. In the ROE model, five variables were relevant: total credits, non-performing loans coefficient, total own funds, membership count and gender of bank president. For the C/I model estimation, five variable were also relevant: total non-financial credits, NPL, client count, membership count, and gender of bank president. The last estimation model generated was for non-performing loans where three variables were relevant: total non-financial sector credits, membership count, and gender of bank president. It is interesting to note that in all panel estimation models, the variable for gender of bank president is relevant for all. The variables for membership count and total non-financial sector credits were relevant for four estimation panels. The remaining variables were relevant for two or less estimation models. This means that the fundamental element influencing the performance of selected banks, for the years 2010-2014, was total non-financial sector credits granted. This may have been a result of the fact that in the case of Poland's co-op banks, savings, and loans are their primary activity which frequently is the sole source of revenue. In the case of the other variable – gender of bank president – it is exceptionally significant. This may be caused by the fact that personal character and predisposition are important for the management of a co-op bank and gender plays a role here.

Conclusion

This study's objective was to assess the performance of Poland's cooperative banks based on the bank president's gender. In the course of the study it became apparent that in co-op banks, where the president was a woman, those banks had a higher average performance level than those banks managed by men. The differential was especially noted in total return on assets, net profits, and non-performing loans indicator where the

differential between analysed groups was statistically significant. In case of profits generated by own funds and the C/I indicator, the nominal terms between banks managed by men or women, the differences were statistically insignificant. The study nevertheless confirmed that a differential in bank performance exists in the selected co-op banks regarding the gender of a bank's president.

Additionally confirmed was that in Poland's sector of cooperative banking, the banks managed by women are decidedly smaller than the banks managed by men. These differences were evident across the board – from total assets, through total deposits and ending with total membership and clientele. Also noticed in the course of the study, the gender of the bank's president was a significant factor differentiating performance levels in the selected banks; clearly shown in the panel estimation models. The position of bank president, filled by a woman, had a positive influence on the performance level attained by a bank, because where performance indexes were used, such as net profits, ROE and ROA, the woman led bank experienced growth in these indices when certain factors remained constant. In the case of C/I indicator and NPL, the banks led by women returned negative values, *ceteris paribus*, which pointed to increased bank performance.

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THE ANALYSIS OF STATE AID GRANTED IN POLAND IN YEARS 2008-2014

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state aid – Poland – horizontal aid – grants - loan

JEL classification: H 23

Abstract:

When state provides state aid it interferes in the market mechanism. Providing support without any restrictions could lead to adverse changes in the market. Monitoring granted state aid is very important issue. This will allow to show us the main directions of the support, as well as changes in the allocation of support in different years. The main aim of the article is to make analysis of state aid granted in Poland in years 2008-2014. The analysis covers the structure of granted aid and also an analysis of dynamics.

Introduction

State aid is a term introduced by the European Commission and regulated in Art. 107 paragraph 1 TFEU [European Commission, 2012]. To the measure could be regarded as State aid under this article must be met including four conditions: intervention by the state or through state resources, the intervention gives the recipient an advantage on a selective basis, competition has been or may be distorted and the intervention is likely to affect trade between Member States.

In the article was made the analysis of the state aid granted in the years 2008-2014. This analysis was carried out in relation to the total value of the aid, the share of support in GDP, dynamics analysis of granted state aid, the forms in which this support was given, methods of financing aid and its destination.

1. Methods, literature overview

Contemporary economic reality is so complicated that it is difficult to imagine the functioning of the market mechanism in isolation from the state. One of the instruments through which the state can intervene in a market economy is state aid. It shall be considered part of the economic state intervention, which aims to stimulate positive economic developments or prevention of negative processes [Modzelewska-Wąchal, E., Pełka P., 2001]. The concept of state aid is wider than a subsidy because it embraces not only positive benefits, such as subsidies themselves, but also interventions which, in various form, mitigate the charges which are normally included in the budget of the

undertaking and which, without therefore being subsidies in the strict sense of the word are similar in character and same the same effect [Wishlade F., 2003]. This aid can be considered as a tool in the hands of public authorities, which is used to achieve different objectives and tasks of social and economic policy. Governments grants state aid for many reasons: economic, social, political and strategic [Hancher L., Ottervanger T., Slot P. J., 2012]. Despite the widespread occurrence the phenomenon of state aid there is no legal (normalized by law) the definition of that term. State aid policy is still changing. Public authorities find new methods of supporting entrepreneurs. So we still need to assess and re-interpret state aid rules [Nicolaidis P., Kekelekis M., Buyskes P., 2015]. State aid could be understood as one of the remaining difficulties in creating an integrated single market [Szyszczak E., 2011].

Issues concerning the admissibility of state aid are governed by Art. 107-109 Treaty of Functioning European Union [European Commission, 2010]. Article 107 paragraph. 1 indicates only that „save as otherwise provided in the Treaties, any aid granted by a Member State or through state resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market”. Analysis of the provisions of this article allows to conclude that it would be prohibited to provide aid if the conditions referred to therein are together fulfilled. For these circumstances include the transfer of state resources, obtaining economic benefits, the selective nature and occurrence of the effect on competition and trade.

State aid control is very important issue. State aid control is one of the instruments of competition policy and state aid control plays a fundamental role in defending and strengthening the single market. An effective internal market requires the development competition policy including state aid control to ensure that the functioning of that internal market is not distorted by anticompetitive behaviour of companies or by Member States. Competition is a major driver of growth; it incentivises enterprises, including new ones, to enter markets and innovate, improving productivity and competitiveness in a global context. Thus, as one of the instruments of competition policy, State aid control plays a fundamental role in defending and strengthening the single market [European Economic and Social Committee and the Committee of the Regions, 2012]. And also state aid control is important from point of view of modernization process of granting state aid. This process started several years ago. The main reason of state aid modernization process was fact, that EC would like to focused on granting less but better target state aid (less aid but better aid). The main direction of the reform is to reduce the total level of state aid granted as a share of GDP. The second direction is to reorientation of spending, from the sectoral objectives to horizontal objectives. The third but very important aspect should be preference in horizontal support to objective which are very import from development point of view and are

underlined in Strategy Europe 2020. This is environmental protection and res, R&D, support to SME or support to training and employment.

The research period covered the years 2008-2014. The data needed for the analysis come from the reports on state aid granted in Poland in subsequent years, which were published annually by the Office of Competition and Consumer Protection. In the paper were used methods of statistical analysis and an analysis of the dynamics of the structure of the support.

2. Results

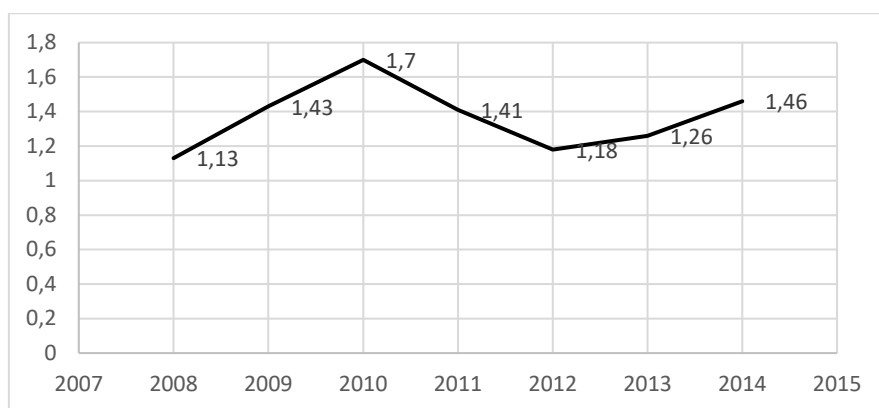
In the years 2008-2014 was granted in Poland, nearly 35.6 bln euro of state aid. Of this amount, nearly 29.2 bln euro accounted for the support given outside the transport sector. In transport sector was given more than 6,5 mld euro of support (tab.1).

TAB. 1: The amount of granted state aid in Poland in years 2008-2014 (in millions of EUR)

Specification	2008	2009	2010	2011	2012	2013	2014
Total state aid	4090.06	4430.8	6029.97	5 211.30	4 869.50	4 912.10	6036.20
Non transport aid	3276.43	3717.61	5316.05	4 239.70	4 055.70	3 948.00	4 624.50
Transport aid	813.63	713.19	713.91	971.5	813.8	964.1	1 411.70

Source: Urząd Ochrony Konkurencji i Konsumentów, 2015; Urząd Ochrony Konkurencji i Konsumentów 2013; Urząd Ochrony Konkurencji i Konsumentów 2011.

In determining the level of state intervention can be used indicator of the share of state aid in GDP. The data presented in Figure 1 show that the share of state aid in GDP in each years was at a level between 1.1% and 1.7%. That share of the support in the GDP is fully in line with the recommendations of the European Commission, which shows that support should not exceed 3% of GDP. The European Commission proposes parallel systematic reduction of participation such kind of support. In case of Poland we couldn't say anything about the trend. In the first three years of research this share increases in the next three consecutive decreases so that again increases. These changes, however, are very small, so we can indicate that this share in each year was at a very similar level.

FIG. 1: Share of all state aid in GDP (%)

Source: Urząd Ochrony Konkurencji i Konsumentów 2015; Urząd Ochrony Konkurencji i Konsumentów 2013; Urząd Ochrony Konkurencji i Konsumentów 2011.

Taking as the base period for 2008 it may be noted that in each of the analyzed years, the total value of the support increased (tab. 2). The biggest increase - amounting to over 47% can be noticed in 2010 and 2014. The increase also occurred in relation to the support granted beyond the transport sector. In this case, the largest increase was over 62% and occurred in 2010. State aid granted in the transport sector decreased in 2009 and 2010 and increased by over 73% in 2014.

TAB. 2: The dynamics of the value of state aid granted in the years 2008-2014 (2008=100)

Specification	2008	2009	2010	2011	2012	2013	2014
Total state aid	100.0	108.3	147.4	127.4	119.1	120.1	147.6
Non transport aid	100.0	113.5	162.3	129.4	123.8	120.5	141.1
Transport aid	100.0	87.7	87.7	119.4	100.0	118.5	173.5

Source: Urząd Ochrony Konkurencji i Konsumentów 2015; Urząd Ochrony Konkurencji i Konsumentów 2013; Urząd Ochrony Konkurencji i Konsumentów 2011.

In the case of the forms in which support was granted, the support are grouped into four groups designated by the letters A, B, C in accordance to the guidelines of the European Commission. In addition to the various letters was added number 1 or 2, depending on the source of support (respectively aid granted directly from the budget or the cost of depletion of budgetary revenues). In each of the years the main form of granted support was grants (tab. 3). This share was in fact more than 63% in 2008 to over 86% in 2010. In the second place in each year were support granted in the various types of tax relief.

TAB. 3: The forms of state aid in years 2008-2014 (in millions of EUR)

Specification	2008	2009	2010	2011	2012	2013	2014
A: Grants and tax allowances	2 667.60	3 175.50	4 855.90	4 255.70	4 107.20	4 243.20	4 367.30
A1: grants	2 086.90	2 616.70	4 117.50	3 727.90	3 667.20	3 732.70	3 649.60
A2: tax allowances	580.70	558.80	738.30	527.80	440.00	510.60	717.70
B: Equity participation subsidies	9.50	4.30	47.60	59.80	30.70	12.20	144.40
B1: contribution of capital to the company	9.50	4.30	47.60	59.80	30.70	12.20	31.20
B2: company debt into equity conversion	0.00	0.00	0.00	0.00	0.00	0.00	113.10
C: Soft crediting	99.00	44.30	84.70	38.70	175.90	69.10	100.80
C1: preferential loans	35.00	44.30	84.70	37.70	175.90	69.10	98.70
C2: eferment and spread into instalments of amounts due to the government budget and the fund. accelerated depreciation	64.00	0.10	0.10	0.90	0.00	0.00	2.10
D: warranty and guarantees	0.00	0.00	1.20	4.10	0.50	0.70	12.10
E: others	500.30	493.40	326.60	0.00	0.00	0.00	0.00

Source: Urząd Ochrony Konkurencji i Konsumentów 2015; Urząd Ochrony Konkurencji i Konsumentów 2013; Urząd Ochrony Konkurencji i Konsumentów 2011.

The positive phenomenon, which we can observed throughout the period considered, it is clear domination of aid in the forms of direct spending on forms involving a budgetary income decrease (tab.4). This situation is very beneficial, because granted support gives businesses real opportunities to develop.

TAB. 4: The method of financing state aid in years 2008-2014 (%)

Specification	2008	2009	2010	2011	2012	2013	2014
Direct expensess (mostly grants)	64	70.5	78.4	86.9	85.7	86.6	79.6
Other forms (budgetary income decrease)	36	29.5	21.6	13.1	14.3	13.4	20.4

Source: Urząd Ochrony Konkurencji i Konsumentów (2015); Urząd Ochrony Konkurencji i Konsumentów (2013); Urząd Ochrony Konkurencji i Konsumentów (2011).

Analyzing the structure of the support according to the types of aid can be observed dominance of regional support (tab.5). This kind of support dominates in all years apart from 2008 and 2014. In all conducted years that type of the aid amounted to over 45%. Horizontal aid accounted for over 34%.

TAB. 5: Objectives of state aid in years 2008-2014 (in millions of EUR)

Specification	2008	2009	2010	2011	2012	2013	2014
Regional aid	1148.5	1790.19	2682.7	1648.28	2013.84	2253.03	1957.11
Horizontal aid	1398.94	1239.96	1555.88	1359.92	1391.33	1162.81	2048.79
including:							
Research and development	49.37	77.51	129.6	127.21	310.35	194.16	126.18
Environment protection	254.96	317.36	369.45	262.85	66.21	10.32	935.46
Small and Medium-sized Enterprises	130.89	6.59	26.64	11.68	13.21	10.84	10.42
Employment	841.01	644.54	744.81	679.72	733.36	803.31	732.92
Training	105.16	155.2	111.83	174.26	102.37	94.25	19.38
Rescue and restructuring	6.03	30.6	11.19	11.21	4.23	2.41	159.32
Others	11.52	8.18	162.42	92.99	161.65	47.58	65.13
Sectoral aid	717.88	615.12	848.04	868.71	445.73	701.85	341.51
Other objectives	0	72.31	229.43	481.33	204.8	207.41	277.07

Source: Urząd Ochrony Konkurencji i Konsumentów 2015; Urząd Ochrony Konkurencji i Konsumentów 2013; Urząd Ochrony Konkurencji i Konsumentów 2011.

The dominant share of regional support stems mainly from projects co-financed by EU assistance. In the case of horizontal support the most share of support was granted to support employment and for purposes related to environmental protection.

3. Discussion

The conducted analysis show that in Poland in years 2008-2014 more than 29,2 bln euro of non-transport state aid were granted. The share of such support in GDP were below 2%. The positive phenomenon is domination of state aid which were granted in direct forms. The main direction of granting aid was regional support. Such situation couldn't be assessed very positive. The dominant direction of granting state aid should be horizontal aims.

Conclusion

Current economic reality is so complicated that it is difficult to imagine the functioning of the market mechanism without state intervention. This intervention, however, can lead to significant distortions in the market. Therefore so important is to monitor of granted state aid. The analysis undertaken in this article showed that value of granted state aid in Poland in each years were on almost same level. The positive phenomenon is also domination of direct expenses above budgetary income decrease. Due to the European Union support the domination direction of granted aid were regional support.

It should be emphasized that the state also operates imperfectly, with the result that its intervention should be limited only to those cases where it can be an effective tool for solving specific problems. This makes it necessary to restrict and monitor granted state aid.

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INPUT-OUTPUT ANALYSIS OF THE SELECTED SLOVAK INDUSTRIES

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JEL classification: E23, E25, E6

Abstract:

Input-output analysis represents a useful tool in assessing structural changes in the economy. These tables provide a detailed dissection of intermediate transactions in an economy, and are thereby a means of describing the supply and use of the products of an entire economic system. The aim of this paper is to look closely at the evolution of four selected industries, namely machinery, electrical and optical equipment, transport equipment and manufacturing in case of Slovak Republic. We compared the technical coefficients and import coefficients as well as output and import multipliers for the period of 1995-2011. We also tried to verify the overall stability of these four industries as well as the strength of their backward linkages.

Introduction

The basic structure of an input-output table (IOT) is the transaction matrix where rows represent suppliers and columns represent users. By converting the initial monetary values in the transactions matrices to ratios (coefficients), it is possible to examine the underlying system of interactions and interdependencies. Using the coefficients, we can examine for a given year e.g. which industries are important to others and to what extent (intersectoral linkages). This paper uses the basic IOT methodology in order to assess the importance of output and import multipliers for selected industries. We have chosen four industries that traditionally generate high volumes of exports. We would like to verify whether these industries can be characterised as the ones with stable evolution, as suggested by the theory.

1. Literature overview

IOT analysis focuses on the mutual linkages between economic sectors. The intersectoral flows of products and services are registered, simultaneously by origin and by destination (D'Hernoncourt, Cordier & Hadley, 2011). Based on these linkages, it is possible to evaluate the structure of the economy, or overall impacts of changing demand in various sectors in national economy. Input-output framework evaluates two

kinds of economic linkages between sectors, i.e. backward linkages, representing demand side, and forward linkages, representing supply side (Lábaj, 2014).

If sector "i" increases its output, it leads to a demand increase in the supplying sectors (whose products are used as inputs to production in sector "i"). This demand relationship is referred to as backward linkage (BL). Higher production in sector "i" also means that additional amounts of product "i" are available to be used as inputs to production in the other sectors. In this case the relationship represents the supply side and is referred to as forward linkage (FL) (Reis & Rua, 2009; Timmer, 2012). The analysis of the strengths of BLs and FLs allows to identify the most important sectors in the economy. When comparing sectors of national economy, the higher values of the BLs indicate the stronger impact of the demand changes in the particular industry. In other word, its expansion of the output is more beneficial to the economy, in terms of causing other productive activities. The same concept can be applied to analysis of FL: higher values indicate stronger impact of the sector, or in other words, the sector is more essential to the economy, in terms of productive activity that it would support. The study of BLs and FLs allows determining which industries can be considered as key industries in terms of demand and supply (Reis & Rua, 2009; Timmer, 2012). In case of an open economy, the imported products should be also taken into account. Increases in production will equally generate additional imports to support it. (Wixted, Yamano & Webb, 2006).

1.1. Input-output multipliers

IOT enable to calculate various types of multipliers. The standard I-O model used to calculate multipliers is the demand-side I-O model, in which the model is driven by demand for its outputs. Once calculated, I-O multipliers can be used for predicting how changes in the demand for the output of any particular industry would impact on all industries in a national economy.

The various multipliers generally remain fairly stable over time. Technological change does not occur very rapidly in most industries, so that it is possible to obtain reasonable results for the latest year even though the latest IOTs may be a few years old. The exceptions would be those industries producing commodities that are susceptible to wide fluctuations in price on the world market, such as petroleum products, and those agricultural industries most affected by adverse climatic conditions (McLennan, 1995).

Using the demand-side model, different kinds of I-O multipliers can be generated, i.e. output multipliers, income multipliers, employment multipliers and import multipliers. They can be viewed as summary measures used to estimate the likely effects of economic change. The output multiplier for an industry „i“ is defined as the total value of production by all industries of the economy required to satisfy one extra euro's worth

of final demand for that industry's output. For this reason the study of multipliers is often called as impact analysis (Pissarenko, 2003).

Multipliers can be calculated either as simple or total multipliers. In calculating the simple multipliers (also referred to as partial by e.g. Pissarenko, 2003), we effectively assume that the spending of households takes place outside the model and there is no feedback between the household sector and the other sectors (open model). Taking into account households' spending expenditures, we do allow feedback to occur (model is closed with respect to households).

1.2. Deriving simple input-output multipliers

Assume a national economy is divided into "n" sectors. If "Xi" represents the total output of sector "i", "Yi" the total final demand for sector "i's" product, and "Zij" the inter-industry flows between sectors, we can describe economy by following set of equations, as explained by e.g. Miller and Blair (2009):

$$\begin{aligned}
 X_1 &= Z_{11} + Z_{12} + \dots + Z_{1j} + \dots + Z_{1n} + Y_1 \\
 X_2 &= Z_{21} + Z_{22} + \dots + Z_{2j} + \dots + Z_{2n} + Y_2 \\
 &\dots \\
 X_i &= Z_{i1} + Z_{i2} + \dots + Z_{ij} + \dots + Z_{in} + Y_i \\
 &\dots \\
 X_n &= Z_{n1} + Z_{n2} + \dots + Z_{nj} + \dots + Z_{nn} + Y_n
 \end{aligned} \tag{1}$$

When we divide, the flow of input from "i" to "j" ("Zij") by the total output of "j" ("Xj"), we obtain ratios of input to output, so-called technical coefficients. According to Pissarenko (2003), they also represent cost structure of the industry. The (1) can be rewritten as:

$$\begin{aligned}
 X_1 &= a_{11}X_1 + a_{12}X_2 + \dots + a_{1j}X_j + \dots + a_{1n}X_n + Y_1 \\
 X_2 &= a_{21}X_1 + a_{22}X_2 + \dots + a_{2j}X_j + \dots + a_{2n}X_n + Y_2 \\
 &\dots \\
 X_i &= a_{i1}X_1 + a_{i2}X_2 + \dots + a_{ij}X_j + \dots + a_{in}X_n + Y_i \\
 &\dots \\
 X_n &= a_{n1}X_1 + a_{n2}X_2 + \dots + a_{nj}X_j + \dots + a_{nn}X_n + Y_n
 \end{aligned} \tag{2}$$

This set of equations can be also expressed in matrix notation as $X = AX + Y$. We obtain $X = (I + A)^{-1} Y$, where the inverse matrix $(I + A)^{-1}$ is also referred to as Leontief inverse matrix L (e.g. Lábaj, 2014):

$$L = (I + A)^{-1} \tag{3}$$

By adding up each column vector of the matrix L, we obtain simple output multipliers (SOMs). Assessing import impacts requires knowing the vector of import coefficients "im", then calculating the matrix $im(I + A)^{-1}$ and lastly adding up column vector of

this matrix. Simple import multipliers (SimMs) can be defined as the total change in imports (endogenous variable) when the final demand (exogenous variable) changes by one unit (McLennan, 1995; Trinh, Le Hoa, Giang, 2009).

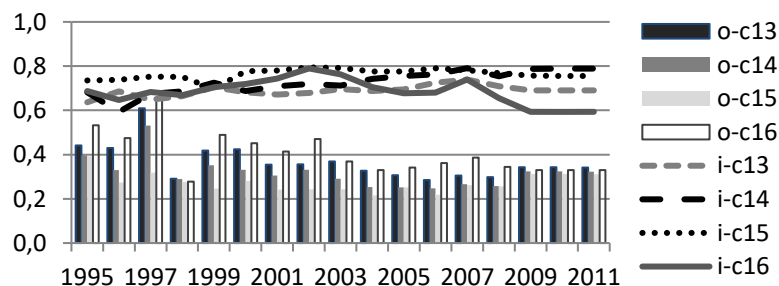
Using a similar approach, we can also calculate simple income multiplier (SIM) and simple employment multiplier (SEM) e.g. (Lábaj, 2014; McLennan, 1995; Miller & Blair, 2009). However, only SOMs and SimMs will be analysed in the paper.

2. Results

With regards to the limited extent of this paper, we only selected 4 Slovak industries that correspond to important "exporters". They are denoted c13-16 in accordance with the classification used in WIOD database (The World Input-Output Database): c13- machinery, c14- electrical and optical equipment, c15- transport equipment, c16- manufacturing.

Firstly, we looked closely at the values of technical coefficients, i.e. the evolution of direct input requirements for selected industries. The observed period (1995-2011) was determined by the availability of national input-output tables in WIOD database.

FIG. 1: Technical coefficients (o) and import coefficients (i) (1995-2011)



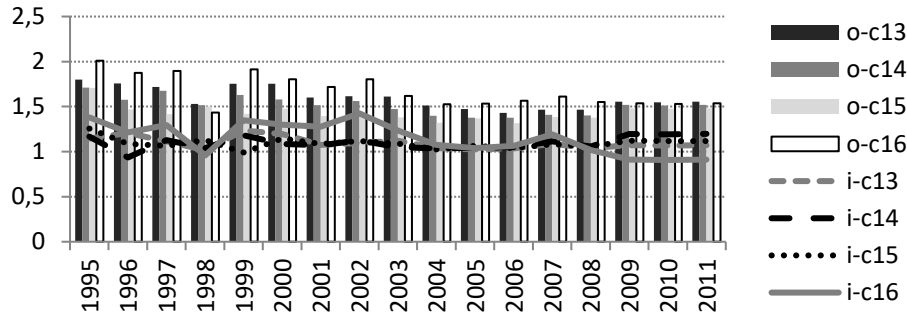
Source: own calculations, based on (WIOD, 2016)

Over this period, the values of import coefficients exceeded the values of technical coefficients. At the end of the 1990s, technical coefficients (TC) for manufacturing and machinery were relatively close in their values to import coefficients (IC). However, since the beginning of 2000s, there can be seen a distinctive downward trend for TCs of all 4 selected industries (0.4 to 0.3). On the other hand, ICs slightly increased and remained mainly in the interval (0.7-0.8). The only exception is c16 industry with the downward trend since 2002 (from 0.8 to values below 0.6).

The comparison of the output multipliers (SOMs) and import multipliers (SimMs) over the period of 1995-2011 was the next step. The highest values of SOMs were typical for manufacturing (o-c16) and the lowest values corresponded to transport equipment (o-c15). As for the evolution of SimMs, the highest effects over the observed period

produced again manufacturing (i-c16) and the lowest effects could be attributed to transport equipment (i-c15).

FIG. 2: Output (o) and import (i) simple multipliers (1995-2011)



Source: own calculations, based on (WIOD, 2016)

In general, the strongest average impact can be seen for manufacturing industry, both for SOM and SimM. The lowest average values can be attributed to industry of electrical and optical equipment in case of SOM and transport equipment for SimM. The median values of multipliers are mainly close to their average values. It could be viewed as a sign that the evolution of SOMs and SimMs for c13-16 industries was indeed stable and without any significant fluctuations.

TAB. 1: Output and import multipliers - selected values (1995-2011)

output	average	min	max	median	trend	import	average	min	max	median	trend
c13	1.596719	1.431191	1.799191	1.554413	↓	c13	1.096736	1.01632	1.145254	1.07591	↓
c14	1.514713	1.378195	1.711137	1.515046	↓	c14	1.098454	0.935507	1.167115	1.08523	↓
c15	1.39	1.31669	1.707932	1.416243	↓	c15	1.093482	0.990745	1.25641	1.0867	↓
c16	1.674655	1.433765	2.008682	1.61289	↓	c16	1.150372	0.908306	1.381514	1.19280	↓

Source: own calculations, based on (WIOD, 2016)

The last step would be the verification whether these industries can be considered as key industries based on the strength of their backward linkages (BL). This required the normalisation of values from Leontief inverse matrix. According to Reis and Rua (2009), only the industries with $nBL_j > 1$ can be considered as key industries (a unitary increase in final demand for sector j 's output will generate an above average increase in activity in the economy). In case of selected industries, $nBL > 1$ appeared only in case of c13 and c16 (machinery and manufacturing). However, the average values were above unity only for c16, indicating important BLs toward other supplying industries. More detailed analysis would require also closer look at industries' forward linkages (supply side of the production) and their evolution over the observed period.

TAB. 2: Normalised backward linkages (1995-2011)

nBL	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	aver.
c13	1.003	1.014	1.010	0.906	1.014	1.022	0.962	0.971	0.989	0.970	0.961	0.931	0.950	0.929	0.975	0.995	0.975	0.977
c14	0.983	0.910	0.984	0.898	0.944	0.920	0.909	0.940	0.902	0.896	0.900	0.896	0.913	0.888	0.952	0.973	0.953	0.927
c15	0.981	0.849	0.832	0.890	0.822	0.860	0.837	0.847	0.845	0.847	0.894	0.856	0.896	0.872	0.928	0.950	0.929	0.878
c16	1.154	1.081	1.114	0.850	1.107	1.052	1.031	1.086	0.993	0.980	1.001	1.018	1.044	0.982	0.964	0.985	0.964	1.024

Source: own calculations, based on (WIOD, 2016)

3. Discussion

Even though the use of I-O analysis has been slowly gaining more interest in the last years, there are not many studies analysing structural characteristics for Slovak or Czech economy. The most comprehensive study of Slovak economy was published by Lábaj (2014). However, this study covers only shorter period (1995-2009) and is focused predominantly on country's participation in global value chains, fragmentation of production or effects on employment and income. This rather low interest for the topic of I-O analysis presents various opportunities for further studies.

The 4 industries selected for this analysis represent also important exporting industries. However, they do not have the highest values of SOMs or SimMs. They are assuring significant volumes of production but on the other hand, they have high degrees of automatization and lower requirements on labour. Therefore, it would be interesting to continue this analysis and study the effects of demand changes on income and employment via SEMs and SIMs. There is also a possibility to take into account the households and calculate multipliers as total multipliers in order to obtain even more detailed results.

Conclusion

The aim of this paper was to compare the evolution of SOMs and SimMS as well as TCs and ICs for sectors c13-16 of WIOD classification in case of Slovak Republic. As confirmed by analysis, the strongest average impact can be seen for manufacturing (SOM=1.67, SimM=1.15), making it the most important exporting sector from our selection, with regards to domestic production as well as imports. The analysis also confirmed a relative stability of SOM and SimM. However, these selected sectors do not represent also the sectors with highest overall economic impacts. Based on the analysis of nBLs we can conclude that only industry c16 has characteristics of key industry from the demand side. Therefore we would like to continue this analysis and verify FLs as well as the impact of these sectors with regards to employment and income.

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Slovak Republic in the process of production activities fragmentation within Global Value Chains" (VEGA 1/0961/16)

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PARTICIPATORY BUDGETING IN POLAND - FINANCE AND MARKETING SELECTED ISSUES

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local government – participatory budgeting

JEL classification: H72, O18, O30

Abstract:

This article is an attempt to present and analyse the changes in the scale and scope of the significance of participatory budgets introduced in the years 2014-2016 in most Polish cities with district rights (MNP), as well as to determine the importance of activities in the field of marketing communication for the effective implementation of the objectives related to its functioning. The analysis carried out in the article concerning PB development in MNP clearly indicates the rise of interest of this form of citizens' participation in deciding about MNP expenses. Simultaneously, differences in scale and range of implemented PB among examined groups might be visible. As an example, the city of Wrocław shows that an adequate marketing communication of the city as well as local project leaders with inhabitants is a fundamental factor influencing forming an active participation among inhabitants.

Introduction

Participatory budgeting (PB) is by definition a mechanism of an active inclusion of residents of a given unit of the local government in identifying objectives and ways of expending a certain amount of public funds within the expenditure of flexible budgets of those units. In the years 2012-2016 the number of local governments allowing their residents to participate in co-creating the list of budgetary expenditure that improves the quality of life of residents increased. This article is an attempt to present and analyse the changes in the scale and scope of the significance of participatory budgets introduced in the years 2014-2016 in most Polish cities with district rights (MNP), as well as to determine the importance of activities in the field of marketing communication for the effective implementation of the objectives related to its functioning. From the perspective of previous experiences of the units of local government in the functioning of participatory budgeting, the problem seems to be, among others, the issue of encouraging residents to active participation both in generating ideas and their submission (i.e. in the first stage) as well as voting on specific projects (in the second

stage). A key role is played here by marketing communication, which ensures a proper flow of information and effective implementation of the objectives. Effective implementation of marketing activities of municipalities (including those of a communication nature) involves creating a marketing strategy and embedding it within the tools of market impact - that is, to be precise, the marketing mix. Of particular importance is the integration of activities in the field of individual instruments and taking into account their long-term character.

1. Aim, methods, literature overview

1.1. Aim and methods

The aim of this article is to present and analyse changes in the scale and scope of the significance of participatory budgets introduced in the years 2014-2016 in most Polish cities with district rights, as well as to determine the importance of activities in the field of marketing communication for the effective implementation of the objectives related to the functioning of participatory budgeting. The choice of entities subjected to testing was due to the fact that mainly MNP (municipalities simultaneously performing tasks of districts) decided to introduce this form of deliberative democracy. At the same time, it should be noted that from the point of view of the image of large cities which are MNP, the lack of participatory budgeting can be seen as a lack of openness and friendliness of city authorities towards residents and, consequently, it can affect a decrease of the attractiveness of a given city in the eyes of current and potential future residents. The article analyses the scale of participatory budgets in relation to the size of the budget of MNP and a number of population. The analysis also concerned directions of expenses, the process of selecting projects, and the availability of information on the participatory budgeting on the websites of cities. The data on the financial situation of municipalities were collected from the annual reports on the implementation of the budget of individual municipalities (Ministerstwo Finansów, 2016). The data on resources aimed for the objectives of participatory budgeting as well as information on the activities in the field of marketing communication were collected by analysing websites of individual municipalities and the subject literature. The research did not encompass an extensive use of classical statistical measures of location in relation to the size and importance of PB for particular groups of MNP due to the fact that in the considered period of 2014-2016, certain dynamic changes were observed and individual MNP introduced PB at different times and in various degrees. However, the article attempts to underline the observed regularities as to the manner and scale of an introduced PB in different groups of individuals. It should be noted that in most units the data relating to the volume of PB in a particular year, result from the choices made by residents in the previous year. Unfortunately, the websites of individual cities use different names – they either indicate a year of tasks' selection to PB or, another time, a year of implementation. In view of the above, the authors attempted to harmonise the data by

reducing the amount of PB-year spending rather than planning. It should be emphasized that the analysis omitted certain expenses which resulted from their multiannuality (Zory - renovation of the swimming pool).

1.2. Participatory budget – literature overview

Although participatory budgeting is considered to be a well-known concept, it takes a very diverse form in each individual country (Sintomer, Herzberg, & Rocke, 2008). As noted in the analysis (Gomez, Insua, & Alfaro, 2016), despite differences in its formation one can point out (from the point of view of expenditure planning) its two basic forms - static and dynamic, the latter one being much less frequent in practice due to bureaucratisation of the budgetary process (annuality, antecedence, the need for acceptance). In Poland, on the basis of the conducted studies one may identify the quasi-static budget, because in most cases the amount to be allocated is pre "guaranteed" in the budget and numerous limitations concerning the scale and form of spending do not cause necessity of making changes in the financial plans of municipalities. This is true even in the relatively rare cases of implementation of participatory budgeting performed in the same year in which the selections of projects were made (i.e. Kielce). However, while taking into consideration the criteria presented in the literature (Sintomer, Herzberg, Allegretti & Rocke, 2010) such as: the origin of the participatory budget (criterion 1), the organization of meetings (criterion 2), the scope and quality of deliberation (criterion 3), and the nature of the participants and the role of civil society in general (criterion 4), one may discover as many as six "pure" models of participatory budgeting - six models (or, ideal-types):

- a) adaptation of Porto Alegre,
- b) the proximity of participation,
- c) consultation on public finance,
- d) a multi-stakeholder participation,
- e) community participatory budgeting,
- f) participation of organized interests.

Reference to Porto Alegre results from the fact that it was the cradle of the practical functioning of participatory budgeting. The history of the PB dates back to the late 80's of the 20th century (Souza, 2001) and derives from the countries of Latin America. Another form of participatory budgeting reflects the diversity of its essence in different countries, because it is currently estimated that globally, there were between 1,269 and 2,778 participatory budgets in 2013. In Latin America, between 626 and 1138 participatory budgets are presently in place; in Europe between 474 and 1,317; in Asia between 58 and 109; and in Africa between 110 and 211 (Dias, 2015). Differences in the number of civil budgets are due to the broad concept of participatory budgeting in which the "PB allows the participation of non-elected citizens in the conception and / or allocation of public finances" (Dias, 2015). In Poland, participatory budgeting has been

studied by many authors, however this topic has not yet been thoroughly analysed. Research of participatory budgeting in Poland are mainly related to legal aspects of public consultation (Krajewska & Sawicki, 2014; Wierzbica, 2014), the importance and procedures of public participation (Bednarska-Olejniczak & Olejniczak, 2014, 2015; Czarnecki, 2014), the financial problems associated with its implementation (Borowski, 2015; Czarnecki, 2014) or an innovation in the field of local government institutions (Bednarska-Olejniczak & Olejniczak, 2016; Wiktorska-Święcka, 2015).

1.3. Place (territorial) marketing – literature overview

Territorial marketing is defined in a number of ways in the subject literature, including all the strategic and technical approaches that are used by organizations (associations, individuals, public institutions, and enterprises) in order to gain new resources and improve the efficiency and quality of the implementation of the project aimed at meeting the specific public needs in accordance with the principles of ethics, leading to the fulfilment of a certain mission (Szromnik, 2008). This definition emphasizes both the strategic nature of the activities as well as directing them towards the public needs. The main objective of territorial marketing is to influence the opinions, attitudes and the manner of behaviour of external and internal groups of interested customers through the development of the proper set of measures and instruments to stimulate interchangeable relations (Szromnik, 2008). One of the instruments, as mentioned above, is the promotion (marketing communication). It includes a set of tools with which a territorial entity communicates with the internal and external environment, provides information describing the socio-economic profile, highlights the strengths, successes, plans, communicates decisions and planned projects (Burczak, 1999).

The functions performed by the promotion consist of three groups: integration functions - to strengthen bonds between members of the local community; stimulating functions - to increase the degree of identification with the considered area and to create specific, desirable attitudes towards it; competitive functions - to compete between different territorial entities for aid funds, tourists, investors, etc. (Burczak, 1999).

As can be seen, the functions of marketing communication depend on such factors as: entities to which these actions are addressed, we are dealing here with both internal stakeholders (residents and any organization located in the municipality) and external stakeholders (investors, local business entities, tourists, neighbouring municipalities and their residents). Therefore, depending on the recipient, promotion of territorial entity can be divided into (Sekuła, 2005):

- a) internal - the aim of which is to create the image of spatial unit and to obtain acceptance for the initiated actions, and even to encourage the collaboration of the local community;

- b) external - aimed at gaining tourists' attention, capital and creating a positive image among these groups.

In the case of communication tasks related to the participatory budgeting we have to deal with the social, internal promotion, i.e. one that concentrates on initiating and strengthening of citizenship, stimulating social activity and identification of the place of residence. This type of marketing communication of the unit of local government has a set of tools at its disposal in order to carry out promotional purposes. These include, among others.: public relations (including publicity and media relations) - these are image-building activities designed to build public trust and understanding, to take care of a positive image of the community and its actions; advertising - any form of non-personal, paid presentation and promotion of ideas or services offered by the municipality, transmitted to the recipients through the media (radio, television, press, the Internet, telephone networks) and through medium such as billboards, posters, audiotapes and video, CD-ROMs, etc. (Kotler & Keller, 2012); direct marketing - the use of post, phone, fax, e-mail or the Internet to communicate directly or encouraging specific recipients to a response and a dialogue (Kotler & Keller, 2012); events and experiences marketing - activities and programs organized by the municipality, which are aimed at daily or occasional interactions with recipients, including sports, cultural, entertainment, charity events, etc. (Kotler & Keller, 2012) and finally interactive marketing - activities and programs on the Internet, aimed at drawing the recipients into interaction and direct or indirect increase of awareness, improving the image, increasing the interest in the offer of municipality (Kotler & Keller, 2012).

2. Research results, discussion

2.1. Analysis of implementation of PB in MNP in the years 2014-2016

The history of participatory budgeting (also known as civil budgeting) in Poland is the story of the last five years. This solution was introduced for the first time by Sopot in 2011. Within a few years, similar forms appeared in several municipalities all over Poland. However, the years 2014-2016 can be considered as a breakthrough, when majority of Polish large cities functioned with district rights (cities - municipalities also performing the tasks of districts).

In Poland, there are currently 66 such units of territorial division and the number of their residents varies between 1.7 million and 35 thousand. By virtue of its specific features appropriate for large cities, they have been isolated from the municipalities and districts. From the point of view of citizens' participation in the management of expenditure policy of this type of units, participatory budgeting fills the gap between the funds allocated to the activities of residents' councils of particular units (districts or housing estates) and the activities of entire cities. PB in most cases relates to "hard" expenditure - investment / financial expenditures relating to infrastructure, and less

frequent "soft" expenditures (training, courses, activities for the residents, etc.). Implementation of the next edition of PB in the examined cities also indicated the necessity to break down the total amount available at residents' disposal for city-wide projects and housing estates projects because, as in the case of Wrocław, well-organized groups of stakeholders were able to win the vote on projects mainly from a relatively small part of the city.

The number of MNP cities realizing PB almost doubled in years 2014-2016. In 2014 there were 32 PB being realized among MNP while in 2016, 62 out of 66 MNP were realizing this particular form of interaction with citizens (fig. 1). Concurrently, the amount of resources entrusted to the citizens increased nearly four times and average value of PB doubled. However, these numbers do not constitute the basis for evaluation, for the largest cities (e.g. Warsaw, Łódź, Wrocław) had substantially been increasing their PB in the mentioned period or introduced it for the first time as late as in 2015 or 2016. The crucial information from the perspective of citizens is the amount of resources allocated for PB per capita because it permits to juxtapose MNP in terms of the level of 'friendliness to the citizens'. For instance, PB in Wrocław was initially commonly criticized for low amount of resources allocated for this purpose by the city authorities. In the following years, the resources were increased under the pressure of citizens. The data analysis allows pointing out certain regularities that occurred while implementing PB in the examined period. In most MNP, low level of financing from PB can be visible, particularly in the first and occasionally in the second year of PB functioning in a particular unit.

TAB. 1: Participatory budgets in MNP

	Participatory budget													
Item	Inhabitants	total amount (millions PLN)				in total expenditures (%)			in investment expenditures (%)			per capita (PLN)		
Town/Year	2015	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	
Białystok	295459	10	12	20	0,64	0,81	1,27	3,02	5,37	8,37	33,87	40,61	67,57	
Bielsko-Biała	173013	2	3,75	3,75	0,25	0,45	0,43	1,79	3,00	3,04	11,51	21,67	21,73	
Bydgoszcz	357652	5	5	5	0,31	0,31	0,27	2,01	1,99	1,21	13,91	13,98	14,06	
Bytom	172306	-	2	2	-	0,27	0,26	-	2,79	2,93	-	11,61	11,71	
Chełm	64855	-	2	1,95	-	0,71	0,65	-	17,84	11,70	-	30,84	30,34	
Chorzów	110337	1,6	2,1	2,4	0,30	0,39	0,39	1,81	2,44	2,17	14,45	19,03	21,87	
Częstochowa	230123	-	5,74	6,66	-	0,50	0,60	-	3,23	4,90	-	24,94	29,19	
Dąbrowa Górnicza	123376	5,00	8,00	8,00	0,47	1,13	1,23	0,90	4,77	7,25	40,32	64,84	65,19	
Elbląg	122368	2,00	2,50	2,50	0,35	0,44	0,46	1,78	3,40	4,25	16,27	20,43	20,55	
Gdańsk	461489	9,00	11,00	11,00	0,32	0,40	0,43	1,02	1,48	2,03	19,50	23,84	23,80	
Gdynia	247820	-	2,40	4,60	-	0,18	0,36	-	1,07	2,89	-	9,69	18,58	
Gliwice	184415	-	-	1,45	-	-	0,11	-	-	0,29	-	-	7,91	
Gorzów Wielkopolski	124145	2,00	2,00	2,00	0,40	0,37	0,34	4,75	2,55	2,19	16,08	16,11	16,16	
Grudziądz	97176	2,00	2,00	2,00	0,37	0,42	0,42	1,44	3,25	7,00	20,48	20,58	20,76	
Jastrzębie-Zdrój	90794	-	1,50	1,50	-	0,40	0,38	-	3,26	5,17	-	16,52	16,61	
Jaworzno	93331	2,02	2,93	2,52	0,49	0,62	0,54	4,17	3,06	3,78	21,57	31,41	27,15	
Jelenia Góra	81408	0,30	1,50	1,50	0,08	0,43	0,41	0,91	6,75	4,34	3,66	18,43	18,52	
Kalisz	103373	-	5,00	5,00	-	1,00	0,98	-	5,62	5,58	-	48,37	48,63	
Katowice	301834	-	10,00	17,00	-	0,55	0,90	-	2,57	4,65	-	33,13	56,68	
Kielce	198857	5,05	5,48	5,00	0,43	0,44	0,42	1,99	1,71	2,56	25,27	27,56	25,25	
Konin	76547	-	2,00	2,00	-	0,47	0,50	-	4,13	8,46	-	26,13	26,36	
Koszalin	108605	1,00	1,50	1,50	0,18	0,29	0,30	0,74	1,71	2,86	9,16	13,81	13,89	
Kraków	761873	-	4,50	14,00	-	0,10	0,30	-	0,69	1,72	-	5,91	18,40	
Legnica	101343	2,00	2,00	1,09	0,45	0,43	0,23	3,40	3,15	2,41	19,61	19,73	10,80	
Leszno	64616	0,30	0,30	0,62	0,10	0,10	0,20	0,94	0,97	2,12	4,64	4,64	9,57	
Lublin	341722	-	10,00	20,00	-	0,53	1,10	-	2,50	8,19	-	29,26	58,70	
Łomża	62779	0,30	1,00	1,10	0,09	0,35	0,34	0,34	2,26	1,88	4,78	15,93	17,53	
Łódź	706004	-	40,00	40,00	-	0,94	1,07	-	3,06	5,16	-	56,66	57,06	
Nowy Sącz	83853	-	-	2,00	-	-	0,61	-	-	5,90	-	-	23,84	
Olsztyn	173831	2,15	3,30	3,53	0,22	0,68	0,78	1,02	3,70	13,14	12,31	18,98	20,35	
Opole	119574	-	2,00	2,00	-	0,14	0,20	-	0,35	1,16	-	16,73	16,82	
Ostrołęka	52611	-	-	0,10	-	-	0,01	-	-	0,08	-	-	1,90	
Piekary Śląskie	56755	-	1,50	1,50	-	0,53	0,54	-	5,09	9,95	-	26,43	26,61	
Piotrków Trybunalski	75608	-	1,20	1,20	-	0,50	0,47	-	2,24	2,23	-	15,87	15,96	
Płock	122224	-	5,00	5,00	-	1,28	1,31	-	6,62	7,91	-	40,91	41,07	
Poznań	545680	10,00	10,00	15,00	0,35	1,23	1,67	2,21	7,51	7,83	18,25	18,33	27,66	
Przemyśl	63441	1,00	1,50	1,50	0,26	0,05	0,05	1,08	0,18	0,20	15,71	23,64	23,92	
Radom	217201	3,00	4,20	4,80	0,29	1,20	1,51	1,68	9,23	28,83	13,73	19,34	22,21	
Ruda Śląska	140669	-	2,38	2,65	-	0,23	0,26	-	1,38	3,02	-	16,88	18,95	
Rybnik	140052	2,00	2,00	3,00	0,28	0,32	0,44	1,25	2,32	2,64	14,27	14,28	21,49	
Rzeszów	185123	5,10	6,49	7,50	0,46	0,99	0,95	1,57	7,96	5,01	27,87	35,05	40,35	
Siemianowice Śląskie	68634	-	2,00	2,00	-	0,41	0,49	-	1,65	5,55	-	29,14	29,31	
Skierniewice	48660	-	-	1,50	-	-	0,53	-	-	7,56	-	-	31,00	
Słupsk	93206	1,00	2,00	2,00	0,19	0,88	0,91	0,81	4,35	4,91	10,65	21,46	21,62	
Sopot	37654	4,00	4,00	4,00	1,38	0,78	0,95	6,76	4,22	16,49	105,50	106,23	107,44	
Sosnowiec	209274	-	5,00	6,00	-	1,73	2,13	-	7,43	9,61	-	23,89	28,93	
Suwałki	69316	-	-	2,00	-	-	0,25	-	-	3,26	-	-	28,83	
Szczecin	407180	-	5,00	6,00	-	1,53	1,67	-	9,29	13,44	-	12,28	14,79	
Świętochłowice	51494	0,25	0,35	0,50	0,10	0,01	0,02	0,27	0,05	0,10	4,82	6,80	9,81	
Świnoujście	41276	-	2,00	2,50	-	0,99	1,21	-	8,03	9,53	-	48,45	60,75	
Tarnobrzeg	48000	1,20	1,20	1,00	0,46	0,46	0,37	1,64	1,78	1,56	24,89	25,00	20,91	
Tarnów	111376	3,00	3,50	4,00	0,53	1,56	1,81	4,89	11,32	18,62	26,76	31,43	36,15	
Toruń	203158	6,44	6,58	6,60	0,56	1,06	1,06	1,68	6,12	8,14	31,65	32,39	32,56	
Tychy	128621	-	5,00	5,00	-	0,47	0,50	-	1,69	2,25	-	38,87	38,93	
Wałbrzych	116691	-	3,00	5,00	-	0,45	0,74	-	2,36	5,77	-	25,71	43,31	
Warszawa	2E+06	-	26,24	51,22	-	3,66	8,18	-	11,09	35,49	-	15,12	29,36	
Włocławek	113939	0,30	1,00	3,00	0,05	0,18	0,50	0,29	1,49	3,29	2,61	8,78	26,54	
Wrocław	634487	3,00	20,00	20,00	0,08	0,49	0,49	0,40	2,33	2,68	4,75	31,52	31,46	
Zabrze	177188	-	3,00	4,00	-	0,33	0,50	-	1,20	4,12	-	16,93	22,69	
Zamość	65055	-	1,60	1,60	-	0,49	0,46	-	5,46	3,65	-	24,59	24,70	
Zielona Góra	118920	6,00	6,00	6,00	1,05	0,91	0,80	5,88	6,15	3,88	50,67	50,45	43,26	
Zory	62051	0,50	0,50	1,20	0,19	0,17	0,40	1,46	0,81	2,77	8,06	8,06	19,37	

Source: own calculations based on (Główny Urząd Statystyczny, 2016; Ministerstwo Finansów, 2016)

The phenomenon results from the low interest and trust in this form of participation is at the beginning of PB. Naturally, a derogation from the rule can also be apparent – as in cases of cities such as Łódź or Warsaw which implemented PB dynamically on a large scale. It is worth to underline that while analysing average value per capita in MNP for groups of cities which introduced their first PB, at the same time, a growth of these values is visible at the level of 30-40% per year (e.g. for MNP that introduced PB for the first time in 2015 average value amounted to PLN 28,8 per citizen while in 2016 it was about PLN 32,2).

Another issue is citizens' susceptibility to new forms of participation in different units. In the smallest units, in terms of the number of inhabitants, PB was introduced (are being introduced) essentially later than in the biggest ones (e.g. in 2015 38 out of 39 cities with population greater than 100,000 while only 19 out of 27 had the budget and in 2016, 4 of the cities were still deprived of the budget, including two of them classified under 10 smallest cities – Biała Podlaska and Krosno). It is possible to notice that only MNP such as Sopot or Świnoujście count on substantial contribution (per capita) of inhabitants in determining their expenses. In case of big cities the discrepancies in subsequent years are not that important – these MNP are likely to balance the level of their PB in the upcoming years.

The very proportion of level of PB to the number of inhabitants does not seem to form a satisfactory method of measuring tendencies in examined group of subjects. What has been already mentioned, the PB expenses usually concern investments or infrastructure. It means that the better factor for determining the scale of citizens' participation seems to be the share of PB in general expenses or in property expenses. The data obtained from MNP financial reports and the data concerning the number of resources engaged in PB tasks show that in most cities the share of PB in budgetary expenses does not exceed 1% of all expenses and fluctuates below 5% of assets. What it means at present is that PB performs a rather supportive and consulting role in terms of fulfilling the investments of MNP in areas of improving local standards for society functioning than in areas of large investments.

2.2. The analysis of selected MNP promotion actions on the basis of selected examples

Consequent realization of aims connected with promoting PB requires competent selection of communication tools – different at a stage of raising awareness and interest as well as persuading to apply with the project (possibly creating a platform of mutual understanding between authors of ideas in order to make their cooperation rationally possible instead of concurring for limited resources), different at a stage of persuading inhabitants to vote for particular projects. Mentioned tools should be a part of marketing strategy of community, steered towards the long-term goals, hence they should be planned in a long-term horizon, integrated with other marketing tools and their

effectiveness should be verified. It is also worth remembering that PB promotion is a part of global marketing strategy of the city and should be listed in its stages, which include the following actions (Szromnik, 2015):

- a) raising awareness,
- b) extending knowledge,
- c) attracting the attention,
- d) visualization,
- e) persuading,
- f) facilitating,
- g) sharing,
- h) repeating.

These actions in relation to PB are presented in the following table.

TAB. 2: The nature of promotion actions taken in terms of functioning of PB

STAGE I – COLLECTING PROJECTS	
The nature of action, taking into account the aims of promotion	<ul style="list-style-type: none"> a) presenting the idea of participatory budget and profits stemming from it b) delivering knowledge about functioning of participatory budget as well as technical issues connected with preparing and lodging the application (explanation who, how, in what form can make an application, where and when it should be submitted, etc.) c) having inhabitants interested and persuaded to prepare and lodge their projects
STAGE II – VOTING FOR PROJECTS	
The nature of action, taking into account the aims of promotion	<ul style="list-style-type: none"> a) informing inhabitants about dates of voting, possible ways of voting, number of projects they can vote for, etc. (education in terms of technical issues connected with the voting) b) encouraging to vote (arousing interest and persuading into acting) c) encouraging to vote for particular project

Source: Own work

An excellent example of employing marketing communication in terms of accomplishing tasks connected with informing, growing awareness, educating and persuading inhabitants to active participation in forming a participatory budget are actions taken in years 2015-2016 by Wrocław. Some of them deserve special attention:

- i) interactive simulation „Gra o WBO” – an innovative way of exchanging information about PB and particular projects constituting an example of profiting from marketing of events in forming an attitude, providing information and education for inhabitants. Game participants had to present their own project ideas, try to convince others to the given idea and they had to jointly decide which of these projects should be realized and how much money should it get from the pool of money on the table divide among each of the projects for their realization (Biuro ds. Partycypacji Społecznej Miasta Wrocławia, 2016b);

- j) Laboratoria Obywatelskie (Citizen Laboratories) – this tool took a form of workshops carried out in 2015 in five residential areas in Wrocław. The basis for the workshop constituted a method of performing social consults created in Great Britain titled "Planning For Real". During the first workshop inhabitants were choosing particular places they wanted to discuss. Second workshop resulted in children having prepared colourful models for mentioned areas. Third and fourth workshop gathered inhabitants to point out main challenges and projects in the areas presented by the models. Citizens talked about the challenges with experts and officials. This type of communication allowed the inhabitants to get to know better local demands as well as propose interesting and advantageous projects to fulfil them (Biuro ds. Partycypacji Społecznej Miasta Wrocławia, 2016c);
- k) Internet service dedicated to WBO – located on the website of Wrocław. This service is designated to provide information about WBO, and also educate inhabitants about terms and procedures concerning lodging projects or voting for projects. Articles, guides and info-graphics for the so called content marketing, which focuses on providing receivers (inter alia by means of the Internet) with accurate information and knowledge about a particular subject. Contrary to traditional advertisement this type of marketing communication permits to build a long-term relationship with receivers and facilitates their active involvement (Biuro ds. Partycypacji Społecznej Miasta Wrocławia, 2016e);
- l) official WBO website on Facebook – informing about WBO rules, voting and realization of projects. Delivering accurate information, the website is a platform when inhabitants can exchange ideas and express opinions. Individual projects can also be promoted by means of this website (Facebook WBO, 2016);
- m) event "Moje Drzewo 2016" – the combination of action promoting WBO with action promoting desired behaviour of citizens in terms of ecology. At the time, people in Wrocław had a chance to get rid of electro waste or wastepaper in the city centre and, in return, obtain a fruit-bearing tree. On the occasion, they could also receive answers to questions concerning WBO and get the information leaflets in the prepared info spot of the Department of Social Participation. Conversations with leaders of particular projects were also possible. They tried to gain the interest of event participants and persuade them to vote for their project, (Biuro ds. Partycypacji Społecznej Miasta Wrocławia, 2016d);
- n) information placed on pavements in selected parts of the city – it is a kind of advertising action with the use of city space. Bicolour graffiti painted on pavements of Wrocław at the end of September 2016 was of both informative (dates of voting were indicated) and persuasive character (through the use of slogan: I vote! What about *you?*).

The importance of communication in regular course of particular stages of implementing PB is underlined by the results of the evaluation questionnaire WBO from the present year (Biuro ds. Partycypacji Społecznej Miasta Wrocławia, 2016a). The majority of respondents noted that the factor deciding about their participation in consultations was clear information about the subject and range of consultation (1459

examined out of 4140 respondents) and also the earlier information about the event (1432 respondents).

Conclusion

The analysis carried out in the article concerning PB development in MNP clearly indicates the rise of interest of this form of citizens' participation in deciding about MNP expenses. Simultaneously, differences in scale and range of implemented PB among examined groups might be visible. As an example, the city of Wrocław shows that an adequate marketing communication of the city as well as local project leaders with inhabitants is a fundamental factor influencing forming an active participation among inhabitants. The issue of PB development is a rather new phenomenon and despite already existing experience, it is still relatively poorly known. What should be underlined at this point as a problem is fundamental differentiation of ways of consulting, lack of legal regulations in this area or failure in establishing homogenous standards for application and selection of projects. That is why this phenomenon should be continually observed and analysed comparatively in order to work out the optimum standards for PB functioning in Polish reality.

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TESTING AN IMPLIED FOCAL PRICING BEHAVIOR IN THE POLISH WHOLESALE GASOLINE MARKET

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JEL classification: L1 L7 C22

Abstract

The study is focused on discovery whether the time series of wholesale prices of motor gasoline observed in the Polish market follow the implied equilibrium path. As a source of testable hypothesis the focal price game model reassembling Import Parity Pricing schema was used. In this preliminary examination of price behavior a proxy for unknown IPP price was introduced and tested in conjunction with known price' paths of the mayor players. As results on the one hand the similarity in price behavior of the players were detected, which is in line with theoretical hypothesis, but on the second hand, the price path did not follow the reference price in a way predicted by the model.

Introduction

The research is devoted to attempt of assessment if observed strategic price interactions in the Polish wholesale motor gasoline market could follow the IPP schema for some price index chosen as a reference. In a previous paper Bejger (2015a) the key characteristics of the industry, the wholesale market, the players and the price's creation mechanism have been studied and isolated. One of the findings was that the pricing mechanism of the players corresponds to the well-known Import Parity Pricing (IPP in short) formula. The price levels were publically announced by both players on their websites from the beginning of the sample period, but regular patterns were being noticed from the beginning of 2006 with announcement on weekdays and with a gap for the Saturday-Monday period. In a next paper, Bejger (2016), based on extracted industry/market characteristics, simple focal pricing game model was constructed, as there was no such a structure in literature which could be well-suited for the Polish wholesale market specifics. These two papers constitute necessary basis for a current research. The present paper contains some methodological remarks in section 2, description of the statistical analysis in section 3. Conclusions and a short discussion finalise the work.

1. Methods of a research and literature overview

From the above mentioned game model two testable implications of an equilibrium could be derived:

- a) it is strategically possible to use the same (or very close) price levels by both players in daily interactions, so we can say about parallel pricing phenomenon,
- b) common price level for both players should be very close to IPP price level (or some proxy of it), if we assume the ability of players to properly calculate it on the basis of commonly known factors

First of the implications was preliminary verified in Beijer (2015b). Current work is devoted to the second one. It is possible to point to at least two examples where IPP pricing is officially described as domestic refineries' pricing schema, namely Portugal and Australia. There is also significant part of DAF/COMP (2013) report devoted to this policy with some interesting opinion dealing with the influence of this policy on the competitiveness of a market. Empirical studies have confirmed so called price ceilings determined by government legislation and regulations can act as focal points. Using data from the US-credit card market during the 1980's, Knittel and Stango (2003) shows that nonbinding price ceilings, which serve as external focal points, increase the probability that firms engage in tacit collusion. In an especially interesting study Faber and Janssen (2011) investigated the effects of oil companies suggesting petrol and diesel prices to their retailers, and whether they created focal points for the coordination of actual prices charged by retailers. Faber and Janssen concluded that the suggested prices reduced uncertainty for retailers concerning competitors' price changes and helped firms to form mutually consistent expectations concerning their pricing strategies.

If one want to assess exactly how close the strategic price interactions was to implied equilibrium path, the knowledge of the reference focal price level (the IPP price as calculated by players) is needed. As such a calculations should be treated as private knowledge of the players, that is impossible, so every effort in that direction is some kind of speculation. Nevertheless, some preliminary examinations and inferences based on common knowledge should be valuable. The proposed method of the research is described in a next paragraph.

At first, a proxy for the focal price should be chosen. For such introductory research discovering a possible price model used by players for IPP calculation would far out of scope, instead of that fairly simple object that could play the role of a proxy of focal price level was searched. A natural candidate was, of course, the reference index for gasoline used by players (PRM UNL 10 ppm CIF ARA) but, unfortunately there was a problem to obtain that series for the whole sample from public domain. Because of that fact the New York Harbor Conventional Gasoline Regular Spot Price FOB was used instead of ARA index. There was a question is it statistically correct. As many sources

states, NYH and ARA prices are in a very close relationship. For example, from U.S. Energy Information Administration (2014) analysis one can learn that: “Spot gasoline prices in NYH, ARA, and Singapore can be broadly thought of as being representative of the western Atlantic basin, the eastern Atlantic Basin, and the Pacific Basin, respectively. Prior to 2008, the United States, in particular the U.S. East Coast, was a large and growing gasoline market that needed to import large amounts of gasoline from the international market to meet demand. In order to attract gasoline supply to the U.S. East Coast from Europe, and at times from the Pacific Basin, NYH gasoline prices typically traded at a premium to prices in ARA and Singapore. Around 2008, economic recession, efficiency policies, and U.S. ethanol mandates began eroding gasoline demand in the Atlantic Basin, while gasoline demand in Asia continued growing, led by major consuming countries China, India, and Indonesia. This shift in demand growth contributed to an increase in Singapore gasoline prices relative to the prices in NYH and ARA. Since 2008, the price of gasoline in Singapore has typically been the highest price among the three major trading hubs, reflecting the need for gasoline supply to flow into the Pacific Basin. Despite the erosion in the Atlantic Basin gasoline demand and the increase in demand in Asia, the relationship between gasoline prices in the ARA and NYH have remained relatively unchanged from the period before 2008. The stability of the ARA-NYH price relationship reflects the continuing need for the East Coast to import gasoline, much of which has been and continues to be supplied from northwest Europe”. The NYH price could not be an exact focal price for Polish market in a sense of a price level but the research is focused on co-movement and stability of relation of wholesale gasoline prices and implied focal price level, rather. Therefore the NYH price, as only wholesale international price reasonable and publically available, was assumed as a proper proxy for a true IPP price.

As a second step, the necessary transformations of data should be conducted. At third step the economically and statistically viable lag of reference price was estimated. Next the spreads between players' price series and reference series were calculated. On the spreads' series some statistical hypothesis were tested to confirm similarity of behaviour of the players. In a last step the coherence between implied movement of prices and observed one was assessed by estimating autoregressive model in a two simple specifications.

2. Results

2.1. Data description and transformations

The time frame of a study encompasses the period from 01.01.2004 to 31.12.2013. The main data set covers wholesale daily prices on standard 10ppm motor gasoline products, named in this paper as PKN PB95 and LOTOS PB95, for cubic meter (domestic currency PLN). The series were irregular and not synchronized. These two time series have been obtained from official websites of the players. As mentioned above, the

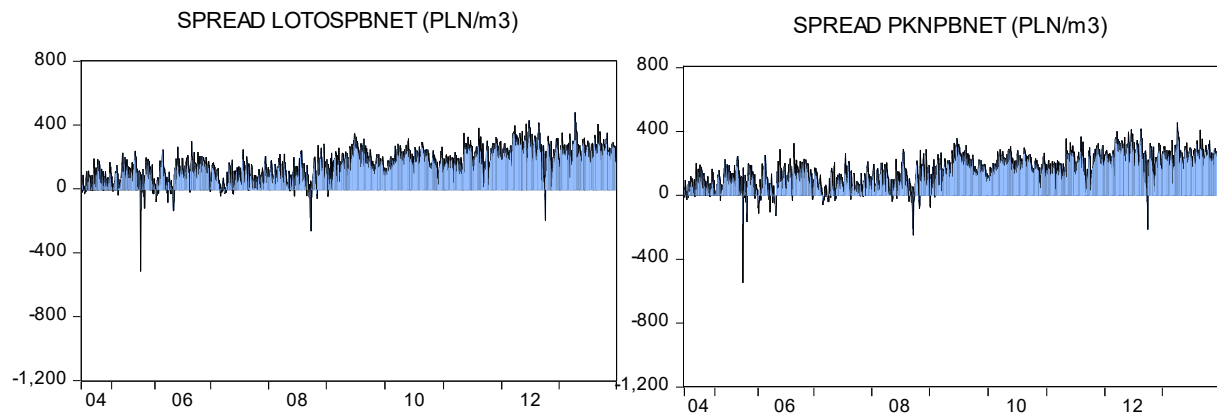
proxy for IPP price was New York Harbour Conventional Gasoline Regular Spot Price FOB spot price for gallon (US Dollars), observed daily and irregular. The series was named NYHGAS.

Next step was devoted to transformation of the original series. At first there was a need to synchronize series of PKN PB95 and LOTOS PB95 and synchronize it with the dates of observations of Polish wholesale prices. At second, values of NYH prices were multiplied by 262.172 to obtain the price per cubic meter. The last transformation was the elimination of influence of USD/PLN exchange rate by expressing of NYH prices in PLN. The PKNPB and LOTOSPB series were transformed as well by subtracting values of excise tax and fuel duty. The transformed series was named as NYHGASPLN, PKNPBNET and LOTOSPBNET.

2.2. Statistical examination

In the main phase of the research the statistical analysis of data was conducted. At first it was necessary to check if implied price mechanism had reasonable support in data. For that purpose a simple regressions of PKNPBNET, NYHGASPLN and NYHGASPLN observed in day $t-1$ to observations of wholesale PKNPB price and expressed in PLN was estimated, using the exchange rate from the same day (i.e. day $t-1$ to observations of PKNPB). The same procedure was repeated for LOTOSNET. Then, on a basis of AIC and SC criterion and other statistics it was possible to assess which model in both pairs was a better one in terms of quality. In both cases, there was found support to assumption that the actual price is better explained by reference price from the previous day. Therefore for the rest of the research as focal price's proxy NYHGASPLN $_{t-1}$ series in PLN/m³ was taken. As the first step of examinations of a co-movement of players' prices and focal price, the spreads between each wholesale price and the focal price were calculated. Figure 1 represents both series of spreads:

FIG. 1: Series of spreads



Source: own

Visual assessment implies strong similarity of the series and, what could be more interesting, some kind of systematic movement in spreads values. A content of Table 1 confirms that observations:

TAB. 1: Basic statistics and tests

SPREAD LOTOSPBNET		SPREAD PKNPBNET	
Mean	161.0486	159.3046	
Median	163.6924	165.1431	
Std. Dev.	98.48867	100.1616	
Skewness	-0.973531	-1.073015	
Kurtosis	12.02298	12.19159	
Test		test stat value	p - value
Test - equality of means			
t-test		0.592942	0.5532
Anova F-test		0.351581	0.5532
Test - equality of variances			
F-test		1.034261	0.4213
Bartlett		0.646682	0.4213
Brown-Forsythe		0.564416	0.4525
Measures of Association			
Cramer's V		0.857888	
Contingency Coefficient		0.932111	
Spread LOTOSPBNET = LOTOSPBNET-NYHGASPLnt-1; Spread PKNPBNET = PKNPBNET - NYHGASPLnt-1			

Source: own

In the case of both means and variances, one cannot reject the null hypothesis of equality of those measures in the whole sample. The subsamples were not examined at this point. Association measures are high, as well. It can be conclude that the players' pricing policies were very similar and close in a sense of the relationship with the assumed focal price.

As the last task of our research we wanted to test the hypothesis dealing with strategic behavior as postulated by equilibrium of our simple game. We have found so far that the pricing behavior of players was similar in a sense of various statistical properties we provided in previous sections. Additionally, we can say that price movement is parallel. To fulfill focal price pricing policy, as postulated by the game theory model, the spread between players' net price level and the focal price level should be approximately constant over the sample period, as net price levels were calculated by the players in correspondence with the focal price level. In order to test this hypothesis, we estimated a pair of simple autoregressive models for each spread of the form (Hamilton, 1994):

$$Y_t = \alpha_0 + u_t \quad (1)$$

$$Y_t = \alpha_0 + trend + u_t \quad (2)$$

where:

$$u_t = \sum_{i=1}^p \rho_i u_{t-i} + \varepsilon_t$$

and $Y_t = \text{SPREADPKNPBNET}$ or SPREADLOTOSNET , trend is linear trend component and ε_t are serially independent residuals.

At first optimal lag structure for AR(p) terms has been choose (using standard AIC and SC criterions). Next models (1), (2) were estimated, using OLS, for both series of Y_t . The results contain Table 2.

TAB. 2: The results of analysis of the spreads

SPREADPKN MODELS					SPREADLOTOS MODELS				
without trend					without trend				
Variable	Coefficient	Std. Error	t-Statistic	p-value	Variable	Coefficient	Std. Error	t-Statistic	p-value
α_0	163.1892	13.9659	11.6848	0.0000	α_0	163.6622	12.1623	13.4565	0.0000
Ut-1	0.7526	0.0335	22.4379	0.0000	Ut-1	0.6899	0.0342	20.1645	0.0000
Ut-8	0.0923	0.0208	4.4410	0.0000	Ut-3	0.1123	0.0263	4.2675	0.0000
Ut-12	0.0814	0.0189	4.3073	0.0000	Ut-8	0.1158	0.0192	6.0403	0.0000
Test /criterion		value			Test /criterion		value		
AIC			10.6623		AIC			10.6834	
SC			10.6724		SC			10.6935	
Adjusted R-squared		0.7498			Adjusted R-squared		0.7363		
Breusch-Godfrey LM Test:					Breusch-Godfrey LM Test:				
F-statistic			2.9618	0.0004	F-statistic			3.3459	0.0001
Obs*R-squared		35.2383			Obs*R-squared		39.7284		
with trend					with trend				
Variable	Coefficient	Std. Error	t-Statistic	p-value	Variable	Coefficient	Std. Error	t-Statistic	p-value
α_0	46.1318	13.5633	3.4012	0.0007	α_0	47.0292	11.6919	4.0224	0.0001
TREND	0.0994	0.0096	10.3064	0.0000	TREND	0.1000	0.0085	11.7316	0.0000
Ut-1	0.7162	0.0363	19.7131	0.0000	Ut-1	0.6539	0.0362	18.0572	0.0000
Ut-8	0.0619	0.0178	3.4787	0.0005	Ut-3	0.0823	0.0238	3.4570	0.0006
Ut-12	0.0482	0.0206	2.3403	0.0194	Ut-8	0.0706	0.0185	3.8163	0.0001
Test /criterion		value			Test /criterion		value		
AIC			10.6417		AIC			10.6576	
SC			10.6543		SC			10.6702	
Adjusted R-squared		0.7550			Adjusted R-squared		0.7431		
Breusch-Godfrey LM Test:					Breusch-Godfrey LM Test:				
F-statistic			1.3479	0.1844	F-statistic			1.2011	0.2759
Obs*R-squared		16.1803			Obs*R-squared		14.4297		
Models estimated by OLS with HAC standard errors & covariance.									

Source: own

As can be seen, the models with trend are better in a sense of information criteria. The residuals in those models are serially independent, contrary to the models without trend. The trend coefficient is highly significant in both models. In both cases we tested the

trend coefficient in null hypothesis as equal to 0 and strongly reject the null. The above calculations drive to the conclusion that the spreads of both players were not constant (with a precision of some stochastic error term) over time, but were characterized by evolution of linear trend type. As the trend coefficients in both cases are positive (and significant) one could say that the spread has been systematically growing. This is, of course, a rough assessment of the tendency, as from Fig. 1 one can observe some periods with clearly high rate of grow of spreads and other of relatively stable spreads' values.

3. Discussion and conclusions

The main objective of the research was to assess how close the price levels of the major players were to implied equilibrium price' path. As a proxy for a focal price the New York Harbor Conventional Gasoline Regular Spot Price FOB from previous day to players' price observations (denoted NYHGASPLNt-1, series in PLN/m3) was taken. Next the spreads between each wholesale price and the "focal price" were calculated which were treated as a test series for players pricing behavior. The findings were twofold:

- a) one cannot reject the null hypothesis of equality of the means and variances of both spread's series in the whole sample,
- b) the estimation of AR(p) models in the alternative specifications (with and without trend component) drove to the conclusion that the spreads of both players were not constant (with a precision of some stochastic error term) over time but were characterized by evolution of linear trend type. As trend coefficients in both cases are positive (and significant) one could say that the spreads were systematically growing, which is contrary to the implied equilibrium price path.

As possible direction of further research the exact statistical analysis of co-movement of spreads and should be pointed. The analysis should be done by a parametric and nonparametric methods for reaching a broader view. For the future we also leave the answer to the question of what the reasons of growing spreads are – one can list some causes now, such as: differences in CPI's (inflation) in Poland and USA, imprecise focal price calculation or, the most interesting hypothesis, an existence of some strategic reasons that were private information of players allowing them to rise prices (in common) above the focal price.

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REVEALED TRADE ADVANTAGE OF THE SLOVAK AND CZECH REPUBLICS IN VEHICLES IN COMPARISON TO THE EU28

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Abstract:

Automotive manufacturing is one of the Europe's growing industrial activities, it provides many jobs positions, huge amount of euros in investments, represents a large portion of the exports. In this paper we describe patterns of competitiveness for the Czech Republic and Slovakia over the period from 2011 to 2015 while differentiating between 16 product labels of automotive industry. To study Czech and Slovak competitiveness and its progress the applied index is measured: revealed trade advantage (RTA) including the export index of the revealed comparative advantage (RCA) and import index of revealed comparative advantage (RMA). Also the index of trade openness (ITO) is used as an important indicator in terms of the competitiveness of countries as well. Using analyses we consider whether both countries are rivals for the EU28. Czech competitiveness lies in seven traditional, yet globally declining, product labels such as cars, spare parts and accessories for motor vehicles, public-transport type passenger motor vehicles, bicycles and other cycles (non- motorized), spare parts and accessories for motorcycles and cycles, and partly chassis fitted with engine for motor vehicles since 2014. Slovak competitiveness lies only in five product labels such as cars, bicycles and other cycles (non-motorized), bodies for motor vehicles, tanks and other motorized armored vehicles and spare parts and partly chassis fitted with engine for motor vehicles till 2013.

Introduction

During the last fifteen years, the Slovak and Czech automotive industries have been transformed into very successful export-oriented industries. Increase of the export of a country is getting more and more important. The production in automotive industry has increased and these two countries are leaders in car production. Nevertheless, the Czech and Slovak automotive industries are currently facing four important challenges: growing specialization, investment in R&D, high import dependence, and lack of qualified employees. We used three modified indexes to evaluate revealed comparative

advantage on the basis of country's specialization in exports and imports and revealed trade advantage of the vehicles in comparison to the EU28. This is a universal way to analyze trade data. We collected the data from International Trade Centre, ILO, UNCTAD, OECD and WKO. Given that we are interested in competitiveness of the Czech Republic and Slovakia towards the EU28. The paper is divided into three sections. The first section describes the growing specialization of both countries in comparison based on the data from the period between 2011 and 2015. The second section delineates the revealed trade advantage in vehicles over the period from 2011 to 2015, using RCA in 16 product labels in export and RMA in 16 product labels in import. The third one describes shortly the openness to trade after accession to the EU till 2015.

1. Methodology

The concept of comparative advantage dates back to David Ricardo who, using a two-country, two-good model, proved the Samuelson term of *uncommon sense* (Samuelson, 2004). Béla Balassa suggested an alternative method for measuring comparative advantage that he called *revealed comparative advantage*. It is based on the following: in addition to the measurement problem, he refers to the problem that theoretical discussions tend to neglect non-price factors such as quality differences, goodwill, service, and availability of repair facilities, the factors that bear as much influence on the pattern of international trade as cost considerations do. An explanation of the worldwide success of Volkswagen, for example, would be incomplete without the consideration of non-price variables. Balassa asks a crucial question: "Is it necessary to take all influences that determine comparative advantage into explicit account? Wouldn't it be sufficient if certain questions provide information about the revealed comparative advantage?" Thus the revealed comparative advantage is indicated by the trade performance of individual countries ... in the sense that the commodity pattern of trade reflects relative costs as well as differences in non-price factors. If comparative advantage determines the system of international flows of commodities, then the export-import ratios would reflect relative advantage. The higher the ratio of the value of exports over the value of imports in a given commodity, the higher the country's advantage in producing these commodities is likely to be. This should hold true even when the aggregation of statistical data (as used for this analysis) allows for exports and imports within the same category (Balassa, 1965). In literature several formulas are used to measure the weak and strong sectors of a country using reveal comparative advantage developed by Balassa but the revealed trade advantage is very rare. In this case the index is calculated as follow:

$$RTA = RCA - RMA = [\ln (X_{ij}/X_j)/(X_{iw}/X_w)] - [\ln (M_{ij}/M_j)/(M_{iw}/M_w)], \quad (1)$$

with export index of revealed comparative advantage (**RCA**) deducting import index of revealed comparative advantage (**RMA**) we can measure revealed trade advantage **RTA** (Fertő, & Hubbard, 2002).

$$RCA = \ln (X_{ij}/X_j)/(X_{iw}/X_w), \quad (2)$$

the export index of revealed comparative advantage (**RCA**) has been defined as the ratio of a country's exports in a particular commodity category to its share in total merchandise exports (Balassa, & Noland, 1989), where **X_{ij}** denotes the export of the product labels within the region and year and **X_j** denotes the total export within region and year. **X_{iw}** represents the export of the product labels within the EU28 and year and **X_w** represents the total export within the region and year.

$$RMA = \ln (M_{ij}/M_j)/(M_{iw}/M_w), \quad (3)$$

where **M_{ij}** denotes the import of the product labels within the region and year and **M_j** denotes the total import within the region and year. **M_{iw}** represents the import of the product labels within the EU28 and year and **M_w** represents the total import within the region and year.

$$ITO = \frac{X+M}{GDP} \times 100 \quad (4)$$

The Trade-to-GDP-ratio¹ is the sum of exports (X) and imports (M) (both goods and services) divided by GDP in Million US dollars. This indicator measures a country's *openness* or *integration* in the world economy. It represents the combined weight of total trade in its economy, a measure of the degree of dependence of domestic producers on foreign markets and their trade orientation (for exports) and the degree of reliance of domestic demand on foreign supply of goods and services (for imports) (Gov.Uk, 2015).

2. Results

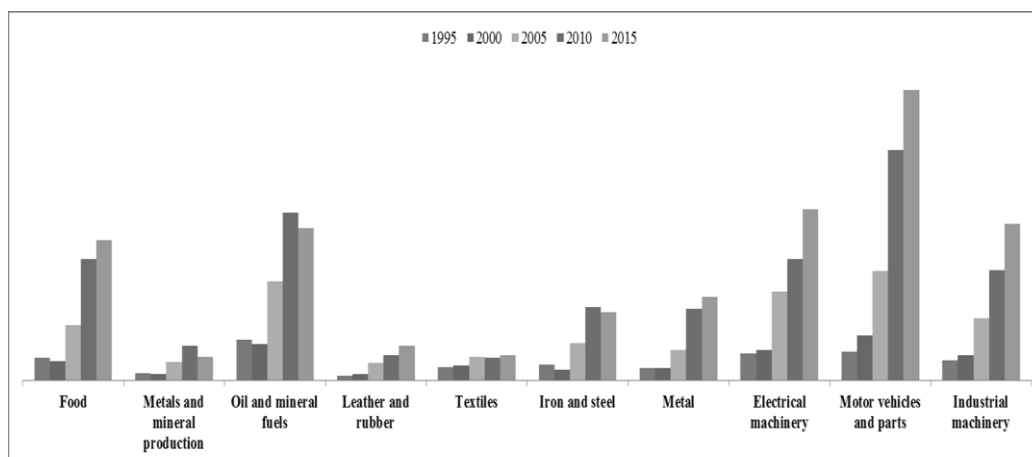
2.1. Growing specialisation

Data from the period of 2000 to 2009 in GDP Value Added by industry made by ILO shows the rising tendency of total GDP moving from 28,493.8 Million € to 63,803.1 Million € in the Slovak Republic during this period. If we look at the share in sectoral value in 2009, we can allege that manufacturing included 20.4 % of the whole share (ILO, SK, 2016). Top five export commodities in 2014 were motor vehicles and spare parts (24.93 %), electrical machinery (21.12 %), industrial machinery (12.23 %), oil and mineral fuels (4.73 %), iron and steel (4.72 %). Among the top five export partners in 2014 there were Germany (22 %), Czech Republic (12.8 %), Poland (8.0 %), Austria

¹ The trade-to-GDP-ratio is often called the „trade openness ratio“.

(6.1 %) and Hungary (6.1 %) (WKO, SK, 2016; Globaledge, SK, 2016). The automotive industry has become the largest sector in Slovak manufacturing in 2015, in fact there has been a growing specialization on this industry during the last ten years as you can see in Figure No. 1. Compared to the year of 2014, we can confirm the same top five export commodities.

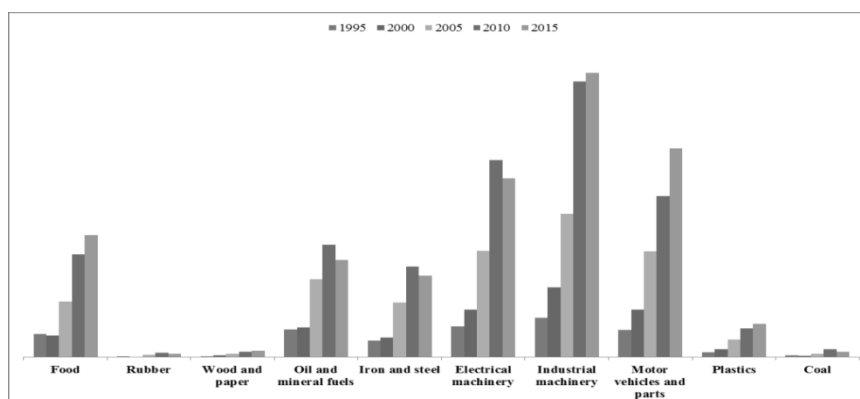
FIG. 1: Slovakia: Merchandise trade matrix – detailed products, exports in thousands of dollars, annual, 1995-2015



Source: author's own calculation based on (UNCTAD, 2016)

The Czech Republic showed the same trend moving from 1,983,446.0 Million € to 2,813,334.0 Million €. The manufacturing sector is the largest employer with 33.6 % of the whole share (ILO, CZ, 2016). The top five export commodities in 2014 were industrial machinery (19.35 %), motor vehicles and spare parts (19.02 %), electrical machinery (16.73 %), iron and steel (4.06 %), plastics (3.67 %). Among the top five export partners in 2014 there were Germany (32 %), Slovakia (8.4 %), Poland (6.0 %), Great Britain (5.1 %) and France (5.1 %) (WKO, CZ, 2016; Globaledge, CZ, 2016). The top three export commodities remained the same also in 2015 but food was the 4th commodity and oil and mineral fuels the 5th commodity as shown in Figure No. 2.

FIG. 2: Czech Republic: Merchandise trade matrix – detailed products, exports in thousands of dollars, annual, 1995-2015



Source: author's own calculation based on (UNCTAD, 2016)

2.2. Revealed trade advantage RTA

In this section we describe the Slovak and Czech Republics' competitive positions within the 28 states of the European Union as revealed by trade flows by comparing the country with the competitor in vehicles. As a result, the calculations in this section are based on data drawn from International Trade Centre from 2011 to 2015. We implement the principle of revealed trade advantage mentioned in the methodology. A positive value of RTA is interpreted as the indication of Slovak or Czech comparative advantage against the rival states of the EU28 (shown in bold). Table 1 shows the trade advantages of Slovakia in cars, bicycles & other cycles (non-motorized), bodies for motor vehicles and, partly in the period from 2011 to 2013, the chassis fitted with engine for motor vehicles and the last product label of tanks and other motorized armored vehicles, and spare parts, except for the year of 2013. Slovakia should invest more into the production of spare parts and accessories for motor vehicles that are used for production; shown in Table No.1 RMA SK against the EU28 that as revealed advantage import.

TAB. 1: Slovakia's Revealed Trade Advantages of Vehicles, 2011-2015 (rounded to two digits)

Product label:	RCA SK					RMA SK					RTA SK				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Cars (incl. station wagon)	0,94	1,06	1,08	1,03	1,02	-0,67	-0,69	-0,69	-0,52	-0,54	1,61	1,75	1,77	1,54	1,56
Parts & access of motor vehicles	0,32	0,30	0,42	0,46	0,59	1,24	1,34	1,27	1,23	1,30	-0,92	-1,04	-0,86	-0,77	-0,71
Public-transport type passenger motor vehicles	-2,09	-1,54	-1,54	-1,69	-1,20	0,36	0,39	0,21	0,60	0,59	-2,46	-1,93	-1,76	-2,29	-1,79
Trailers&semi-trailers;other vehicles not mechanically propelled	-0,16	-0,16	-0,22	-0,31	-0,19	0,07	0,18	0,02	-0,11	0,04	-0,22	-0,34	-0,24	-0,20	-0,24
Tractors (other than tractors of heading no 87.09)	-1,11	-1,33	-1,18	-0,97	-0,96	0,50	0,53	0,47	0,44	0,45	-1,61	-1,86	-1,65	-1,41	-1,41
Parts and accessories of motorcycles & cycles	-1,36	-0,93	-1,39	-1,56	-2,02	-0,62	-0,66	-0,80	-0,99	-0,86	-0,75	-0,28	-0,59	-0,56	-1,16
Trucks, motor vehicles for the transport of goods	-1,07	-1,03	-0,92	-1,02	-1,18	-0,47	-0,74	-0,67	-0,70	-0,75	-0,60	-0,29	-0,24	-0,33	-0,43
Bicycles & other cycles, not motorised	-0,49	-0,66	-0,64	-0,73	-0,33	-0,85	-0,98	-0,83	-1,06	-1,07	0,36	0,32	0,20	0,33	0,74
Special purpose motor vehicles (fire fight veh,crane lorry)	-1,39	-1,60	-1,62	-1,89	-1,70	-0,17	0,11	-0,29	0,67	0,70	-1,22	-1,71	-1,33	-2,56	-2,41
Bodies for motor vehicles	2,79	3,07	3,07	3,09	3,25	-3,06	-2,64	-2,52	-2,27	-2,38	5,85	5,71	5,59	5,36	5,64
Motorcycles, side-cars	-2,89	-3,13	-3,56	-3,33	-2,37	-1,51	-1,48	-1,30	-1,32	-1,18	-1,39	-1,66	-2,26	-2,01	-1,20
Chassis fitted with engine for motor vehicles	-2,01	-1,64	-2,16	-4,62	-0,92	-2,28	-2,10	-2,53	-1,14	0,31	0,27	0,46	0,37	-3,48	-1,24
Baby carriages and parts thereof	-2,73	-2,58	-2,12	-2,24	-2,98	-0,82	-0,93	-1,05	-1,15	-0,78	-1,91	-1,65	-1,08	-1,10	-2,20
Invalid carriages (wheelchairs), w/n motorised	-2,10	-3,14	-3,58	-3,73	-4,01	-0,72	-0,69	-0,96	-0,26	-0,90	-1,38	-2,46	-2,63	-3,48	-3,11
Work truck,self-propelled, for factorie/airport & parts	-1,59	-1,30	-2,57	-2,63	-2,72	-0,44	-0,46	-1,09	-1,01	-0,92	-1,15	-0,83	-1,48	-1,62	-1,79
Tanks and other armoured fighting vehicles, motorised, and parts	2,44	2,01	1,20	1,71	1,62	-0,55	1,19	1,34	-0,20	0,36	3,00	0,82	-0,14	1,91	1,26

Source: author's own calculation based on (ITC, 2016)

If we look at the Czech Republic in Tab. No. 2, we can assign quite the same results in three product labels against Slovakia: cars, bicycles & other cycles, non-motorized and bodies for motor vehicles except for the year of 2015 where the Czech Republic lists its advantage. Among the trade advantages there are also the spare parts and accessories of motorcycles & cycles, then spare parts & accessories for motor vehicles in 2012 and the highest trade advantage is the public-transport type passenger motor vehicles for the whole period from 2011 to 2015. The Czech Republic should focus on the product level of tractors against the EU28; shown in Table No. 2. RMA CZ, as production of this item has a long history but well-known ZETOR did not manage to integrate into the world class.

TAB. 2: Czech Republic's Revealed Trade Advantages of Vehicles, 2011-2015 (rounded to two digits)

Product label:	RCA CZ					RMA CZ					RTA CZ				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Cars (incl. station wagon)	0,49	0,52	0,50	0,50	0,48	-0,79	-0,77	-0,79	-0,77	-0,73	1,28	1,29	1,29	1,27	1,21
Parts & access of motor vehicles	0,86	0,88	0,94	0,96	1,01	0,67	0,80	0,74	0,75	0,75	0,19	0,08	0,21	0,22	0,27
Public-transport type passenger motor vehicles	1,37	1,35	1,44	1,50	1,40	-0,56	-0,14	-0,03	0,00	-0,23	1,93	1,49	1,47	1,50	1,63
Trailers&semi-trailers;other vehicles not mechanically propelled	-0,25	-0,15	-0,12	-0,21	-0,15	0,16	0,21	0,26	0,24	0,19	-0,41	-0,36	-0,38	-0,45	-0,35
Tractors (other than tractors of heading no 87.09)	-1,17	-0,99	-1,05	-1,11	-1,23	0,38	0,29	0,34	0,54	0,43	-1,55	-1,28	-1,39	-1,65	-1,66
Parts and accessories of motorcycles & cycles	-0,26	0,03	0,10	0,08	0,14	-0,22	-0,06	-0,15	-0,26	-0,13	-0,04	0,08	0,25	0,34	0,27
Trucks, motor vehicles for the transport of goods	-2,04	-1,99	-1,92	-1,83	-2,19	-0,57	-0,59	-0,53	-0,48	-0,49	-1,47	-1,40	-1,40	-1,35	-1,70
Bicycles & other cycles, not motorised	0,23	0,19	0,32	0,18	0,09	-0,32	-0,22	-0,25	-0,18	-0,37	0,56	0,41	0,57	0,35	0,46
Special purpose motor vehicles (fire fight veh,crane lorry)	-2,27	-2,05	-1,51	-1,33	-1,36	-0,62	-0,35	0,46	-0,19	0,08	-1,65	-1,70	-1,97	-1,14	-1,44
Bodies for motor vehicles	0,09	0,44	0,10	-0,04	-1,32	-1,96	-1,77	-0,99	-0,10	-0,88	2,05	2,21	1,09	0,06	-0,44
Motorcycles, side-cars	-2,52	-2,03	-1,86	-1,58	-1,46	-1,07	-0,87	-0,74	-0,75	-0,73	-1,46	-1,17	-1,12	-0,84	-0,73
Chassis fitted with engine for motor vehicles	-3,54	-3,31	-2,08	-1,65	-1,37	-3,16	-2,64	-1,38	-1,67	-1,44	-0,38	-0,67	-0,70	0,02	0,07
Baby carriages and parts thereof	-1,25	-1,45	-1,18	-0,95	-0,85	-0,34	-0,32	-0,38	-0,35	-0,41	-0,91	-1,14	-0,80	-0,60	-0,44
Invalid carriages (wheelchairs), w/n motorised	-1,12	-1,24	-1,65	-1,84	-1,17	-0,45	-0,71	-0,73	-0,69	-0,63	-0,67	-0,53	-0,92	-1,15	-0,54
Work truck,self-propelled, for factorie/airport & parts	-2,28	-2,29	-3,12	-1,80	-2,14	-1,27	-0,03	0,01	-0,58	-0,52	-1,01	-2,26	-3,13	-1,22	-1,62
Tanks and other armoured fighting vehicles, motorised, and parts	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

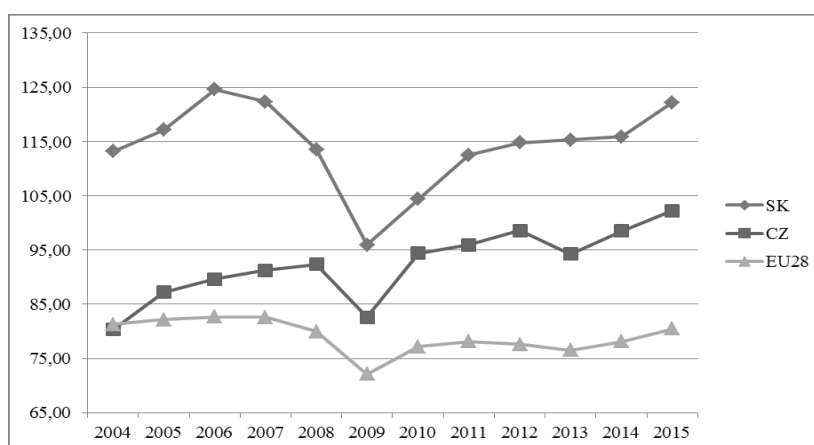
Source: author's own calculation based on (ITC, 2016)

In five of the product labels of vehicles, Slovakia had the comparative advantage in general terms and the Czech Republic had the comparative advantage in six of the product labels of vehicles; but definitely the conqueror is Slovakia with 46.41 % share of the vehicles compared to 24.03 % of the Czech Republic.

2.3 The Index of Trade Openness (ITO)

The indices of trade openness state that Slovakia and Czech Republic have better position in the world economy at a significant level against EU28. However, the index of trade of openness of both Visegrád countries have been increasing after entry to the European Union and have opened to foreign dramatically except the financial crisis in 2008 and after slightly fall in 2012 as it is shown in figure 3. Compared with the Czech Republic, it is observed that Slovakia's indices of ITO are higher by years, but both of them have positive impact on the international competitiveness against the EU28.

FIG. 3: The Index of Trade Openness from 2004 till 2015 against EU28



Source: author's own calculation based on (OECD, 2015a; 2015b)

3. Discussion

We recommend further research with comparing 22 countries within the EU automotive industry as the researches are rare. Furthermore, it should be focused on the rest of the Europe's countries such as Belarus, Russia, Serbia and Ukraine. All of them reveal more and less successful performances at the industry-region level. I think that this improves understanding of the regional aspect of competitiveness, future point of view of the economic development of the region.

Conclusion

Trade data allow, inter alia, identifying industries or products in which the regions realize trade specialization. The aim of the paper is to assess the competitive position of the Czech and Slovak Republics compared to the EU28 countries on the basis of export

of the vehicles. Slovakia has higher trade advantage in production of vehicles than the Czech Republic. The Czech Republic does not export or import one of the product labels - tanks and other motorized armored vehicles and spare parts, this is influenced by the history (the Cold War). In this article, we added two new aspects to the discussion. The first one is provision of an overview of both countries and their performances in trade of vehicles according to the data from 2011 to 2015 and the second one is using of own RTA indexes to analyze advantage or disadvantage and competitiveness in the vehicles. To sum up, Slovakia is a region with five strong product labels in trade that are typical for its export commodity; that raises the question whether Slovakia should be concerned about this situation against the Czech Republic as we see a change of the manufacturing diversity here. We know that Slovakia has become the world leader in car production per capita. There is no clear-cut answer in these hard times. Both of the countries show that the strong reform implementation was made possible by strong political consensus on accelerating the EU accession and boosting living standards. Anyway, the state should invest correctly into the R&D and education system to influence the effect of potential decision of the investors in both countries. The future will show whether these challenges will turn to risks. Jaguar Land Rover aims to open a plant in Slovakia in 2018. Tesla Motors, the US electric car manufacturer, is searching for a production location in Europe in the long run – so there is a chance that Slovakia or the Czech Republic will become a world producer of electric cars in the future as well. The trade openness results showed us that both countries have opened to foreign dramatically against the whole EU28 and I hope that this shows better position of their competitiveness in the international market.

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INSTRUMENTS PROVIDING FOR BETTER ACCESS TO THE LABOUR MARKET WITHIN THE EUROPEAN UNION

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JEL classification: F02, F66

Abstract:

The European Union within the framework of its policies considers the increasing of employment of young people and inclusion of women into the workforce as priority. To this end it uses various tools such as mutual recognition of diplomas, financial support within the Erasmus+ Programme, adopting the legal regulations aiming at the strengthening the status of women in the labour market. In this paper we point out the concrete measures being introduced in Slovakia, which facilitate the access to the labour market to the Slovak citizens. We have focused our research on the analysis of realised study stays in the foreign universities.

Introduction

The European Union considers as its priority among others also the education and training as it is stipulated in the Article 165 of the Treaty on the Functioning of the European Union.(EU, 2010) The Treaty of Lisbon did not change the provisions on the role of the EU in education and training (Title XII, Articles 165 and 166). However, there are new features worthy of mention: for instance the Treaty of Lisbon contains a provision which has been described in the literature as a horizontal ‘social clause’. Article 9 of the Treaty on the Functioning of the European Union (TFEU) states: ‘In defining and implementing its policies and actions, the Union shall take into account requirements linked to the promotion of a high level of education [and] training.’ Moreover, the Charter of Fundamental Rights of the European Union (EU, 2012a), which has the same legal value as the Treaties (Article 6 TEU), states: ‘Everyone has the right to education and to have access to continuing and vocational training’ (Article 14), as well as ‘the right to engage in work and to pursue a freely chosen or accepted occupation’ (Article 15). (Franke, 2016)

The system of education belongs to the competences of the Member States of the European Union (the EU).(Borchardt, 2010) The European Union requires from its Member States to support the mobility of students and teachers and to focus on the

academic recognitions of diplomas. Students rank among persons who in general enjoy the free movement of persons in the largest extent. Free movement of persons means mainly possibility to change their place of living in order to work or do business at the new place. (Schronk, 2002) Free movement of persons as one of basic pillars, without which the correct functioning of internal market would not be possible. The aim of this freedom is that workers of the Member States can look for better living and working conditions that they have in their regions and mainly to improve their living standards. (Nováčková, 2004) The European Union introduces the programmes for universities as the tools for reducing the unemployment and for increasing the language skills. Such programme represents the Erasmus+ Programme. Many students of the Faculty of Management of the Comenius University in Bratislava utilizes the chance to study in other Member States. As the consequence of growing global migration for work the interest of the work abroad is increasing. In recent years mainly after that accession of the Slovak Republic in the European Union the problems of movement of persons for work abroad became highly actual and find interest not only among academic professions but also in politics, media and general public. The most persons from the Slovak Republic work in Austria and the Czech Republic. (Paškrťová, Stachová, 2015).

With regard to the fact that the Slovak Republic had the Presidency in the Council of the European Union in the second half of 2016, we have focused on the priority areas that have been in the forefront of activities of the Trio Presidencies (1st January 2016 – 30th June 2017). The questions of antidiscrimination, protection of health and security, obtaining new skills and new jobs, recognition of professional qualifications and realisation of Erasmus+ Programme form part of this agenda.

1. Methods, literature overview

The main goal of this article is to point out the fact that the European Union has its citizens in the centre of its attention, it provides the financial resources for investments into the human capital and it also creates the conditions for preserving the social model of Europe. With regard to this goal we have firstly collected the accessible theoretical sources, from which have only kept the relevant information. Subsequently we have applied these methods: analytical method has been applied to analyse the legal framework relating to the substantive facts connected to the free movement of persons. The synthetic method enabled us to connect significant findings and correlations obtained from the analytical approach to the homogenous whole. The processing the information and facts about students that have been studying at the Faculty of Management Comenius University (FM CU) in Bratislava as well as about Slovak students studying at the foreign universities are included in the text. We have used the statistical methods in order to process those information. Individual facts, substantive information and phenomenon have been studied and on the basis of those we have made the conclusions using the method of induction.

2. Results

The European Council at its meeting on 27 June 2014 in Brussels adopted the document named „Strategic Agenda for the Union in Times of Change“ which provide the basis for the working programmes of EU institutions and defines the main principles of the EU during the political cycle of the EU until the year 2019. Among these principles ranks the growth and competitiveness, strengthening and protection of rights of citizens, freedom, security and justice, development of energy union. (EU, 2014)

Within the framework of protection of its own citizens the EU respects their identity and recommends to its Member States to provide for conditions for the development of skills and utilizing talents and to intensify their fight against unemployment of young people. The Government of the Slovak Republic manifests these principles in its Resolution no. 354/2015 of 1 July 2015 named „Recourses of 18-months Programme of the Council of the European Union – the contribution of the Slovak Republic“. (EUa, 2014) The priorities of the programme will be further development by Trio Presidency, which is as from 1 January 2016 to 30 June 2017 composed of the Netherlands, Slovakia and Malta. As regards the employment and social protection of citizens this Resolution mentions the proposals aimed at supporting the employment of young people and integration of long term unemployed persons as well as measures to support skills as the priority for the negotiations. The Presidency Trio has drafted its programme „Taking forward the Strategic Agenda – 18-month programme of the Council (1 January 2016 – 30 June 2017)“. (EUa, 2015) Among the priorities for the presiding states in the years 2016 – 2017 ranks forming the social model of Europe in its various manifestations and investments into the human capital with the aim: to adopt measures for creating the job opportunities for young people and for the development of lifelong learning; to deal with the social protection systems providing for the adequate levels of protection and contributing to the social inclusion and inclusion into the labour market; to protect health of EU citizens – to discuss the ways of improvement of health conditions of the population in the EU, the fight against non-communicable diseases, the approach to innovative and affordable medicines, the deepening of cooperation among the health systems of the EU Member States; to work at proposals relating to the health protection and labour security as well as the quality of environment etc.

Measures aimed at improvement of status of women at the labour market, enhancement of system of recognition of professional qualification and at training form are part of the operative programme. The institutions of the EU prepared the draft „Directive of the European Parliament and of the Council on improving the gender balance among non-executive directors of companies listed on stock exchanges and related measures COM/2012/0614final-2012/0299(COD)“. (EUB, 2012) This proposal sets forth measures to ensure more balanced representation of men and women among non-executive management positions of listed companies by introducing measures with the aim to speed up the progress in the field of gender balance. According to the draft

Directive the Member States shall ensure that the listed companies in whose boards members of the under-represented sex hold less than 40 per cent of the non-executive director positions make the appointments to those positions on the basis of a comparative analysis of the qualifications of each candidate, by applying pre-established, clear, neutrally formulated and unambiguous criteria, in order to attain the said percentage at the latest by 1 January 2020 or at the latest by 1 January 2018 in case of listed companies which are public undertakings. This Directive is debatable, since we hold the view that stipulating the quotas for the representation of men and women in the company boards of listed companies interferes with the legal regulations of the EU Member States. The position of women in the management positions does not necessarily ensure the competitiveness of companies in the international markets.

The position of women in the labour market belongs to the highly discussed topics at present. More and more women study at the Faculty of Management of the CU. Following table illustrates the number of graduates – men and women – of fulltime and part-time Master's degree.

TAB. 1: Structure of Graduates of fulltime and part-time study programme at the FM CU 2012 – 2015

	Number as of 31/12/ 2012	Number as of 31/12/ 2013	Number as of 31/12/ 2014	Number as of 31/12/ 2015
Fulltime: men	239	120	159	125
Fulltime: women	60	168	168	161
Fulltime: total	299	288	327	286
Part-time: men	123	109	97	117
Part-time: women	202	167	176	219
Part-time: total	325	276	273	336

Source: Study Department of FM CU, Bratislava 11 October 2016

On the basis of these data it is possible to say that women are interested in the study of management and their number is increased.

Within the system of recognition of professional qualifications the original „Directive of the European Parliament and the Council 2005/36/EC of 7 September 2005 on the recognition of professional qualification“ (EU, 2005) has been amended by the „Directive 2013/55/EU of the European Parliament and the Council of 20 November 2013“. (EUa, 2013) A directive is binding on the Member States as regards the objective to be achieved but leaves it to the national authorities to decide on how the agreed Community objective is to be incorporated into their domestic legal systems. This Directive introduced the European Professional Card (EPC). It will enable the EU

citizens to acquire the recognition of their qualification in a quicker and more simple way through the standardized electronic procedure. The license is based upon the use of Internal Market Information System (IMI) and will be issued for nurses responsible for general care, physiotherapists, pharmacists, mountain guides and real estate agents. Directive 2013/55/EU was fully transposed into the „Law on Recognition of Diplomas and on Recognition of Professional Qualifications and on Amendment of Certain Laws No. 422/2015 Coll.“. The Slovak Republic thus expressed its intention to remove obstacles to the recognition of professional qualifications of citizens from the EU Member States. The most significant tool of reaching common goals in the area of academic recognition is Lisbon Recognition, officially the Convention on the Recognition of Qualifications concerning Higher Education in the European Region. (Kaczová, 2012)

Within the framework of improvement of position of workers in the labour market the university students have the possibility to realize the part of their study in other universities in the EU Member States. To this end the „Erasmus+ – EU programme for education, training, youth and sport“ (continuation of Erasmus Programme) was established. The respective legal instrument of this programme represents the „Regulation (EU) No 1288/2013 of the European Parliament and the Council of 11 December 2013“ (EUB, 2013) for the period of 7 years from 1st January 2014 to 31st December 2020. Erasmus+ includes following areas: education and professional training at all levels with the perspective of lifelong education, including the school education (Comenius), university education (Erasmus), international university education (Erasmus Mundus), professional education and training (Leonardo da Vinci) and training of adults (Grundtvig); youth (youth in action) – especially non-formal education and non-formal learning; sport – especially mass sport.

Faculty of Management of the Comenius University ranks within the Erasmus+ Programme among the most successful faculties of the Comenius University as well as in the whole Slovak Republic by the number of its students who every year take part in making their study abroad. FM CU offered in the academic year 2015/2016 150 foreign universities of different types in the whole Europe and in Turkey. The number of foreign students studying at the FM CU is equal, or is even higher as the number of our students abroad. FM CU provides teaching in English language in the bachelor and master study and starts with measures providing for the mobility for postgraduate students. At FM CU Erasmus+ internship is taking place, within the framework of which the domestic students after accomplishment of bachelor study can make the compulsory practice in the foreign company. Erasmus+ also provides for the possibilities for the mobility of teachers for teachers having accomplished the postgraduate study.

TAB. 2.: Foreign students at the FM CU

	School year: State:	2012/2013	2013/2014	2014/2015	2015/2016	Total
1.	Austria	---	---	2	1	3
2.	Belgium	---	---	1	---	1
3.	CzechRepublic	---	1	---	1	2
4.	Finland	---	1	2	---	3
5.	France	9	12	19	22	62
6.	Germany	3	3	6	14	26
7.	Greece	4	4	3	3	14
8.	Ireland	---	---	3	---	3
9.	Italy	6	23	34	44	107
10.	Latvia	2	1	---	---	3
11.	Lithuania	3	2	5	2	12
12.	Netherlands	9	6	10	5	30
13.	Poland	---	1	---	4	5
14.	Portugal	10	12	6	16	44
15.	Romania	---	---	---	12	12
16.	Spain	41	53	47	65	206
17.	Sweden	---	---	1	2	3
18.	Turkey	1	4	13	14	32
Total		88	123	152	205	568

Source: International Office of FM CU, Bratislava 11 October 2016

The above mentioned information evidence the fact that there is the interest to study at the FM CU. The biggest number of students is from France, Italy and Spain. The lowest number, i.e. one student in the school year 2014/2015 came from Belgium. The students of the FM CU have studied mainly in Belgium, Finland, Netherlands, Island, Germany, Portugal, Spain, Turkey etc. within the framework of Erasmus+ Programme. Following table shows the numbers of FM CU students, who have studied abroad in the school years 2012/2013 to 2015/2016.

TAB. 3: Students of FM CU studying abroad

School year:	2012/2013	2013/2014	2014/2015	2015/2016
Study abroad:	179	193	199	171

Source: International Office of FM CU, Bratislava 11 October 2016

3. Discussion

The realisation of internships in the renowned universities in the EU Member States have the positive impacts for the students of Slovak universities from the viewpoint of their future realisation in the European labour market. The following positive impacts

can be mentioned: improved level of key competencies and skills for the labour market; international dimension of education; improved language skills; obtaining the new knowledge about the culture of the respective country; possibility of practical internship in the chosen companies.

As the evidence can also serve the fact, that many FM CU students after the return from their study abroad work in the foreign companies in Slovakia (Henkel, Volkswagen, etc.). The obtained new skills and knowledge help them in searching for job also in other EU Member States. Their competitive advantage represents mainly their language skills.

Conclusion

The European Union by its activities clearly contributes to the improvement of position of workers in the European labour market. It endeavours to create such legal environment, which would facilitate the access to the labour market for the citizens of the EU Member States. The Member States are obliged to remove all barriers and to use all instruments for the free movement of persons, to which undoubtedly belong the institute of mutual recognition of diplomas as well as the Erasmus+ Programme. The area of improvement of position of women in the labour market also belonged to the agenda of the Slovak Presidency in the Council of the EU in the year 2016. The structure of FM CU graduates is the evidence of the fact that the interest of women in university study is increased. Non-making use of the educational potential of women would represent the loss for the whole society. Potential of women should be systemically developed and their participation in the decision making should be supported.

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ENERGY DISTRIBUTION IN AGENT-BASED ECONOMIC MODEL

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Keywords:

multi-agent models – energy market model – experimental economics – computational economics – supply chain

JEL classification: C63, L1, R1

Abstract:

The underlying parts of economic models focused on industrial production are energy production and distribution. Although energy is an important factor in production inputs, its consumption is sometimes altogether omitted or overly simplified. In the effort to create dynamically complete economic model with involvement of all participants in the production/supply chain, it is necessary to capture this side of production as well and with appropriate level of detail. In this paper, we would like to provide and discuss concept of energy production and distribution sub-model as a part of larger economic model of regional economy.

Introduction

The importance of the energy-related topics has grown lately due to the increased interest in sustainability, green technologies, environmental pollution, smart technologies, and rational use of resources. In order to bring potentially applicable results, models of production and regional economics, such as the model which will be described in this paper, should be developed with attention to detail when it comes to energy market modelling. This paper will be focused on discussion about questions related to proper design of energy market sub-model and presented solutions will be demonstrated on several examples. The economic model is developed gradually in modular increments by introducing more products and services into overall production portfolio. However, the energy is integral part of any given production pattern. While energy is being different to standard products in the means of distribution (electricity, gas, etc.), it is appropriate to develop energy sector as a dedicated sub-model layer.

1. Research Goals and Motivation

Using agents as elementary construction blocks is reasonable for the purpose of economic modelling, especially when large-scale applications are intended for research and study. Agents have, in fact, wide range of common characteristics with the economic subjects such as companies or individuals. They are capable of autonomous

decision-making, are generally goal-oriented (on maximizing utility), therefore they have a potential to make the rational decisions. Such abilities are extremely useful in the dynamic environments, which is a common characteristic of the majority of economic systems and models.

Our model is primarily focused on the autonomous behaviour of the agent-based community, perceived from the economic and computational perspective. Our primary goals are: (1) study of establishment and development of the decentralized market-based economics while maintaining the controllable experimental conditions; (2) study of the evolution of behavioural norms (see Tesfatsion, 2003); (3) the design of computational agents for the automated markets (also there); (4) optimizing of the overall system's performance. This is closely connected with the adaptability of the system as a whole.

The energy market model described in this paper is essential component of production chains in the economy. Allows further study and experimentation related to price settings, energy distributor behaviour, consumer preferences, and other important aspects of energy production and distribution.

2. Simulation Model Description

2.1. Configuration of the Simulation Model

The model enables user to set up the power plants of the specific area via configuration file (example of such configuration is shown in Tab. 1). The user will be able to set the capacity of the power plant (in MWe unit) and its type: (a) nuclear, (b) thermal – brown coal, (c) thermal – black coal, (d) water, (e) solar, (f) wind. Configuration parameters are necessary to be set before the model start up. This approach is suitable for modelling purposes because it is possible to create models in different situational settings for testing various scenarios and configurations.

TAB. 1: Configuration data file with selected power plants of the Czech Republic

Name	Type	Capacity (MWe)	Latitude	Longitude
Temelin	Nuclear	2000	49.180270	14.375290
Dukovany	Nuclear	1810	49.086330	16.145440
Lipno	Water	120	48.633050	14.239720
Kladno	Thermal - Brown coal	310	50.150920	14.199550
Detmarovice	Thermal - Black coal	800	49.903560	18.469190
Dlouhe strane	Water	650	50.086390	17.179440

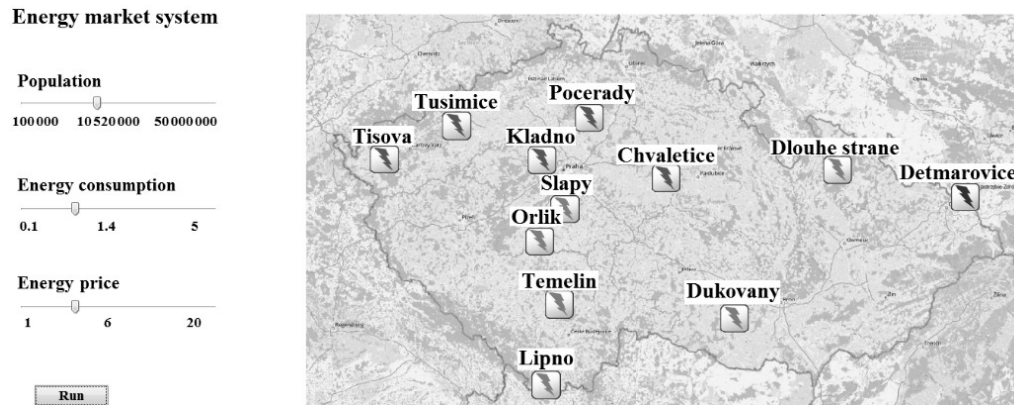
Source: own processing

2.2. Energy market in the multi-agent system

The step following model initialization is configuration of the demand side of the energy market. Important factors are (i) number of people which will consume the

energy, (ii) average energy consumption (per human and year in megawatt-hour (MWh)), and (iii) price (in EUR/kilowatt-hour (kWh)). Default values for these model parameters are set according to real data from the Czech Republic from the year 2015 (converted from the Czech crowns (CZK) to EUR). The user interface is shown at the Fig. 1.

FIG. 1: Energy model interface and configurational settings



Source: own processing

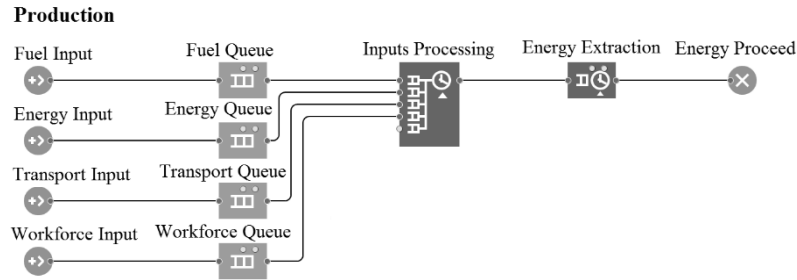
Model works over GIS data layer and presence of power plants is indicated by icon differentiated according to type of power plant (see Fig. 1). The production principles of power plant are derived from standard production agents since they are similar, but processing of final product (packaging, distribution, etc.) is handled differently. For this reason, a specific type of agent representing power plant was implemented into model.

The production line of the power plant agent is shown on the Fig. 2. There are four inputs to production process: (a) fuel, (b) energy, (c) transportation, and (d) workforce.

- a) The fuel source represents the costs needed for the extraction of the energy. The fuel costs are different for the each type of power plant. For example, the uranium for the nuclear power plant is much cheaper than brown coal when considering amount of energy produced (UK Nuclear Power, 2008). E.g., the uranium generate almost 24 000 000 kWh from 1 kg, but the coal generate 8 kWh from the same weight (euronuclear.org, 2016). On the other hand, nuclear power plants have higher building costs than others (UK Nuclear Power).
- b) The energy input represents energy costs needed to (i) process of the extraction energy, (ii) cover daily operating costs, and (iii) other energy costs. This is basically joint operating cost of the power plant which allows easier comparison.
- c) The transport input includes the costs needed to the transport of the fuel source from the provider to the power plant, i.e. distribution of raw power plant fuel for processing into energy.
- d) The employee represents the costs for the salaries of the employees.

All of the costs are in the same units of currency expressed as costs per hour. The generation of the energy is constantly continuous and ongoing but within the model abstraction the fuel supply is occurs once per hour. This allows discrete time representation (with tick = 1 hour as a basic time unit) in the model. This is useful for work with various numerical parameters of the model which are usually in units for given time period.

FIG. 2: Production line of the power plant agent



Source: own processing

During the model run there is a loop of production and consumption. Every power plant produces the energy which is consumed by the population. When given the choice, the population is trying to consume the cheapest energy so the power plant which offers the lowest energy price is chosen as an energy provider. The same principle was used in previous research published in (Tučník, Čech & Bureš, 2014). This allows more rational behaviour of consumers as various strategies might be used when considering investment project of building a new power plant, tax policy, subsidies, etc. and as a result, the model reflects reality more precisely. Although in the Czech Republic is less dynamic energy market and changes cannot be done in such a short time intervals, in Germany, for instance, it is possible to change energy providers quickly and market is highly competitive. This aspect depends on legislation and norms in any given country and model is designed to cope with it. This aspect of the model can be modified according to given situational setting and adjusted to the purpose of the model/experimentation.

3. Experimental Part

For the verifying the right functionality several experiments were created. The experiments are used to verify the dependencies between the power plant energy production and population. For industrial sector, similar principle would be used. With the default values the population consume only a part of the energy and surplus is sold as export (more elaborate export/import policies are intended as the future development).

3.1. Experiment #1 – Real Data Configuration

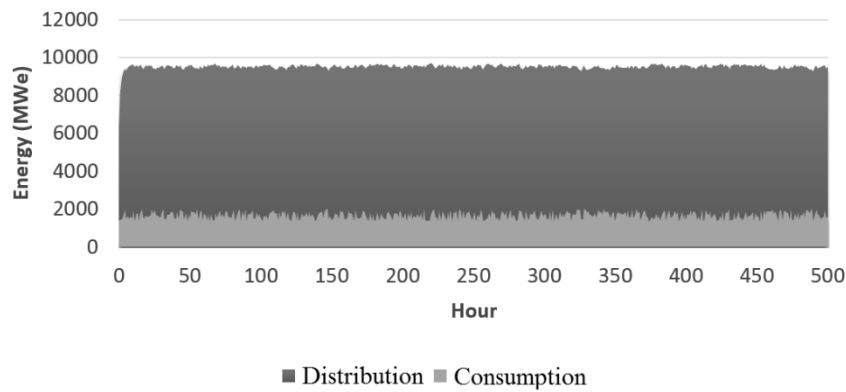
The first experiment uses the real population and energy consumption data from the 2016 for the Czech Republic. Population was set to 10 520 000 and energy consumption on 1.4 MWh / human / year (see Tab. 2). The model runs for the 500 simulation hours.

TAB. 2: Experiment #1 – Settings

Variable	Value
Population	10520000
Energy consumption (MWh / human / year)	1,4

Source: own processing

FIG. 3: Experiment #1 – Energy consumption and distribution in CR – real data



Source: own processing

As it shown on the FIG. 3, the energy supply exceeded the consumption. It is an expected result because the Czech Republic is energy exporter.

3.2. Experiment #2 – Increased Consumption

The second experiment uses the real population data from the 2016 for the Czech Republic with increased energy consumption to validate the model sensitivity. Population was set on 10 520 000 and energy consumption on 3 MWh / human / year. The model runs for the 500 simulation hours.

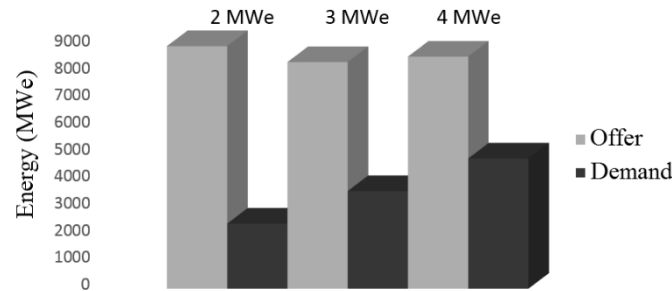
TAB. 3: Experiment #2 – Settings

Variable	Value
Population	10520000
Energy consumption (MWh / human / year)	2 - 3 - 4

Source: own processing

The experimental results shown on the Fig. 4 are different to the first experiment. The offer values stayed the same as on the previous experiment but the demand (energy consumption) was properly increased.

FIG. 4: Experiment #2 – Energy consumption and distribution in CR – increased consumption



Source: own processing

3.3. Experiment #3 – Increased Population

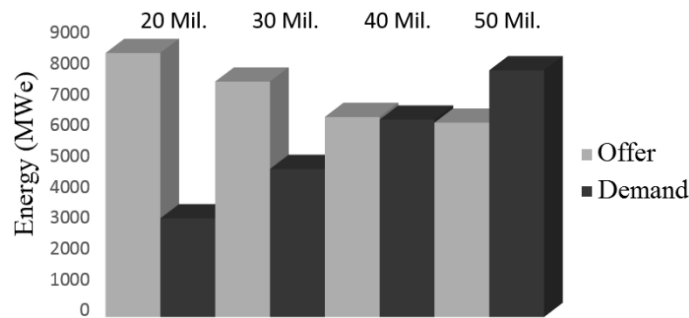
The third experiment uses the real energy consumption data from the 2016 for the Czech Republic. Population size was increased and set up to 50 000 000 while energy consumption remained on 1.4 MWh / human / year. The model runs for the 500 simulation hours. This experiment should verify if the actual domestic energy delivering cover the larger population with own production.

TAB. 4: Experiment #3 – Settings

Variable	Value
Population	10000000 - 50000000
Energy consumption (MWh / human / year)	1,4

Source: own processing

As can be seen on the Fig. 5, the consumption of 50 000 000 population completely cover or exceeds the offer. So in the model the state with the same configuration as in the third experiment will need to import energy from other countries.

FIG. 5: Experiment #3 – Energy consumption and distribution – increased population

Source: own processing

Conclusion and Future Work

The concept of energy market model is intended to be used as a part of the larger model with industrial production, population, and services. Given the importance of energy sector, it is essential component of our economic model which allows as to create dynamically complete system. Various strategies may be tested and studied in the current model framework. On the supply side of energy providers, there is a dynamic, strongly competitive market and there are possible ways to obtain advantage through different technologies of energy production or price setting strategies. On the demand side (of population), various policies might be considered for experimentation to support green or renewable resources and pursue public interests. From this perspective, developed model can serve as a decision support tool for policy makers or for analysis and prediction of energy market behaviour in environment with adjustable configurational settings.

Acknowledgement:

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INFLUENCE OF THE RISK IMPORTANCE AND THE METHOD OF A RISK MEASUREMENT ON THE COMPOSITION OF THE INVESTMENT PORTFOLIO

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Keywords:

fuzzy number – influence of risk – investment portfolio – multiple objective programming method – risk measure

JEL classification: C61, G11

Abstract:

Risk is one of the most important criteria in the investment portfolio making. It can be measured by the various ways. Three well-known risk measures are discussed - variance, semivariance and average absolute negative deviation. These concepts can be easily applied to making a portfolio via the mathematical programming methods. In order to take into account a variability of some input data in time, the fuzzy multiple objective programming method is introduced. Through making the portfolio of open unit trusts, the influence of risk measure on the composition of the portfolio is studied. Further, the real portfolio making should confirm or disconfirm that a higher level of risk mostly can produce a higher level of return.

Introduction

Making an investment portfolio is a complex process. To make a reasonable decision, the potential investment instruments should be examined from multiple perspectives. It is no doubt that one of the most important criteria (perspectives) is the risk. This characteristic represents the measure of a possible loss of the investment.

The risk can be measured by the various methods. In this article, three concepts of a risk measure are selected - variance, semivariance and average absolute negative deviation. These techniques are described. Their advantages and disadvantages are discussed. In order to make a portfolio, the mathematical programming methods can be applied. In the capital market, there are typical elements of uncertainty (input data variable in time or investor's vague preferences). These elements can be quantified by means of the fuzzy numbers. So the fuzzy multiple objective programming method is briefly introduced.

The fuzzy decision making approach is used for making the portfolio of open unit trusts. The investment portfolio is made for two strategies (risk-averse and risk-seeking). These real investment situations should provide an answer to the question whether the used technique of risk measurement influences the composition of the investment portfolio. The second aim of this article is to show whether a higher level of accepted risk leads to a higher return.

The structure of the article is as follows. After introduction, the concept of multiple objective mathematical programming approach is introduced. Then the algorithm of the fuzzy multiple objective programming method is briefly described. Its benefits are highlighted. In the next section, three selected concepts of risk measure are described. Their pros and cons are discussed. In the third section, the portfolio of open unit trusts offered by Česká spořitelna investment company is made. The results are analyzed and the aim questions are answered. Finally, the article is summarized and some ideas for future research are formulated.

1. Portfolio making by the (fuzzy) multiple objective programming methods

Beside well-known methods (fundamental, technical analysis, intuitive approaches), the investment portfolio can be also made via the multiple objective programming methods. This approach can be inspired by Markowitz portfolio theory (Markowitz, 1952, 1959). The multi-objective model of the mathematical programming for making a portfolio is formulated as

$$\begin{aligned}
 & \left. \begin{array}{l} f_1(x_1, x_2, \dots, x_n) \\ f_2(x_1, x_2, \dots, x_n) \\ \vdots \\ f_k(x_1, x_2, \dots, x_n) \end{array} \right\} \rightarrow \text{"max"} \\
 & g_i(x_1, x_2, \dots, x_n) R_i b_i \quad i = 1, 2, \dots, m, \\
 & x_j \geq 0 \quad j = 1, 2, \dots, n
 \end{aligned} \tag{1}$$

where x_j ($j = 1, 2, \dots, n$) is a share of the j -th investment instrument in the portfolio, i -th ($i = 1, 2, \dots, m$) constraint consists of the left side $g_i(x_1, x_2, \dots, x_n)$, the relation mark R_i ($\leq, \geq, =$) and the right side b_i . The constraints can describe demand on level of return, risk or cost of the portfolio, demand on portfolio diversification, portfolio condition etc. The number of objective functions is k . The i -th objective function $f_i(x_1, x_2, \dots, x_n)$ can express the return, risk or cost of the investment portfolio. The portfolio composition is given by a compromise solution of the model (1), when the values of all objective functions are the best possible.

The functions in the model can be linear or nonlinear. In the case of nonlinear function in the constraints, the set of feasible solutions can become non-convex, thereby finding

the optimal solution becomes more difficult. If the objective function is nonlinear, finding the global extremes can be also very difficult. If all objective functions are linear, the model of linear (convex) programming is solved more easily by simplex method. In order to conserve a linearity of the model (1), all portfolio characteristics and conditions must be adapted. The risk is not an exception.

Typical characteristic for the capital market is uncertainty. The element of uncertainty represents variable input data in time or vague investor's preferences. The uncertainty can be quantified by means of the fuzzy numbers. The concept of fuzzy numbers are used in fuzzy multiple objective programming methods that began to develop at the turn of 1970s and 1980s with a growing interest in the fuzzy sets theory proposed by Zadeh (1965). Many methods use the most common triangular fuzzy numbers (e.g. Lai & Hwang, 1992). Other methods are able to work with the various types of fuzzy numbers (e.g. Wu et al., 2006). Some decision making methods using fuzzy programming are based on the α -level principle (e.g. Kahraman, 2008). Some methods use the fuzzy goal technique (e.g. Yang et al., 1991).

Each fuzzy method has some advantages and disadvantages regarding the algorithm itself and the applicability in a specific real decision making situation. In the investment decision making situation, the input data can be in the strict and also vague (uncertain) form. Many methods are not able to accept this combination. Further, a part of methods demands some additional information often intricately determined by a decision maker (e.g. α -level, goal values etc.). Finally, the algorithm should be user-friendly and comprehensible for a wider range of potential users. In order to take into account all aspects of the portfolio making procedure and requirements on the algorithm, a new fuzzy multiple objective programming method is proposed in (Borovička, 2016). This method accepts the vague input data (variable in time) which is expressed by the triangular fuzzy number. This method is inspired by KSU-STEM method (Lai & Hwang, 1996).

1.1. Algorithm of the fuzzy multiple objective programming method

The mentioned fuzzy method is applied in the practical part of this article. A detailed description of the algorithm can be found in (Borovička, 2016). So now let us describe the algorithm briefly in the following several steps:

Step 1: Define k objective functions. The objective functions can be with the strict and also vague coefficients. The vague coefficients are expressed by the triangular fuzzy numbers. Their parameters are calculated on the basis of the variable historical values. The objective function can be minimizing or maximizing. The vector of weights of the objective functions is determined by a scoring method (Fiala, 2013).

Step 2: The ideal and basal value of each objective function is found on the set of the feasible solution. This set is shaped by conditions of the decision making situation. Now, all objective functions can be converted to the fuzzy goals (Bellman & Zadeh, 1970). The fuzzy goal is expressed as the right-side, or left-side triangular fuzzy number for the minimizing, or maximizing objective function.

Step 3: Model of fuzzy linear programming is formulated. This model can be transformed to the one-objective strict form via the concept of fuzzy goals on the basis of Bellman optimality principle. The solution is found by the particular method.

2. Risk measures

In this section, three often used risk measures are described. Their advantages and disadvantages are discussed. As mentioned above, the risk is connected with the return of the investment instrument or the portfolio as a whole.

2.1. Variance

Very often used measure of the risk is variance (or standard deviation) of the investment instrument's return. According to Rényi (1972), the variance of return of the j -th investment instrument is computed as follows

$$\sigma_j^2 = \frac{\sum_{i=1}^m (x_{ij} - \bar{x}_j)^2}{m}, \quad (2)$$

where x_{ij} ($i=1,2,\dots,m; j=1,2,\dots,n$) is the i -th return, \bar{x}_j ($j=1,2,\dots,n$) is the average return and m is the number of historical returns of the j -th investment instrument. If the dependence among returns of the investment instruments is taken into account, the risk of the portfolio of n investment instruments denoted r_p is formulated as the variance of the portfolio σ_p^2 (Alexander & Francis, 1986)

$$r_p = \sigma_p^2 = \sum_{k=1}^n \sum_{l=1}^n x_k x_l \sigma_{kl}, \quad (3)$$

where σ_{kl} ($k, l=1,2,\dots,n$) is a covariance (variance) of return of the k -th and l -th investment instrument, x_k ($k=1,2,\dots,n$), or x_l ($l=1,2,\dots,n$) denotes a share of the k -th, or l -th investment instrument in the portfolio.

One disadvantage can be the nonlinearity of the risk function. Finding a global optimum is then complicated. To eliminate the nonlinearity, the risk of the whole portfolio can be specified in the simplified form without covariances as the following weighted sum of the variances

$$r_p = \sum_{j=1}^n \sigma_j^2 x_j . \quad (4)$$

This function is indeed linear but ignores the prospective independences among returns of the investment instruments. This fact can be drawback, but it depends on the particular investment decision making situation.

In my opinion, the main disadvantage of the variance concept is the fact that the negative and also positive deviations are included. To get a minimal risk, both deviations are minimized, even if the positive deviation is desirable. A similar situation is in the case of covariances. According to the Markowitz portfolio theory, the portfolio can be diversified by the investment instruments with an opposite development of their returns. Then if the risk is minimized, the return is actually also declined. This drawback can be partly weakened by the concept of semivariance (Markowitz, 1959).

2.2. Semivariance

The concept of semivariance uses only negative deviations from the average value. So the semivariance of the j -th investment instrument's return is formulated as

$$sem\sigma_j^2 = \frac{\sum_{x_{ij} < \bar{x}_j} (x_{ij} - \bar{x}_j)^2}{m} , \quad (5)$$

where m is the number of historical returns less than the average return. The risk of the whole investment portfolio can be expressed in the linear form

$$r_p = \sum_{j=1}^n sem\sigma_j^2 x_j \quad (6)$$

However, the covariances cannot be taken into account. Now, the question is whether the square root of deviations from the average value makes sense. I think that the square roots are unnecessary.

2.3. Average absolute negative deviation

If the inclusion of the covariances is not necessary then the concept of average absolute negative deviation is the best choice from all mentioned risk measures. This concept eliminates all other drawbacks of the previous two concepts. This measure inspired by Konno & Yamazaki (1991) is calculated for the j -th investment instruments as follows

$$AAND_j = \frac{\sum_{x_{ij} < \bar{x}_j} (\bar{x}_j - x_{ij})}{m} , \quad (7)$$

where m is the number of historical returns less than the average return.

This measure indicates the average negative deviation from the average value. In my opinion, this indicator can be comprehensible for a wider range of users than two previous concepts. The calculation is easy, the interpretation of the value as well. The risk of the whole investment portfolio is specified as in the previous concepts by the weighted sum principle

$$r_p = \sum_{j=1}^n AAND_j x_j. \quad (8)$$

3. Portfolio of the open unit trusts and its risk

Imagine the real situation when a human being has some free financial resources. One way how to use them is the investment. As a long-term client of Česká spořitelna, I focus on the investment products offered by this company. In recent time, the market with open unit trusts becomes more and more popular in the Czech Republic. This investment instrument is also suitable for smaller investors. They can indirectly invest money in stocks, bonds or treasuries. Česká spořitelna namely offers mixed, bond and stock open unit trusts. We select 7 mixed funds (*Akciový Mix*, *Dynamický Mix*, *Fond řízených výnosů*, *Fond životního cyklu 2020*, *Fond životního cyklu 2030*, *Konzervativní Mix*, *Vyvážený Mix*), 5 bond funds (*High Yield dluhopisový*, *Korporátní dluhopisový*, *Sporobond*, *Sporoinvest*, *Trendbond*) and 3 stock funds (*Global Stocks*, *Sporotrend*, *Top Stocks*).

3.1. Criteria, data and investment strategies

To make a complex investment decision, the open unit trusts should be evaluated from more perspectives. Three main characteristics are selected - *return*, *risk* and *cost*. The return of the open unit trust is calculated from the historical returns from the period 2011 - 2015. The investment in open unit trusts is rather longer-term. This period is calmer, without extreme falls and drops. So it reflects better a long-term development. A historical early return is calculated on the basis of a comparison of the market price at the end of the month in one year and in the following year. The return is comprehended as a vague element expressed as the triangular fuzzy number. The risk is calculated as three measures (variance, semivariance and average absolute negative deviation of the returns). Cost includes all fees connected with the investment in open unit trust (entry, management, license fees etc.). The data of open unit trusts is shown in the following table (TAB.1). The market prices and incremental cost of the open unit trusts are taken from Česká spořitelna investment centrum (2016). Then the final values of all characteristics are calculated in MS Excel. All values are in %.

TAB. 1: Data of the open unit trusts

<i>Fund type</i>	<i>Open unit trust</i>	Return	Risk			Cost
			Var.	Semvar.	AAND	
<i>Mixed</i>	<i>Akciový Mix</i>	(-11.22,7.12,21.57)	63.01	109.49	8.72	5.46
	<i>Dynamický Mix</i>	(-6.71,5.94,17.33)	32.80	52.39	6.08	3.80
	<i>Fond řízených výnosů</i>	(-1.43,0.19,2.55)	0.80	0.51	0.57	2.59
	<i>Fond životního cyklu 2020</i>	(-4.97,4.14,12.76)	17.57	24.80	4.20	2.83
	<i>Fond životního cyklu 2030</i>	(-9.47,5.73,18.67)	42.90	72.44	7.20	3.97
	<i>Konzervativní Mix</i>	(-18.52,2.67,30.36)	24.32	20.31	2.46	2.01
	<i>Vyvážený Mix</i>	(-4.59,4.67,13.04)	16.77	24.63	4.16	3.08
<i>Bond</i>	<i>High Yield dluhopisový</i>	(-15.28,3.46,22.98)	72.07	94.08	7.11	2.42
	<i>Korporátní dluhopisový</i>	(-8.08,1.92,12.31)	21.33	17.48	3.48	2.73
	<i>Sporobond</i>	(-0.36,4.30,13.03)	7.30	5.68	2.21	2.19
	<i>Sporoinvest</i>	(-0.51,0.52,1.74)	0.20	0.18	0.32	0.89
	<i>Trendbond</i>	(-6.06,3.16,18.18)	39.09	27.75	4.73	2.77
<i>Stock</i>	<i>Global Stocks</i>	(-8.36,12.85,31.73)	98.86	116.30	8.79	6.10
	<i>Sporotrend</i>	(-43.54,-7.61,14.30)	200.21	307.96	13.20	5.35
	<i>Top Stocks</i>	(-14.17,17.65,44.65)	188.11	251.85	12.86	5.69

Explanatory notes: Var. (Variance), Semvar. (Semivariance), AAND (Average absolute negative deviation)

Source: Own calculation in MS Excel

Two investment strategies are specified - *risk-averse* and *risk-seeking*. Risk-averse investor is very concerned about the risk. S/he is able to sacrifice some part of return for a lower level of risk. His/her most important criterion is the risk of investment. A risk-seeking investor is willing to take a higher level of risk in order to achieve a higher return of the investment. The most important criterion for him/her is the return. The cost is more important for a risk-seeking investor due to his/her greater emphasis on the return. According to the investors' preferences, the weights of criteria are calculated via a scoring method. The following table shows the score for a particular criterion and the relevant weight (TAB. 2).

TAB. 2: Weights of the criteria for both investors

Criterion	<i>Risk-averse</i>		<i>Risk-seeking</i>	
	Score	Weight	Score	Weight
Return	6	0.333	10	0.556
Risk	10	0.556	5	0.278
Cost	2	0.111	3	0.167

Source: Own calculation in MS Excel

3.2. Results

We can see in TAB. 1 that the level of risk for each measure is different. This fact is meaningful and was fully expectable. Moreover, the relative relations among risk values are also different for each risk measure. On the basis of these facts, it is not possible to exclude the possibility that the final composition of the investment portfolio can be different according to the used risk measurement principle.

For both investors, the portfolio should be heterogeneous and diversified. On the other hand, too large number of funds might not be transparent and controllable for the investor. So it was decided that only one open unit trust will be in the portfolio from each group. The share of each fund contributing to the portfolio should not be major but also insignificant. From this perspective, a minimum level of fund's share is 20 % and a maximum level is 50 %.

At first, let us focus on the portfolio of open unit trusts for a risk-averse investor. In order to make it, the fuzzy multiple objective programming method described above is applied. The mathematical model from the third step leads to the problem of mixed integer (binary) linear programming due to the conditions mentioned above. This model can be easily solved by the branch and bounds method. TAB. 3 shows the portfolio of a risk-averse investor for each concept of risk measure.

TAB. 3: Portfolios of a risk-averse investor for each concept of risk measure

<i>Variance</i>		<i>Semivariance</i>		<i>Average abs. negative dev.</i>	
Fund	Share	Fund	Share	Fund	Share
<i>Dynamický Mix</i>	23.30 %	<i>Vyvážený Mix</i>	20 %	<i>Konzervativní Mix</i>	21.9 %
<i>Sporobond</i>	50 %	<i>Sporobond</i>	46.22 %	<i>Sporobond</i>	50 %
<i>Global Stocks</i>	26.7 %	<i>Global Stocks</i>	33.78 %	<i>Global Stocks</i>	28.1 %

Source: Own processing in MS Excel

As we can see in this table, the portfolios are different in a composition and also shares. The bond and stock fund is the same. The mixed open unit trust is different. But it is possible to generally say that in these portfolios there are open unit trusts with a lower level of risk. On the other side, it was not reasonable to expect that there are the funds with the lowest level of risk because of other criteria return and cost. For variance concept, a choice of Dynamický Mix can be surprised a little because it has the fifth lowest risk. This result is influenced by its higher return which is the second most important criterion. Higher level of cost does not matter because the cost has too small importance. The shares of the particular funds differ, but the composition of all portfolios is similar. Of course, the different results are affected by the different proportion among the risk values for each risk measurement concept. The following table (TAB. 4) shows the values of watched portfolio characteristics. The return of the

open unit trust is computed as an average of three parameters of the triangular fuzzy number. Further, we can see the proportion of the risk to its ideal value and also the indicator calculating how many times the value of risk is greater than the ideal.

TAB. 4: Output data of the portfolios for a risk-averse strategy

<i>Characteristic</i>	Variance	Semivariance	AAND
<i>Return</i>	7.34 %	7.57 %	7.28 %
<i>Risk</i>	37.69 %	54.84 %	4.11 %
<i>Cost</i>	3.61 %	3.69 %	3.25 %
<i>Risk/basal risk</i>	0.28	0.26	0.38
<i>Risk/ideal risk</i>	20.94	33.94	5.27

Source: Own processing and calculation in MS Excel

A different concept of risk measure indicates a different level of the portfolio risk. In order to compare the values, a level of risk is related to its basal and ideal value. For the concept of average absolute negative deviation, the value of the indicator *risk/ideal risk* is the best (the lowest). However, the value of the indicator *risk/basal risk* is the worst (the highest). The opposite situation occurs for the semivariance concept. So it is not possible to say that one portfolio has less risk than others. The values of return and cost are similar which results from their similar structure.

For a risk-seeking investor, the following table (TAB. 5) shows the composition of the investment portfolio and the values of its characteristics and risk indicators.

TAB. 5: Portfolios and their characteristics for a risk-seeking investor

Fund	Share	Characteristic	Variance	Semivariance	AAND
<i>Vyvážený Mix</i>	20 %	Risk	70.87 %	93.44 %	6.23 %
<i>Sporobond</i>	45.89 %	<i>Risk/basal risk</i>	0.52	0.51	0,58
<i>Top Stocks</i>	34.11 %	<i>Risk/ideal risk</i>	39.37	67.71	7.99
		Return	8.94 %		
		Cost	3.56 %		

Source: Own processing and calculation in MS Excel

It is obvious that the concept of risk measure does not affect the composition of the investment portfolio unlike the previous case. The main reason is that the risk is not the most important criterion so this characteristic has not such an impact on the final composition of the investment portfolio. As expected, the portfolio includes the open unit trusts with a higher return. Bond fund Sporobond shares in all portfolios because of its highest return and the second lowest risk. The values of indicators calculating the proportion of risk level and its basal and ideal value are similarly arranged as in the case

of a risk-averse strategy. However, these values are higher because the risk is not the most important criterion. The return and cost of the risk-seeking investor's portfolio is higher than for a risk-averse strategy. The cost is higher because the open unit trusts with a higher potential return usually have a higher cost. It is confirmed that a higher level of accepted risk can lead to a higher return. This relation was also confirmed on the simulated returns of the selected open unit trusts. But this analysis is not a part of this article.

Conclusion

This article firstly introduces (fuzzy) multiple objective programming concept which can be used for a portfolio making. One of the most important portfolio characteristic is the risk. Three selected risk measures are described. Their advantages and disadvantages are specified. In terms of making the portfolio of open unit trusts, the influence of risk importance and the method of risk measurement on a composition of the investment portfolio is studied. It is confirmed that a higher level of accepted risk leads to a lower level of return. A risk-seeking investor has a chance to a higher return than a risk-averse investor on the basis of the used historical data. It is not possible generally to say that the use of one risk measure leads to the portfolio with better values of the selected characteristics than for another measure. If the risk is the most important criterion, the final portfolio is the same for all risk measures. Otherwise, a composition of the portfolios is different. However, the shares of the particular types of open unit trusts are similar. So the portfolios are also very similar from the perspective of the values of the specified characteristics. The influence of a risk measure on the investment portfolio appears to be insignificant. On the basis of these results, I recommend using such a risk measure which the potential investor understands and can interpret its value. For future research, other concepts of risk measure could be studied (Value at Risk or stochastic dominance) and the influence of risk could be discussed in more case studies.

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FISCAL REGIME SWITCHES IN SLOVAK ECONOMY: MS-VAR

APPROACH

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Abstract:

This paper investigates the switches in Slovak fiscal policy. Two regimes of fiscal policy were identified by Markov-Switching vector-autoregressive model. In the Regime 1, that lasts on average only for a half of year, the output responds to shocks in taxes and government spending in accordance with expectation: it increases as taxes revenue decreases and spending increases. To the contrary, the fiscal policy in the Regime 2, that is more frequent in the observed period, is non-functional according to the estimated model: the output does not react to impulses in taxes, neither spending. The model was estimated using quarterly time series of Slovak economy for the period 1999:3–2015:3.

Introduction

In the recent years, more and more researchers shifted their interest from monetary policy to fiscal policy as monetary policy hit its edges. Perfect knowledge of consequences of the specific fiscal policy is crucial especially for country such as Slovakia that lost control over its own monetary policy. Mainly, one of the interests is the effect of taxation and government spending on economic growth.

The main aim of this paper is to investigate switches in Slovak fiscal policy. The response of economy to fiscal policy can be various during long period. Slovak economy has to face many challenges, e.g. entering the European Union in 2004, or struggle with the global financial crisis in 2008, during the 21st century. Hence, the presence of the fiscal regime switches is very likely.

Similar studies as this one were published by Ko and Morita (2013), that focus on switches in Japanese fiscal policy, and Afonso, Claeys and Sousa (2009), that focus on Portuguese fiscal policy. Both studies have found strong evidence of switching in fiscal policy.

1. Markov-switching vector-autoregressive model

Since the publication of Hamilton (1994), the Markov-Switching VAR model is one of the standard tools to estimate regime switching models. The VAR model specification of Blanchard and Perotti (1999) with the tax revenue, government spending, and GDP were used.

The MS-VAR model is defined as following

$$\mathbf{Y}_t = \mathbf{C}_0(s_t) + \mathbf{C}_1(s_t)\mathbf{Y}_{t-1} + \dots + \mathbf{C}_p(s_t)\mathbf{Y}_{t-p} + \Sigma^{\frac{1}{2}}(s_t)\epsilon_t, \quad (1)$$

$$\epsilon_t \sim NID_n(\mathbf{0}, \mathbf{I}), \quad (2)$$

where $\mathbf{Y}_t = (\tau_t, g_t, y_t)'$ is vector that consists of tax revenue, government spending, and output. The $\mathbf{C}_0(s_t)$ is vector of constant and $\mathbf{C}_j(s_t)$ is matrix with coefficients at j -th lag, $j \in \{1, \dots, p\}$. The $s_t = 1, \dots, m$ is a latent stochastic process that represents a regime in time t , where m is the number of regimes. We assume that its evolution follows the homogeneous Markov chain. Homogenous Markov chain is adequately described by transition matrix \mathbf{P} , e.g. for $m = 2$ we got

$$\mathbf{P} = \begin{pmatrix} p_{11} & p_{12} \\ p_{21} & p_{22} \end{pmatrix}, \quad (3)$$

where $p_{ij} = \Pr(s_t = i \mid s_{t-1} = j)$, i.e. the probability that Markov chain changes the regime depends only on the previous status of the chain.

The MS-VAR model can be estimated via maximum likelihood or Bayesian method. We use the block-wise algorithm of Sims, Waggoner and Zha (2008) to compute the maximum likelihood estimation. For all statistical programming, the R programming language was used with MSBVAR package created by Brandt (2015).

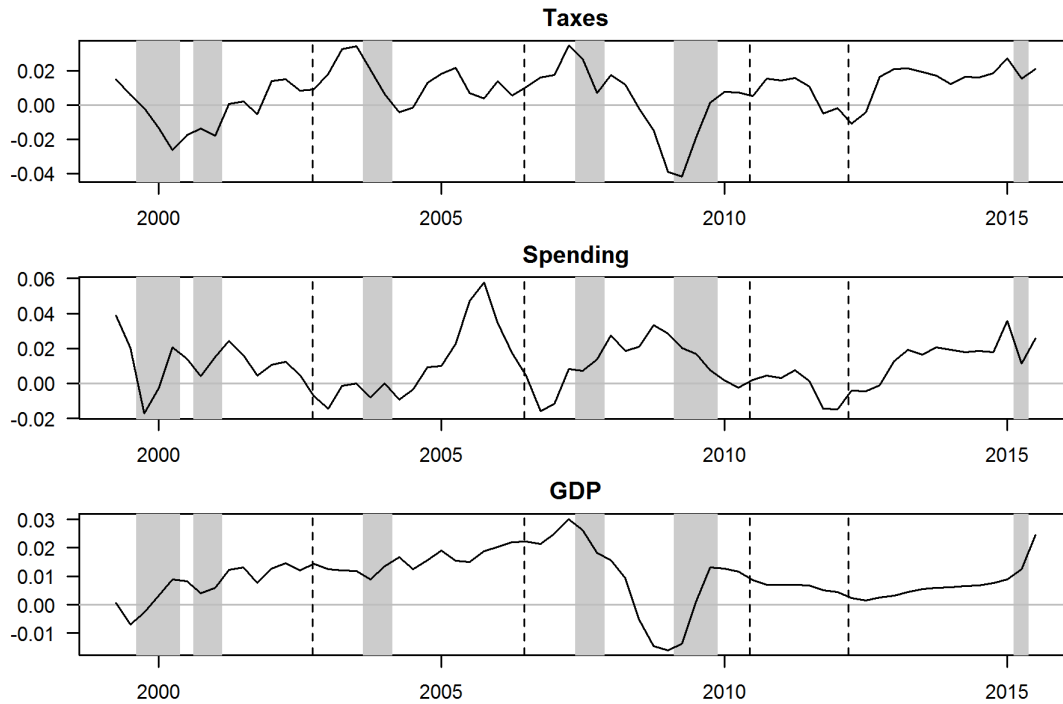
2. Data

In this section we present the data used for the model estimation. Data were downloaded from the Eurostat Database. We use the quarterly data from period starts in the third quarter 1999 and ends in the third quarter 2015. This period was selected because of the availability of data.

The data contains tax revenue, government spending, and GDP. The government spending consists of intermediate consumption, compensation of employees, and gross fixed capital formation of government institutions. The tax revenue contains taxes on products (including VAT), and taxes on income and wealth. All variables were seasonally adjusted and transformed to real variables using GDP deflator with base year 2010. Finally, the variables were transformed to growth rates via logarithmic

differences. The time series in form of growth rates with estimated regimes are in the Figure 1.

FIG. 1: Graphs of growth rates of tax revenue, government spending and GDP with estimated regimes (Regime 1 shaded) and Slovak parliamentary election (vertical dashed lines)



Source: Eurostat Database

3. Description of estimated regimes

Because of the length of the time series and characteristics of Slovak economy, we estimated MS-VAR model with 2 regimes. Other specifications with 3 regimes were taking into the consideration, however they did not improve the estimation, and thus we decided to include only the smaller model with 2 regimes. Finally, we decided to include only the 1st lag of the variables that gives the best fit according to Bayesian information criterion (BIC).

The estimated transition matrix is following

$$P = \begin{pmatrix} 0.523 & 0.477 \\ 0.096 & 0.904 \end{pmatrix}. \quad (4)$$

According to the estimation, the chain stays in the Regime 1 with probability only 52 percent and in the Regime 2 with probability nearly 90 percent. We can calculate the average length of period during which regimes do not change. It is approximately 2 quarters (a half of year) for the Regime 1 and 10 quarters (2.5 years) for the Regime 2.

The Regime 1 is not persistent and the Markov chain tends to leave the Regime 1 just few quarters after its entrance.

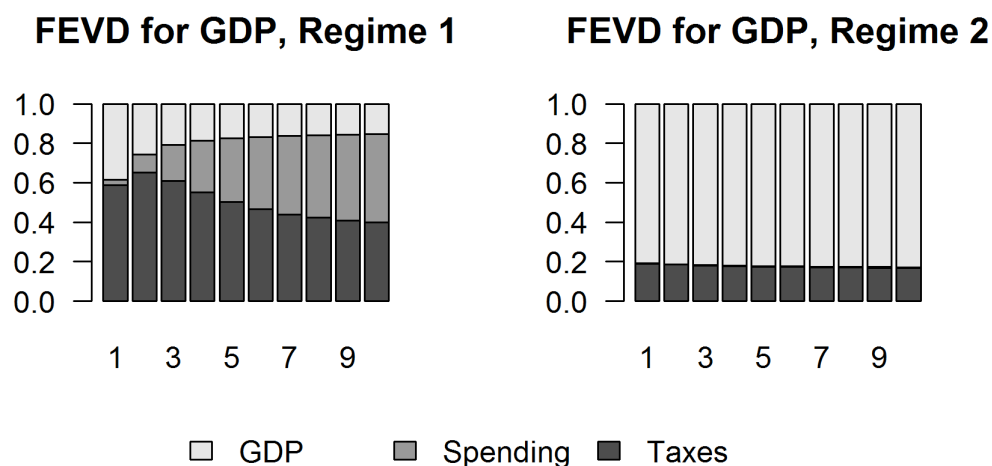
The graph of the occurrence of the Regime 1 is part of the Figure 1. The Markov chain was decided to be in the Regime 1 if the smoothing probability of the Regime 1 was higher than 0.2. This lowered threshold was chosen because of the low persistence of the Regime 1. We observe that the Regime 1 occurred in the beginning of the observed period, shortly in 2004, 2008, 2010 and at the end of the observed period.

One would expect that the regime switching would be dependent on political cycle. In the Figure 1, the vertical dashed lines represent Slovak parliamentary election. Clearly, there is no evidence of relationship between political cycle and fiscal policy switches.

4. Forecast error variance decompositions and impulse responses

To investigate the relative contribution of impulses to output fluctuations, we compute the forecast error variance decompositions. Figure 2 displays the contributions of each impulse to the forecast error variance decompositions of the GDP over a horizon of 10 quarters.

The main finding is following. The error variance of the GDP in the Regime 1 is affected by all variables. The influence of the GDP itself is the strongest at the beginning and slowly decreases to 10 percent. On the contrary, the effect of the government spending is almost 0 at the beginning and increases up to 45 percent. The effect of tax revenue is strong through the whole horizon. In the Regime 2, the most of the error variance of the GDP is explained by the GDP itself. The remaining part (20 percent) of the error variance is explained by impulse in the tax revenue and there is no influence of government spending.

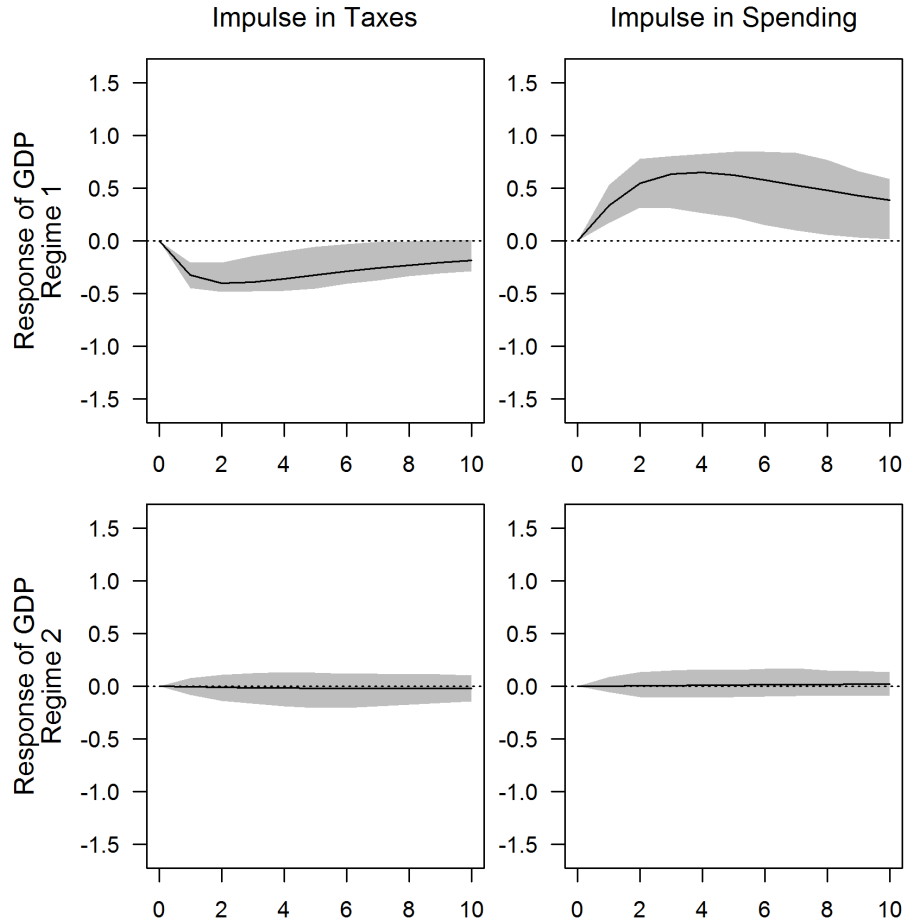
FIG. 2: Forecast error variance decompositions for.

Source: own

In the Figure 3, there are reported impulse response functions for Regime 1 and Regime 2. For each regime, we collected response of 10 periods of the horizons. The solid line is impulse response function and the shaded area is 90 percent confidence interval. The columns represent impulses in the tax revenue and government spending, and the rows represent response of GDP in both regimes.

In response to a tax revenue impulse in the Regime 1, the GDP growth decreases by 0.5 percent in the second quarter and then slightly increases to the minus 0.25 percent after 10 quarters. Contrarily, the GDP growth increases up to 0.75 percent after 3 quarters and then slightly decreases to 0.5 percent after 10 quarters as response to a government spending impulse. In contrast, the GDP does not response neither to impulse in tax revenue nor in the government spending in the Regime 2.

FIG. 3: Impulse response of GDP on impulse in Taxes and Spending for both regimes.



Source: own

Conclusion

The Markov-Switching vector-autoregressive model has identified 2 regimes in the Slovak fiscal policy during the observed period. In a more detailed look, the 2 estimated regimes significantly differ.

The expected effects of fiscal policy were found only in the Regime 1. The GDP increases as the tax revenue decreases and government spending increases. However, the Regime 1 only occurred few times and last short period. In the Regime 2, that was more frequent in the observed period, the GDP does not respond neither to tax revenue nor government spending. We can conclude that fiscal policy has different impacts on the economic growth in each regime.

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INTERNET AND SOCIAL NETWORKS AS A SUPPORT FOR COMMUNICATION IN THE BUSINESS ENVIRONMENT – PILOT STUDY

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Keywords:

corporations – Internet – social network – utilization

JEL classification: M10, M30, O30

Abstract:

The paper brings comparison of gained data on utilization of various means of communication of small and medium size enterprises with clients and utilization of social networks for private and corporation purposes. The most frequently used social networks like Facebook, Twitter and Google+ were explored. The results were obtained using a questionnaire and a guided interview. Despite the significant expansion of social networking in personal life, this boom did not occur in a selected sample of businesses that participated in the pilot testing. The adopted methods demonstrated their potential and will be applied in the wide scale in the following stage of the research.

Introduction

Web2.0 has brought corporations new challenging ways of communication with customers. The paper discusses ways of communication which companies offer to customers on their websites from standard contact via telephone and e-mail to social networks. The core of the contribution deals with actual utilization of social networks with the real role of social networking in corporation setting. Perception of positive potential or contrary perception of negative obstacles arising from implementation of social networking is presented on a selected sample of small and medium size enterprises.

The structure of the paper follows the standard pattern: methodological frame comprising applied methods, research goal, questions, tools and concluded with literature review focused on definitions of key terms, the core of the paper can be found in the chapter 'Findings' with graphs illustrating the results, 'Discussion' and 'Conclusion' summarize and highlight the main ideas.

The findings might be beneficial for businesses searching for information on this currently widely discussed issue as they bring findings directly from the field and might help them to get familiar with this social networking way of interactions via true experience of similar size businesses.

1. Methods, literature overview

1.1. Methods and goal

The pilot survey was run with seven small and medium sized enterprises in 2016 which were firstly contacted by e-mail, then in person and which consequently agreed to engaging into the survey. A brief questionnaire followed by a guided interview was chosen as an appropriate research tool for gaining data from selected companies. Respondents were owners or employees where five companies out of seven were represented by their owners and two companies by ordinary employees. All companies have been firmly established on the Czech market for more than 20 years. To this correspond the age of owners; all of them belonged to the age category 50+.

The goal of the paper is to map the real situation in utilization of individual means of communication between companies and their customers in the Internet environment presented on the company web from telephone and e-mail contacts to social networks.

The sub-goal of the paper is to identify possible connections in the use of social networks for private purposes and seen potential for business purposes.

Three research questions were stated:

- a) If the company presents itself on own websites, will it have its profile also on social networks?
- b) If the company has its social network profile, will respondents use social networks for private purposes, as well?
- c) If the company doesn't have social network profile, will be there an effort to create it within a year?

Primary and secondary sources were used. Primary sources were gained from the companies that would like to stay in the anonymity. As for secondary sources, they comprised websites, information gathered from professional journals, technical literature, discussions or participation at professional seminars or conferences. Then it was necessary to select, categorize and update available relevant information from the collected published material.

The chapter 'Findings' presents the issue firstly from the company perspective and then from the respondents perspective. That is way there are different numbers of answers.

1.2. Literature overview

Web 2.0 concept was defined by Tim O'Reilly in MediaLive International in 2004 as a designation of the new generation of the Web. Reillyho definition of Web 2.0 is as follows: "Web 2.0 is the business revolution in the computer industry, which is caused

by deflection in the understanding of the Web as a platform. Key among those rules is this: build applications that will get better due to the network effect with an increasing number of people." Tim O'Reilly (2005) defined the main differences between classical Web site and a new generation web. In terms of software development Web 2.0 is characterized as a shift from centralized processing and services to decentralization. The 2nd generation web gave users the ability to handle their website and use social networks to converge with other users and attract potential customers (commercial use). Web 2.0 is in thefreedictionary.com (2016) defined as "the internet viewed as a medium in which interactive experience, in the form of blogs, wikis, forums, etc., plays a more important role than simply accessing information". For the purposes of our research a shortened definition of Web 2.0 was selected: "Web 2.0 is a term for applications, where the user communicates with other users and he/she affects the content".

A concise definition of social networking fitting our survey was taken from Brown et al. study (2013) "Social networking is a process and practice that draws people and organizations together in an electronic medium". Generally speaking social network on the Internet is considered to be a group of people who communicate and share documents and information on users. The Social Network concept is described and defined by Boyd and Ellison (2017). "Social networking is defined as a web service that allows individuals to create a public or semi-public profile within the bounded system, create a group of users with whom they share a connection, and browse the list of own connections and that created by other users of the system. The nature and terminology of these connections may be different network from the net-work." The similar, but shorter definition has Ahlqvist et. al. "Social media refers to the means of interactions among people in which they create, share, and exchange information and ideas in virtual communities and networks." Kaplan and Haenlein (2010) define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content." Thefreedictionary.com (2016) defined social media as "the websites and applications considered as collectively constituting a medium by which people share messages, photographs, and other information, especially in online communities or forums based on shared interests or backgrounds."

2. Findings

Seven entrepreneurial subjects and twelve respondents were involved into the survey of the pilot stage. Standard ways of communication were followed like telephone and e-mail address and then ways of communication via networking. Utilization of Facebook, Twitter and Google+ as the most frequently used social networks in our country were explored.

All participating enterprises were ranked as micro or small size enterprise. Defining the size of the enterprise can be approached from various perspectives. Conditions for

obtaining grants from CzechInvest (2016) were applied in categorization for the purposes of this paper. The basic criterion for assessing the size of businesses, the number of employees, size of annual turnover and annual balance sheet (asset size). The data to be used for determining the number of employees and financial quantities shall be data relating to the last closed tax period and calculated on an annual basis.

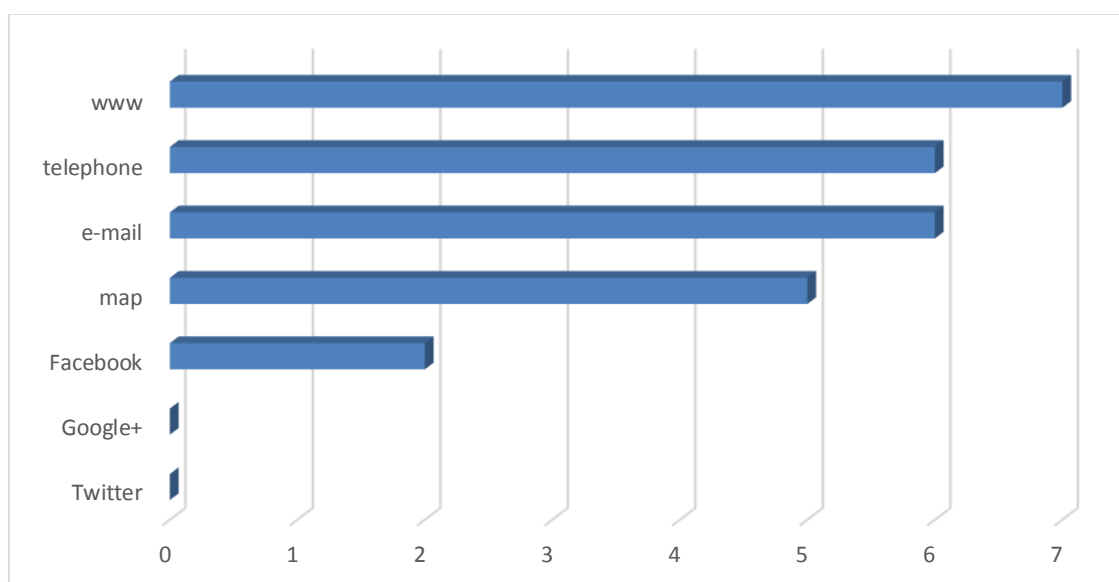
- a) Micro, small and medium entrepreneur is considered the one that employs fewer than 250 employees and an annual turnover doesn't exceed EUR 50 million or an annual balance sheet total doesn't exceed EUR 43 million.
- b) Within the small and medium size enterprise (SME) category, a small enterprise is defined as an enterprise which employs fewer than 50 people and whose annual turnover or annual balance sheet total does not exceed EUR 10 million.
- c) In the category of small and medium enterprises are small entrepreneurs addressed as entrepreneurs who employ less than 10 persons and whose annual turnover or annual balance sheet total does not exceed EUR 2 million.

Similar conditions can be found in the Accounting Act no. 563/1991 Coll.

The following part brings results relating to options on ways of being contacted which individual companies offer to their potential customers on company's websites.

All analysed companies had their company websites which had been the prerequisite for incorporating them into the survey. Fig.1 illustrates the findings. We have been searching contact possibilities for the information about the company on their websites.

FIG. 1: Technologies used for communication

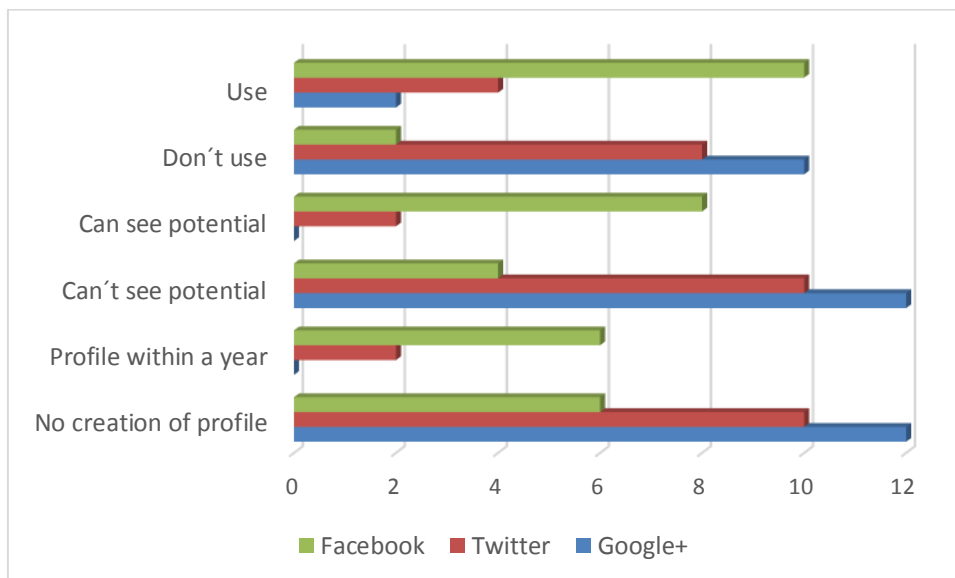


Source: own elaboration

Except for the smallest enterprise all explored companies offer telephone and e-mail contact. The smallest company informs the potential customers only on its activities and the seat of the company. Placing map onto the website has become a standard attribute of a company in the on-line presentation which corresponds to the findings. Surprisingly only two companies have link to social network, both to Facebook which dominates on the social network scene.

The other part of findings deals purely with social networking. It discusses results gained from twelve respondents from explored companies on utilization of social networks in private life and their role and perceived potential of their introduction into the business, fig. 2. There were monitored 6 categories: use/no use of individual social in private life, seen/not see potential of these networks for business purposes and finally creation/no creation of a company profile on these networks within a year.

FIG. 2: Utilization of Facebook, Twitter and Google: private purposes, potential for business activity and future



Source: own elaboration

Only two respondents do not use Facebook at all. Those two respondents can't see any potential in Facebook as well as in other social networks. There is connection between no fancy in use of social networks and seen potential for business activity. But contrary utilization of Facebook for personal purposes doesn't guarantee belief in social network power in the business field. Two people out of 10 active users are even strictly against incorporating Facebook profile onto the company website.

Two thirds can see potential of this social network for business activities and half finds creating a profile on Facebook within a year feasible. When the issue is summarised from company perspective, two companies already have a Facebook profile and 3

companies are going to create their Facebook profile within a year. Two companies resist any social networking.

4 respondents from two companies who are in this case their owners have Twitter account. But owners of only one company can see potential of Twitter in business and are currently planning to create a link to Twitter social network on their company websites. As for Google+ there were only two users who had her profile on this social network. Potential of this Google+ for business purposes could see no one.

3. Discussion

During the structured interviews it was found out that all respondents are active in the use of various social software applications like Instagram (6 respondents) so that they could see photos and videos; all of Instagram users get logged from their Facebook, three respondents use Viber mostly for instant messaging, exchange images and calling. Five have Skype account and 5 Messenger and only one has profile on LinkedIn. Why respondents who are so active in various kinds of on-line communication cannot see potential in mostly used social networks in our country for both private and business purposes? Is that because their companies are well established and they feel no need to widen their image on the market? Is there any connection to the age of respondents?

Conclusion

The answer to the first research question is ambiguous. Presenting the company on own websites doesn't guarantee link to social networks. Only two companies out of seven had their profile on the dominant network Facebook. Following question dealt with possible connection between social networking of company and social networking for private purposes of respondents. No influence was identified. Ten respondents use Facebook for private purposes but none of them had played any role in introducing Facebook on company websites. Fruitful seems the third question relating to the future action; the intention of the company which still doesn't have its network profile to create it within a year. Three out of five companies can see potential in social networking and are planning to create the net profile. The findings might be beneficial for businesses searching for information on this currently widely discussed issue as they bring findings directly from the field and might help them to get familiar with this social networking way of interactions via true experience of similar size businesses.

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THE IMPACT OF RECODIFICATION ON THE SQUEEZE-OUT IN A COMPARATIVE PERSPECTIVE

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Keywords:

joint-stock company – majority – re-codification – squeeze-out – shares

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Abstract:

The dynamics of the participation in a joint-stock company are crucial not only for the company and its shareholders, but as well for stakeholders at large and potentially even for the entire society. Basically all states on both sides of the Atlantic decided to regulate at least certain aspects of the shareholder participation. The squeeze-out belongs clearly to them and it is highly illustrative to assess and compare how the squeeze-out is regulated in the Czech Republic, before and after the recodification, and in other states. The collected prima and secondary data, qualitative and quantitative, is processed by Meta-Analysis and Pearson's chi-square test. The results provide an indication about the perception of the (in) effectiveness of legislative regulatory changes and the perception and attitude of the squeezed-out shareholders in general.

Introduction

Joint-stock companies and limited liability companies are conventionally classified as capital companies, as opposed to personal companies represented by open commercial companies, commanditary companies and other companies with partnership features. Indeed, joint-stock companies are perceived as the most "capital" company type with a dramatic reduction, if not elimination, of the personal feature linked to its shareholders. Anonymous trading of such shares on various stock exchange markets further magnifies the depersonalization of joint-stock companies and their shareholders, and reinforces the perception of the joint-stock company as a juridical person distinct from shareholders.

However, it is well known that shareholders, especially majority shareholders, dispose with control and governance instruments vis-à-vis joint-stock company and that this, along with anonymous and free trading of shares, represents very fine and fragile mechanisms. In extreme situations, these mechanisms can easily get distracted and unbalanced and produce a situation not compatible with a general perception of justice, fairness and the social contract as such. A typical example is the scenario when, for

whatsoever result, the comfortably controlling packet of shares end in one set of hands or several co-ordinated sets of hands and the previous e.g., family, control and professional (outside) management are substituted instead by excess controls and descendent management leading to both lower valuation and performance (Gama & Galvão, 2012). Boldly, if one shareholder or one agreed upon group of shareholders have so many shares in a joint-stock company, then the remaining shareholder(s) do not have any real power to influence the management of the joint-stock company, including the profit distribution, and basically become passive investors tempted to become active by suing the majority shareholder, CEO, Board of Directors, etc. To avoid an extreme hardship, a paralyzing agony, inefficient law suits and other actions destroying the company, the national laws steps in and regulates the compulsory sale of the shares of minority shareholders of a joint-stock company for a fair cash compensation, a squeeze-out which sometimes can become a freeze-out. Such legislation should assist in re-installing a peaceful, effective and efficient situation and the balance of the compensative and distributive justice, when one or more shareholders who collectively holds or controls a comfortable majority of shares in a joint-stock company is to gain ownership of the remaining shares for a fair payment to minority shareholders. This legislation may extend to both, situations involving one company as well as more merging or leveraging companies, and may be perceived as an enforcement tool, either against majority shareholders or minority shareholders, depending upon the perspective, the real situation of the company, and of course the so called fair price to be paid.

It is highly illustrative to research and describe the dynamics of the recent evolution of the squeeze-out regulation in the Czech Republic, assess its perception based on the primary data yield from questionnaires combining solid quantitative mathematic data and drive to qualitatively go deeper to underlying concepts (Silverman, 2013) and examined by the cross-classified categories using Pearson's chi-square test (Pearson, 1900) in its modern perception (Franke, Ho & Christie, 2012), and compare it with current regulations of squeeze-out in selected countries.

Indeed, the forced sale of the minority shares is a complex issue with which basically all developed countries struggle and a lesson learned about its various legislative regulations and their impact is a source of highly relevant data and suggestions. Indeed, an optimal and commonly acceptable regulation of squeeze-out belongs, or at least should belong, to priorities of all developed states determined to provide a good and stable business environment allowing business economics and management compatible with the mandate of the global economy success and sustainability in the 21st century.

1. Methods, literature overview

There is an abundance of secondary data about the squeeze-out regulation and its recent evolution in the Czech Republic and abroad, and they include legislation, case-law, various commentaries as well as academic articles. They present, among other material,

empirical studies which indicate many problems related to the separation and/or disbalancing of control of a company (Goshen & Hamdani, 2016) and "ownership" of shares (Gilson & Schwartz, 2015), to changes in the distribution and duality of shares (Nüesch, 2016), agency problems (Venezze, 2014) and paralysation and devaluation of minority shares, majority shares or even the entire company, and to the eternal balancing of the external (country-level, i.e. law) and internal (firm-level, i.e. bylaws) governance (Kim, Kitsabunnarat-Chatjuthamard & Nofsinger, 2007). Their critical research and comparative analysis yields valuable information with a medium novelty and originality and relevant to be recapitulated and further processing. There is a lack of primary data about the squeeze-out regulation, its recent evolution and their perception by a very particular and perhaps the most concerned group, the Czech squeeze-out shareholders. By a direct field search and questionnaire investigation, the authors obtained this valuable data and processed it by using Pearson's chi-square test. They present this raw primary semi-result and by Meta-Analysis, as suggested by Heckman (2005) and Glass (1976), and combine them with the recapitulation of the secondary data. This battery of qualitative and quantitative data exposed to the indicated methods ultimately leads to highly original bottom-up suggestions reflecting domestic perceptions in the light of changing domestic regulation as well as regulations abroad.

This implies as well a quartet of goals - (i) to recapitulate selected features of squeeze-out regulations in selected countries, (ii) to research and describe the regulation of the squeeze-out before and after the recent Czech re-codification, (iii) to obtain the data about its perception by a particular and highly relevant group of respondents, namely squeezed-out shareholders before and after the Czech re-codification and work on a related hypotheses (H1-H4), and most importantly (iv) to take an open-minded approach, combine all information, discuss it and present bottom-up suggestions and recommendations in the light of the domestic as well as abroad settings.

2. Results - the squeezed-out regulation and its perception

The squeezed-out regulation is an integral part of national laws in almost all developed countries. The national particularities, along with social and economic priorities, result in certain differences in national legal frameworks and their application regarding the omnipresent and highly similar issue of the termination of the participation of minority shareholders in joint-stock companies. Therefore, it is highly illustrative to recapitulate the status quo abroad, as well as the dynamics of the recent evolution of the squeezed-out regulation and its perception in the Czech Republic.

2.1. Selected features of squeeze-out regulations in selected countries

The squeeze-out issue is omnipresent and the subject of regulations on both sides of the Atlantic. The increase in the liquidity of shares may boost market value (Gebka, 2014), but the concentration of virtually all shares in one set of hands might constitute a quasi-

antitrust issue requiring a law regulation, such as of the squeeze-out. Although the definition of the squeeze-out and the pre-conditions of its application are set differently (e.g., deals within one company vs. a takeover or merger involving more companies), the main features of the squeeze out regimes are very similar. Certainly the EU harmonization by the Takeover Directive 2004/25/EC contributed to it. Namely, the threshold is set basically all over as 90% or 95% and the "fair" price is to be paid for the minority shares. Table 1, along with the note below, indicates that once the squeeze-out is identified and pre-conditions met, the national law explicitly provides very similar regimes, i.e. a similar setting of the threshold and of the price to be paid, and thus the discussion generally oscillates around two issues - whether the pre-conditions are met, and if yes, whether the "fair" or "equitable" price to be paid is in compliance with the perception of justice.

TAB. 1: The squeeze-out threshold in selected countries

Country	Threshold	Law / Act of Parliament
EU		Directive 2004/25/EC on takeover bids – section 5 et foll.
Belgium	95%	Lois relatives aux offres publiques d'acquisition
France	95%	Law no. 2006-387 on takeover bids
Germany	95%	Wertpapiererwerbs- und Übernahmegesetz vom 20. Dezember 2001 (BGBl. I S. 3822) Aktiengesetz vom 6. September 1965 (BGBl. I S. 1089), das zuletzt durch Artikel 5 des Gesetzes vom 10. Mai 2016 (BGBl. I S. 1142) geändert worden ist – section 327a et foll. Ausschluss von Minderheitsaktionären
Italy	95%	2007 amendments to Financial Services Act
Netherlands	90 % or 95% (listed public company)	2007 amendments to Financial Supervision Act (Wet financieel toezicht
Spain	90%	Law 6/2007 (which amended Spanish Securities Act 24/1988, of 28 July)
Sweden	90%	Takeover Act (lagen (2006: 451) om offentliga uppköpserbjudanden på aktiemarknaden)
United Kingdom	90%	The Companies Act 2006 (c 46) – section 979 Right of offeror to buy out minority shareholder
United States		
United States - Delaware	90%	8 Delaware Code § 253 Merger of parent corporation and subsidiary or subsidiaries

Source: Authors' own research and processing

In Germany, the price is determined by the main shareholder based on documents provided by the Board of Directors, see sect. 327a et foll. AktG. In the UK, the price for the minority shares should be basically the same as the price for the majority package, see sect. 979 et foll. Companies Act 2006. Similarly, in Spain, the equitable price to be paid for the minority shares is that which corresponds to the consideration offered in a previous bid. Indeed, the Takeover Directive brings a legal presumption of a fair bid price under certain conditions and it is highly interesting to identify the circumstances

reversing this fairness presumption and inquiring about reasons why the original bid failed to be accepted (Kaisanlahti & Nofsinger, 2007). The decisions seem very casuistic and reflecting national particularities, including the readiness to apply several methodologies of evaluation (Jinoria, 2015 and Dollinger, 2008). Hence, the threshold is settled, but not the price, i.e. the issue of determination of the fair and equitable price to be paid in the squeeze out situation is still heavily discussed and a reconciliation about it does not seem to be pending.

2.2. The squeeze-out before and after the recent Czech re-codification

The squeeze-out as the forced transfer of the minority shares by the shareholder(s) having at least 90% shares is well known to Czech society and law. Since the transfer occurs by the operation of law based on the formal publication of the will of the majority shareholder, the possible acceptance or rejection by minority shareholders is reduced to the mere objection regarding the adequacy of the price paid by the majority shareholders for their shares. This was perceived as a violation of constitutional rights and brought before the Czech Constitutional Court which ruled that the regulation of the squeeze by the Act No. 513/1991 Coll., Commercial Code, is not in breach with the Constitutional law and order. The Commercial Code allowed for the 90% majority shareholder to go ahead with the squeeze-out, provided a fresh expert appraisal was presented and the minority shareholders could merely ask the court to review the adequacy of the price set by the majority shareholder. The majority shareholder and minority shareholders were inclined to interpret differently the available data relevant for appraisal and this led to conflicts (Lankašová, 2016) and while often the person ordering and paying the expert was the majority shareholder, many appraisals of share values were challenged by minority shareholders to be highly underestimated. If a minority shareholder succeeded with such a claim, the surplus compensation to reach the adequacy was paid just to him.

Although, the Commercial Code regulation survived the constitutional scrutiny, its days of application were over due to the massive re-codification of the Czech private law in 2012. The Commercial Code was abolished and the new Act on Business Corporation includes a changed squeeze-out regulation, which incorporates the EU standards, i.e. the duty to treat all minority shareholders in the same manner. This was translated in the generalization of the law outcome, i.e. when one majority shareholder succeeds with his claim for the surplus compensation; all other "underpaid" minority shareholders have automatically the right to get the same extra payment from the majority shareholder, without the need to launch their own court proceedings.

2.3. *The perception of the squeezed-out regulation and its application before and after the recent Czech re-codification*

Already the squeeze-out according to the abolished Commercial Code was adjudicated to be in compliance with the Constitutional law and the academic literature pointed out that the squeeze-out is economically efficient and socially prosperous (Dvořák, 2007), it helps to improve the administration of the joint-stock company and avoids unnecessary objections and lawsuits brought by "eternally" dissatisfied and constantly complaining minority shareholders. It is assumed that the opinion of minority shareholders remains the same, they feel sacrificed, chased from "their" prosperous companies and expropriated for an inadequate consideration. However, this assumption is not founded upon any strong data and thus the authors decided to execute a primary questionnaire inquiry with respect to squeeze-out minority shareholders before and after the re-codification. Each group of shareholders was further divided according to the value of the minority shares, i.e. under or over CZK 100 000. The questionnaires included 10 closed questions, 5 half-closed questions and 2 open questions. One hundred questionnaires were sent to each group and the first group had the return rate of completed questionnaires by 98%, the second group by 95%. The collected data was assessed by categorial data analysis with assistance of the program Statistika. The level of importance was set $\alpha=0,05$ and the dependency of quantitative signs was done by the Pearson's chi-square test, for which use the conditions were met ($n>40$).

For the first group, the following two hypotheses were set: the squeeze-out shareholder agreed upon the price of shares (H1) and the squeeze-out shareholder applied his right for surplus compensation to reach the adequacy (H2).

TAB. 2: H1 and H2 - The squeeze-out shareholders before the re-codification

H1	YES	NO	Totals
Shares no more than CZK 100 000	35	20	55
Shares over CZK 100 000	15	28	43
Total for H1	50	48	98
H2 (respondents negative to H1)			
Shares no more than CZK 100 000	15	5	20
Shares over CZK 100 000	25	3	28
Total for H2	40	8	48

Source: Authors' own research and processing

Regarding H1, the value of the Pearson's chi-square is $X^2 = 7,983$ and the level of the importance is $\alpha=0,05$, i.e. $X^2_{0,05}(1) = 3,841$. Since $X^2 > X^2_{0,05}(1)$, there is a dependency between signs, i.e. squeeze-out shareholders agreed upon the price set and paid by the majority shareholder during the application of the Commercial Code regime. Regarding H2, the value of the Pearson's chi-square is $X^2 = 1,714$ and the level of the importance is $\alpha=0,05$, i.e. $X^2_{0,05}(1) = 3,841$. Since $X^2 < X^2_{0,05}(1)$, there is not a

dependency between signs, i.e. the squeeze-out shareholder did not claim the surplus compensation to reach the adequacy of the price set and paid by the majority shareholder during the application of the Commercial Code regime.

For the second group, the following two hypotheses were set: the minority shareholders are aware about their new rights in the case of the squeeze-out (H3) and the squeeze-out shareholders applied their right for the payment of the price difference (H4).

TAB. 3: H3 and H4 - The squeeze-out shareholders after the re-codification

H3	YES	NO	Totals
Shares no more than CZK 100 000	35	20	55
Shares over CZK 100 000	25	15	40
Total for H3	60	35	95
H4			
Shares no more than CZK 100 000	34	21	55
Shares over CZK 100 000	24	16	40
Total for H4	58	37	95

Source: Authors' own research and processing

Regarding H3, the value of the Pearson's chi-square is $X^2 = 0,111$ and the level of the importance is $\alpha=0,05$, i.e. $X^2_{0,05}(1) = 3,841$. Since $X^2 < X^2_{0,05}(1)$, there is no dependency between signs, i.e. minority shareholders are not aware about their new rights in the case of the squeeze out. Regarding H4, the value of the Pearson's chi-square is $X^2 = 0,0321$ and the level of the importance is $\alpha=0,05$, i.e. $X^2_{0,05}(1) = 3,841$. Since $X^2 < X^2_{0,05}(1)$, there is no dependency between signs, i.e. minority shareholders did not apply their right for the payment of the price difference, i.e. surplus compensation to reach adequacy.

3. Discussion

Squeeze out regulations have become an integral part of national laws of the majority of countries, without openly admitting the empirical evidence that ownership concentration in a company may be a substitute for weak shareholder protection laws and that countries with weak minority shareholder laws are more likely to have companies with undesirable boards (Kim, Kitsabunnarat-Chatjuthamard & Nofsinger, 2007). Interestingly this balancing remains strongly nationally particular while the requirements for the application of one of its mechanisms, the squeeze out, are similar. Indeed, the quantitative requirement for the application of such regulations is basically the same and oscillates between 90% or 95% of shares or votes in direct and/or indirect control. At the same time, many national regulations and their implementation struggle with the determination of the price to be paid to the squeeze out minority shareholders. Considering this, the Czech legislature ambitiously proclaimed that 'we used the

opportunity presented by the re-codification' to clarify and improve the Czech squeeze regime and its application.

However, the conducted field search and bottom up approach suggest that the rhetoric from above does not match the real life perception. Minority shareholders squeezed out before the re-codification basically agreed upon the price and did not ask the court to review the adequacy of the price set by the majority shareholder. A significant factor leading to this result was the extent of their financial involvement, i.e. 56% of the respondents have shares in the value of no more than CZK 100 000 and of them 63% agreed upon the price, 37 % disagree, and only 27% sue. Only 63% of minority shareholders squeezed out after the re-codification knew about the benefits of the new squeeze out regulation and just slightly over one half was ready "to go for it." Considering the data provided in questionnaires along with explanatory interviews, it became obvious that the minority shareholders with shares with a value over CZK 100 000 are slightly more aware about the new regulation and are much more inclined to sue for an adequate compensation surplus than minority shareholders with shares of a value of no more than CZK 100 000. Often minority shareholders who knew the new regulation decided to "wait and see" in hopes that another minority shareholder will spend time, money and efforts to sue for the adequate compensation surplus and so will win the case for all other minority shareholders. Such a speculative approach along with the mentioned low awareness, undermines the ambitions goal of the Czech legislature.

Conclusion

Squeeze-out regulations to be applied in the case of acquisition of a package of 90% or 95% shares in a joint-stock company are common and generally explained by the needs of efficiency of the operation of the company and of the reduction of frivolous paralyzing law suits launched by "desperate" shareholders having a tiny minority of shares. The burning issue is that the majority shareholder can determine the price and launched a law process leading to the forced transfer of minority shares to him for a price determined by him. The effectiveness and generally the justice of that have been many times questioned by the minority shareholders, generally unsuccessfully.

The Czech legislature used the re-codification opportunity to improve the Czech squeeze-out regime. Despite its strong rhetoric, the results look, so far, meagre and the vox populi suggests that the old saying "Cry, minority shareholders!", as translated into the passivity and low law awareness of minority shareholders, remains. This is deplorable, but at the same time not desperate, the new regulation truly offers benefits to minority shareholders and especially if they improve their use of modern IS/IT, or at least their communication skills, it can definitely get closer to the objective, as well as their subjective, concept of both, compensatory and distributive justice.

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NOTE ON THE KNAPSACK PROBLEM WITH RANDOM DATA

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Abstract:

We consider the Knapsack Problem with a fixed load capacity of a ship and random weights of containers. We discuss a simple bound illustrating that (under some probabilistic assumptions) there is a high probability that the capacity of the ship will be utilized almost in full. This shows that even if we do not know the weights of containers exactly, we can ‘bet’ that almost no capacity of the ship remains idle.

Introduction

We consider the following version of the Knapsack Problem: given $w \geq 0$ and $0 \leq c \in \mathbb{R}^n$, the task is to solve

$$\max_{x \in \{0,1\}^n} c^T x \text{ s.t. } c^T x \leq w. \quad (1)$$

In Operations Research, this problem is often interpreted as Container Loading: given a ship with loading capacity w and a family of n containers with weights $c = (c_1, \dots, c_n)^T$ (satisfying $\sum_{i=1}^n c_i > w$ to make the problem nontrivial), the task is to select a subset of containers to be loaded such that sum of their weights is as high as possible under the constraint that the ship does not sink down.

In this text we will treat the container weights c as random variables (formal assumptions are described in the next section). This is a stochastic version of the Container Loading Problem. It has straightforward practical applications whenever we are to load a ship with a known capacity with a family of containers the weights of which are not known in advance; instead of exact container weights we only know a probabilistic distribution of weights. (For example, we could use the observed empirical distribution of weights of containers having passed through the port in the past.)

The main message of this paper is that under certain assumptions, the probability that the ship will be almost fully loaded is ‘high’. Thus, when arriving at a port, even if we do not know exactly in advance which containers will be in the port, we can safely bet

that the unused capacity of our ship will be ‘small’ if the containers to be loaded are determined as the solution of (1).

Related work. During the last decades, uncertainty or imprecision common in real world data motivated involving stochastic elements into optimization models. The Knapsack Problem didn’t stay aside. As a basic overview of results, the comprehensive book Kellerer et al. (2004) can be useful, although not very recent.

In fact, there are several directions of research based on what data are available and what the actual goal should be. All the data in the Knapsack Problem can be subject of uncertainty: the weights and/or the prices of items, and the capacity. The uncertainty itself can be distinguished to two cases: only uncertain domains are known, or the domains are provided with some probabilistic distributions.

Dealing with the former case, *existencial* or *possibilistic* results are of interest, e.g. finding solutions of the problems like “given a set of uncertain weights, what is the best combination of items that surely won’t exceed the capacity?” (the paper by (Yu, 1996) serves as a serious example) or “given the set of uncertain prices, what is the combination of items that maximizes the worst case over the uncertainty region?” (see for example (Bertsimas & Sim, 2004)). There are more papers on robust knapsack, we include Monaci & Pferschy (2013), Nobibon & Leus (2014), Goerigk (2014), Han et al. (2015) to mention some.

The latter case with some probabilistic information over the data is a bit closer to our goal. Several approaches, partially based on stochastic programming techniques (suitable especially for dealing with random prices), form the mainstream here. They are all based on assumption that the decision-maker chooses the items first, before the actual data become known. Usually, the stochastic nature is brought in a model by random weights, rather than prices or capacity. The approaches differ in the goal to be achieved. First, there are some works on *simple* or *two-stage stochastic knapsack with recourse*. The goal is to maximize profit subtracted by some (stochastic) penalty for violating the capacity constraint (Cohn & Barnhart, 1998; Kosuch & Lissner, 2009; Merzifonluolu et al., 2012). Second approach, called *chance-constrained programming* tries to find the combination of item with maximal profit w.r.t. the capacity constraint is satisfied with a given requested probability, see for example (Klopfenstein & Nace, 2008) or (Kleinberg et al., 2000)). Finally, some effort is devoted to *dynamical stochastic knapsack*. One assumes that the items come online one by one. The decision-maker must immediately choose whether the last arrived item is added to knapsack or not. The weight of each individual item is known just after the decision is made. The goal is to propose a strategy how to decide about accepting in a reasonable way (Bhalgat et al., 2011; Kleywegt & Papastavrou, 1998).

Our work in context of the related work. Our work aims to some topics that weren't addressed yet. In fact, it stands somehow between the two mainstream areas: it assumes stochastic nature of data, however, the goal to be achieved is rather of existential nature: we assume the optimization is done *after* the realizations of random data are known, and ask about the probability of *existence* of a good solution. Our approach tries to fill the gap that remained left in the studied topics of the family of knapsack problems.

1. Assumptions

Let w be a fixed constant and let c_1, \dots, c_n be independent random variables with the same distribution Φ , which is assumed to be continuous with support $(0, \gamma)$, where $\gamma > 0$ is a fixed constant. In other words, for any i ,

$$(\forall z \in [0, \gamma])(\forall \varepsilon > 0) \Pr[z - \varepsilon < c_i < z + \varepsilon] > 0. \quad (2)$$

Remark. This is a model for a situation when a container has a maximum allowed capacity γ which must not be exceeded. (And by (2) with $z = 0$, a container can also be almost empty.) The independence assumption can be understood as model for the situation that containers are dispatched by independent consignors.

The ‘easiest’ example of Φ is the uniform distribution. However, it would be more realistic to work with a distribution giving higher weights to the values close to the maximum allowed weight γ .

2. Some properties of the model

Let $x^* \in \{0, 1\}^n$ be the optimal solution of (1) with a fixed $0 < w < n\gamma$ and a random c as described in Section 1. Clearly, x^* is a random variable, too.

Property 1. If $n \rightarrow \infty$, then $c^T x^* \xrightarrow{P} w$.

The proof is easy. Let $k = 1 + \left\lceil \frac{w}{\gamma} \right\rceil$. Define $C_\ell = \sum_{i=1+(\ell-1)k}^{\ell k} c_i$. Now $C_\ell, \ell = 1, 2, \dots$, are independent and identically distributed with support $(0, k\gamma) \ni w$. In particular, for any ℓ and $\varepsilon > 0$, $\Pr[C_\ell \in [w - \varepsilon, w]] =: \pi > 0$ by (2). Now, if n is a multiple of k ,

$$\Pr[c^T x^* \geq w - \varepsilon] \geq \Pr[(\exists \ell) C_\ell \in [w - \varepsilon, w]] \quad (3)$$

$$\begin{aligned} &= 1 - \Pr[(\forall \ell) C_\ell \in (0, w - \varepsilon) \cup (w, k\gamma)] \\ &= 1 - \Pr[C_1 \in (0, w - \varepsilon) \cup (w, k\gamma)]^{n/k} \end{aligned} \quad (4)$$

$$= 1 - (1 - \pi)^{n/k} \xrightarrow{n \rightarrow \infty} 1$$

since π and k are independent of n . In (4) we have used the fact that all C_ℓ are independent and have the same distribution as C_1 . The proof is complete.

Thus, if $n \rightarrow \infty$, the distribution of $c^T x^*$ degenerates to the single point w . Moreover, the proof also shows:

Property 2. *For every fixed $\varepsilon > 0$, the probability that the optimal loaded weight $c^T x^*$ is worse than $w - \varepsilon$, is exponentially small (with respect to n).*

Remark. The bound (3) is obviously very loose. In fact, it does not use any properties of the optimization formulation (1); it just tells us that if we have a random variable taking a value in a given interval with nonzero probability, and we sample the value of the random variable infinitely many times, then we will hit the interval. Nothing more. Although this is sufficient for the main message of this text, which is devoted to practical problems in Operations Research, it would be interesting to find less trivial estimates.

3. Insightful example

In the previous section we observed that we can safely bet that the idle capacity of our ship will be small. To get some further insight, we consider this example: let $n = 10$, $w = 1000$ and

$$c_i \sim \text{Unif}(0, 300) \text{ independent, } i = 1, \dots, n.$$

Figure 1 shows 50 simulated instances. A line in the left picture consists of ten bricks the widths of which are c_1, \dots, c_n (after sorting $c_1 < c_2 < \dots < c_n$). The red (or: dark if you are reading a B&W version) bricks correspond to the loaded containers ($x_i^* = 1$) the green (or: light in a B&W version) correspond to the opposite case ($x_i^* = 0$). The right picture displays the sums of weights of the loaded containers, i.e. the optimal values $c^T x^*$.

Observe that there are a pair of instances where $c^T x^* \ll w$; but these are trivial instances with

$$\sum_{i=1}^n c_i \ll w \tag{5}$$

(The probability of (5) can be easily calculated or estimated using the theory of tail bounds for sums of independent random variables.) Thus it makes sense to consider only the distribution of $c^T x^*$ conditioned by $\sum_{i=1}^n c_i > w$. The simulated pdf is depicted

in Figure 2 (left plot) together with the distribution of $\sum_{i=1}^n x_i^*$ (the number of containers loaded, right plot).

The left plot of Figure 2 illustrates Properties 1 and 2: the distribution of $c^T x^*$ is indeed concentrated close to the capacity $w = 1000$.

FIG. 1: 50 randomly generated instances of the Knapsack Problem.

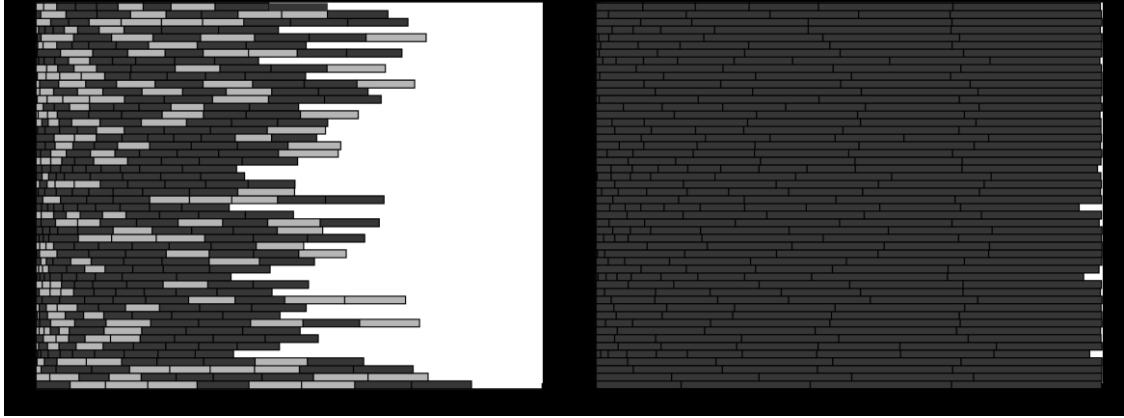
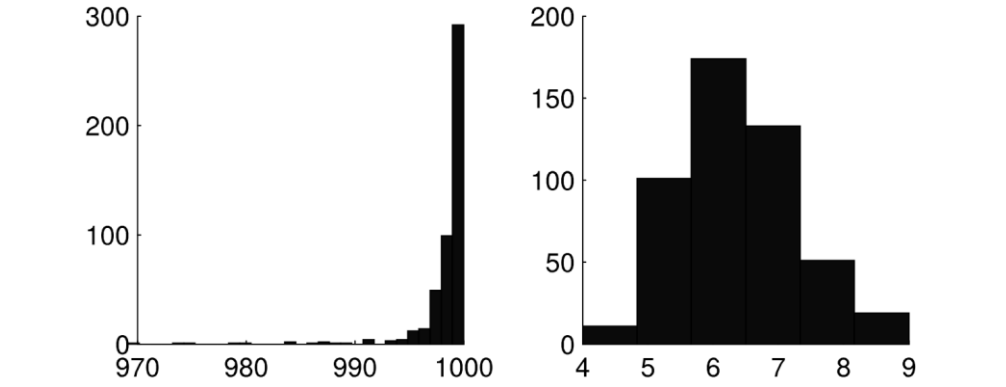


FIG. 2: Left plot: Simulated distribution of $c^T x^*$ conditioned by $\sum_{i=1}^n c_i > w$ (500 simulations). Right plot: Simulated distribution of $\sum_{i=1}^n x_i^*$ (the number of containers loaded).



4. The distribution of subset sums

Now we consider *all* possible subset sums of c . Namely, let $S = \{c^T x : x \in \{0,1\}^n\}$. The set S has $N := 2^n$ elements almost surely. Assume that the elements are sorted: $S = \{0 = s_1 < s_2 < \dots < s_N\}$. Since $c_i \leq \gamma$ by assumption, we have $s_N \leq n\gamma$. The average distance between two consecutive points in the sequence

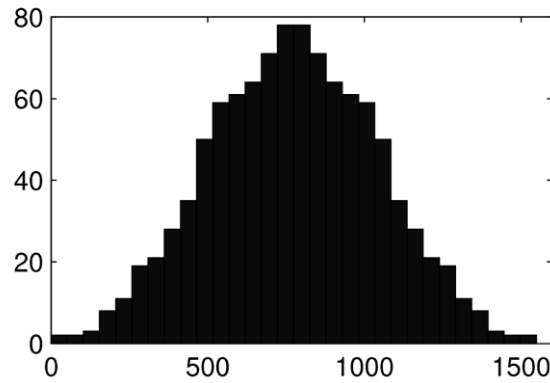
$$s_1, s_2, \dots, s_N, s_{N+1} := n\gamma \tag{6}$$

is $\delta_n := \frac{\gamma n}{N} = \frac{\gamma n}{2^n}$. Since γ is independent of n , we can see that δ_n tends to zero at the rate $n/2^n$; this is another useful observation complementing Properties 1 and 2.

A typical histogram of (6) is illustrated in Figure 3. This example is plotted for

$$c = (116,3; 293,6; 87,6; 177,7; 171,4; 184,8; 168,3; 83,0; 45,6; 219,9)^T. (7)$$

FIG. 3: A typical histogram of all subset sums of c ; here, $n = 10$, $N = 2^{10}$ and c is given by (7).



Conclusion

We studied knapsack problem with random (identically independently distributed) weights. We show that under assumption of nonnegative continuous distribution with finite domain the probability of *not attaining optimum* in any given positive interval vanishes as the number of items in knapsack goes to infinity. We also showed that this probability shrinks exponentially with the number of items. We supplemented our study with some insightful examples showing further properties of our model.

Many related questions should attract further attention. Staying inside the sandbox of our model, one may want to improve the (currently quite loose) bound (3). Or, for example, one might be interested in the distribution of the cases where only solutions formed by concrete numbers of items are considered feasible. Also, one may want to relax some assumptions on distributions of weights, either allow different distributions for items, or allow dependencies among them. The generalization of our results for such cases are of particular interest.

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RANKINGS OF THE EU COUNTRIES ACCORDING TO MATERIAL CONDITIONS OF THEIR RESIDENTS

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Abstract:

This paper compares the EU countries by ranking them according to material conditions of their residents. It applies a composite indicators approach, which is a useful tool for summarizing complex and multidimensional phenomena. In order to obtain more robust results a few different methods are employed. The study uses Eurostat data for 2006 and 2014, referring to material deprivation, housing conditions and subjective perception of having difficulty to make ends meet. According to obtained results, Poland and the Czech Republic made the biggest jumps in analysed period, in contrast, the United Kingdom moved down from the best to the middle group. Finland and Sweden remained leaders in all rankings.

Introduction

People use material resources, according to their own values and priorities, to pursue their own self-defined well-being. Thus, the quality of life is directly or indirectly constrained by an access to the material resources. In this perspective, economic conditions and, in particular, material living conditions, while not reflecting quality of life per se, provide a framework for the measurement of the potential of people to achieve it (Eurostat, 2015). For this reason, the topic is worth exploring.

This paper focuses on chosen aspects of material living conditions in the European Union (EU). We examine a few country-level indicators referring to material deprivation and housing conditions. In order to summarize the multidimensional nature of the undertaken issue, we apply a composite indicators approach. Such indicators play an important role at an international level, in making it possible to compare the situation in different countries, using a set of commonly agreed criteria. Their role is particularly crucial in a formal multinational context, such as the European Union, which gathers together countries with heterogeneous levels of living conditions (Fusco, Guio &

Marlier, 2013). As a poverty reduction is the key policy component of the Europe 2020 strategy (EU2020), an issue of material living conditions is particularly important. To be more precise, the severe material deprivation rate was introduced as part of the EU2020 poverty and social exclusion target, in order to capture the outcome element of the EU poverty definition. Similarly, housing conditions occupy a central position in poverty research and policy in the EU (Atkinson, Cantillon, Marlier, & Nolan, 2002). Thus, material living conditions indicators are alternative to the income-based measures in the European context.

The aim of this study is to rank the EU countries according to the material conditions of their residents. In this paper we examine four indicators, retrieved from Eurostat database. In order to obtain more robust results we apply a few different methods to aggregate these indicators.

1. Data

The empirical section of this paper uses Eurostat data from 2006 and 2014 of 27 countries. We analyse this period in order to avoid using incomplete data. Croatia is omitted in our analysis because of missing data from 2006. The data is retrieved from Eurostat database (2016b), more precisely, section ‘Quality of life’, sub-section ‘Material living conditions’ of Eurostat’s data navigation tree. The sub-section ‘Material living conditions’ in this database consists two of domains named ‘Income’ and ‘Material’. The first one relates to the monetary aspects of living conditions. It encompasses indicators based on income data, such as mean income, at-risk-poverty rates and inequality indicator reflecting the distribution of income. The second one relates to ‘material deprivation’ and ‘housing conditions’. It encompasses indicators, which measure specific different aspects of living conditions directly. We concentrate on this second domain including following indicators:

- a) the proportion of a country’s population of severely materially deprived people ($X1$),
- b) the proportion of a country’s population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor ($X2$),
- c) the proportion of a country’s population having neither a bath, nor a shower, nor an indoor flushing toilet in their home ($X3$),
- d) the proportion of a country’s population making ends meet with great difficulty ($X4$).

Regarding the first indicator, severely materially deprived are living in conditions that are severely constrained by a lack of resources and they cannot afford at least 4 out of 9 following deprivations items: 1) to pay rent or utility bills, 2) keep home adequately warm, 3) face unexpected expenses, 4) eat meat, fish or a protein equivalent every second day, 5) a week holiday away from home, 6) a car, 7) a washing machine, 8) a colour TV, or 9) a telephone.

The next two indicators relate to housing conditions. The housing quality can be assessed by looking at housing deficiencies, such as problems in the general condition of the dwelling, for example: a leaking roof, damp walls, floors or foundation, or rot in window frames or floor. The other deficiency is a lack of certain basic sanitary facilities in the dwelling, such as a bath or shower or indoor flushing toilet.

The fourth indicator is based on the self-reported difficulty of the household to make ends meet. It provides a measurement of the feeling of poverty, experienced by household. This indicator refers to the subjective perception of the quality of life.

The indicators selected for this domain can be used as indicative proxies for assessment of the overall, inherently multi-faceted, level of material living conditions (Eurostat 2016a). Eurostat derives this data primarily from the European Union Statistics on Income and Living Conditions (EU-SILC) survey.

2. Methodology

The use of composite indicators as a tool for a ranking is common in applied research, because they illustrate a comprehensive view on a phenomenon that cannot be captured by only one single indicator. Composite indicators have become increasingly popular, especially in the field of measuring progress and the related ‘beyond-GDP’ debate, see i.a. report of the Stiglitz–Sen–Fitoussi commission (2009). The rankings produced by these indicators often receive wide attention. Unfortunately, composite indicators and the resulting rankings are affected by the methods chosen to build them. Thus, in order to obtain more robust results we apply a few different methods. Such an approach is common in applied research (Ostasiewicz, 2012; Hudrliková, 2013).

Detailed description of steps for constructing a composite indicator can be found in (OECD, 2008). In our paper we shortly explain applied methods of normalization data and linear orderings of countries.

In the first step, before proceeding with the analysis, the imputation of missing data is conducted. We substituted missing Romanian values for 2006 with the predicted values obtained from a linear trend model estimated on the base of 2007-2014 data. Such an approach is supported by a strong linear relationship between predicted and observed dependent variables. We retrieved missing Swedish data relating to the lack of basic sanitary facilities in the dwelling from TrendEconomy (2016).

In the second step we normalized the input values of all indicators to render them comparable. This study deals with two types of normalisation of data: so called min-max and standardisation procedures.

According to the min-max procedure, also called unitarisation method (Kukuła, Bogocz, 2014), the individual value of the indicator X_j for i -th country is transformed into the score z_{ji} :

$$z_{ji} = \frac{x_{ji} - \min(x_{ji})}{\max(x_{ji}) - \min(x_{ji})} \quad (1)$$

where: $\min(x_{ji})$ is minimum value of j -th indicator X_j calculated across countries,

$\max(x_{ji})$ is maximum value of j -th indicator X_j calculated across countries,

in our study $j=1, 2, 3, 4$ and $i=1, 2, \dots, 27$.

According to the standardisation score z_{ji} are calculated as:

$$z_{ji} = \frac{x_{ji} - \bar{x}_j}{S(x_j)} \quad (2)$$

where: \bar{x}_j is the average for each individual indicator X_j calculated across countries,

$S(x_j)$ is the standard deviation each individual indicator X_j .

In the third step an aggregation procedure is performed. Aggregation procedures require the determination of the weight system (w_j , where $j = 1, 2, 3, 4$). The weighting schemes considered in our paper are : firstly, the equal weighting and, secondly, the procedure which take into account correlations among indicators. Using the first method, the equal weight is assigned for each indicator, i.e. $w_j = 0.25$. According to the second method the weights should be set inversely proportional to the strength of the correlation for a given indicator. It can be achieved by applying a formula:

$$u_j = \frac{1}{\sum_{k=1}^4 |r_{jk}|} \quad (3)$$

where r_{jk} is the correlation coefficient between the two indicators X_j and X_k .

To ensure the summing up of weights to unity, we transform u_j into w_j :

$$w_j = \frac{u_j}{\sum_{k=1}^4 u_k} \quad (4)$$

In the next stage of aggregation procedure we calculate composite indicators. For data normalised according to formula (1) we use the following formula:

$$S_i^1 = \sum_{k=1}^4 w_k z_{ki} \quad (5)$$

For data standardised according to formula (2), to obtain composite indicator ranged from 0 to 1, we apply formula:

$$S_i^2 = \frac{S_i^1 - S_{min}^1}{S_{max}^1 - S_{min}^1} \quad (6)$$

where S_{min}^1 and S_{max}^1 are values of S^1 obtained for hypothetical countries with $min(x_{ji})$ and $max(x_{ji})$ values respectively.

At the final stage we subtract values S_i^1 and S_i^2 from 1 yielding values of composite indicator:

$$S_i = 1 - S_i^m \quad (7)$$

where $S_i^m = S_i^1$ for normalized data and $S_i^m = S_i^2$ for standardized data.

Applying formula (7) ensure that the better the rank of i -th country according to material conditions of their residents corresponds to the highest the value of the composite indicator.

3. Results and discussion

We observed that material conditions significantly varied from country to country. In particular, in 2006, the lowest levels of the rate of severe material deprivation were in Luxembourg (1.1 %) and the highest in Bulgaria (57.5 %). The proportion of the country's population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rotten window frames of floor, ranged from 4.5 % in Finland to 41.4 % in Poland. The huge differentiation in the proportion of the country's population having neither a bath, nor a shower, nor indoor flushing toilet in their household can be also observed. The biggest proportion such people was in Romania 43.0 %, whereas in the United Kingdom and Netherlands all people had these basic sanitary facilities in the dwellings. The share of households making ends meet with great difficulty ranged from 1.6 % in Luxembourg to 37.7 % in Bulgaria.

Comparing to 2006, we found that in 2014 the proportion of the country's population living in bad material conditions changed in the majority of countries. Table 1 summarizes rankings obtained via four different methods. Countries in table 1 are set according to the median rank obtained by the use of different methods.

TAB. 1: Rankings of countries with respect to material conditions of their residents

Country	2006				2014			
	Unitarisation		Standardisation		Unitarisation		Standardisation	
	equal weights	unequal weights	equal weights	unequal weights	equal weights	unequal weights	equal weights	unequal weights
Finland	1	1	1	1	1	1	1	1
Sweden	2	2	2	2	2	2	2	2
Austria	4	4	4	4	3	3	3	3
Denmark	3	3	3	3	7	8	6	8
Luxembourg	5	5	5	5	5	5	5	5
Germany	7	7	7	7	4	4	4	4
France	6	6	6	6	6	7	7	7
Netherlands	9	9	9	9	8	10	8	9
Belgium	11	11	10	10	12	13	11	13
Malta	10	10	11	11	13	12	12	11
United Kingdom	8	8	8	8	14	14	14	14
Slovakia	14	13	14	14	10	9	10	10
Czech Republic	16	16	16	16	9	6	9	6
Ireland	12	12	12	12	16	16	16	16
Slovenia	13	14	13	13	18	18	18	18
Spain	15	15	15	15	17	17	17	17
Estonia	19	19	19	19	15	15	15	15
Italy	17	17	17	17	20	20	19	19
Poland	25	25	24	24	11	11	13	12
Portugal	18	18	18	18	21	22	21	22
Greece	20	20	20	20	22	21	22	21
Lithuania	23	23	23	23	19	19	20	20
Cyprus	22	22	22	22	23	23	23	23
Hungary	21	21	21	21	24	24	24	24
Latvia	24	24	25	25	25	26	25	26
Bulgaria	27	27	27	27	26	25	26	25
Romania	26	26	26	26	27	27	27	27

Source: own research

One can observe that the orderings of countries for the given year, obtained via various methods, are quite stable. Finland, Sweden, Denmark, Austria, France, Luxembourg and United Kingdom belonged to ‘the best countries’ in 2006. ‘the worst group’ was formed by Hungary, Cyprus, Lithuania, Latvia, Poland, Bulgaria and Romania. Weak position of Romania, Bulgaria, Latvia, Hungary and Cyprus was also achieved in 2014, whereas Poland advanced to the middle group. The big jump from the middle to the best group made the Czech Republic. In contrast, the United Kingdom moved down from the best to the middle group. Finland and Sweden still remained leaders in ranking. Such the change for Poland resulted from the increment in all four indicators, whereas the upturn

for the Czech Republic resulted mainly from the improvement of the general condition of the dwelling. The proportion of the Czech population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor decreased from 21.2 % in 2006 to 9.2 % in 2014.).

The obtained results are confirmed by the other researchers. For example, Šoltés and Nováková (2016) applied different method obtaining of composite indicator for measuring changes of material living conditions in the Visegrad Group. They have also found the relative improvement of the position of Poland and the decrease of position of Hungary. Moreover, they stated the best material living conditions in the Czech Republic.

In order to explore our results more fully, we estimated regression models explaining composite indicators. Such an approach enables us to get deeper insight into reasons for obtained rankings. We estimated simple linear regression models with median equivalised net income expressed in purchasing power standard (PPS) as explanatory variable. We found a significantly positive impact on composite indicators for 2006 and 2014, which this explanatory variable has. However, in all models, coefficients of determination R^2 were only slightly above the level of 0.5. It roughly means that more than 40% of variability of the composite indicators remains unexplained by incomes of households.

Concluding remarks

The main contribution of this paper is the comparison of the EU countries according to the four indicators of material conditions recommended by Eurostat. Instead of building one composite indicator, to obtain more robust results, we used different normalisation and aggregation rules. Thus, we did not deduce a single ranking from a single composite indicator, but we built many rankings on the basis of different procedures. We found that the orderings of countries, obtained via various methods are quite stable. All rankings appointed Finland as the absolute 'winner', as this country occurs as the best one no matter which method of ranking is used. Also, Sweden and Austria are always one of the best four countries. On the other hand, two countries, namely, Bulgaria and Romania appears repeatedly as the worst countries. The biggest increment in the period 2006-2014, refers to Poland and the Czech Republic, whereas the biggest decrement relates to the United Kingdom. Moreover, we found that incomes of households explain only slightly above 50 % of variability of composite indicators of material conditions.

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OFFSHORING AND LABOUR DEMAND: IMPLICATIONS FOR THE SLOVAK REPUBLIC

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Keywords:

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Abstract:

The emergence of global chains supply caused that production stages are divided and distributed across countries. This fundamentally alters the nature of international trade, away from trade in goods towards trade in tasks and activities, with profound implications for the labour markets. The aim of this paper is to examine the impact of offshoring on labour demand in the Slovak republic. In order to measure the impact of offshoring we estimate the system of cost share equations derived from translog cost function. The equations for different cost shares are estimated using seemingly unrelated regression (SUR). The data covers period 1995-2009 and come from WIOD database.

Introduction

The flows of value added across countries rather than goods have become an increasingly debated topic due to the rapid international integration of production processes. The questions ranking from how global supply chains influence income distribution to how they transmit shocks across borders, how fragments of value added are combined via the global supply chain to form final goods (Foster–McGregor et al. 2013, Johnson, Noguera 2012). The World Input–Output Database (WIOD) provides annual time-series of world input–output tables from 1995 onwards, allows a revisit of the debate on the effects of offshoring on labour demand. In order to measure the impact of offshoring on employment in the Slovak Republic we estimate the system of cost share equations derived from translog cost function. The equations for different cost shares are estimated using seemingly unrelated regression (SUR). The data covers period 1995-2009 and come from WIOD database. The paper is divided into four sections. Following the introduction, the relevant empirical literature is reviewed in Section 1. In Section 2 we provide a brief overview of model that we employ to examine the impact of offshoring on labour demand. In Section 3 we provide and discuss main results. Finally, concluding remarks are made in Section 4.

1. Literature overview

The effects of offshoring on labour demand have been studied by several authors. Hijzen and Swaim (2007) looks at the effects of offshoring using industry-level data for 17 high income OECD countries. Their findings indicate that offshoring has no effect or a slight positive effect on sectorial employment. Foster- McGregor, Stehrer and de Vries (2013) studied the link between offshoring and the skill structure of labour demand for 40 countries and 35 industries over period 1995-2009 using data from WIOD. Their results indicate that offshoring has impacted negatively all skill-levels, the largest impacts was observed for medium-skilled workers. An evidence of offshoring impact on the skill structure across industries of one country was examined by Hertveld and Michel (2012). They focused mainly on the contribution of offshoring on the fall of the low-skilled workers. Their estimations shows that it is mostly offshoring to Central and Eastern European countries that entails a fall in the low-skilled employment share. Ekholm and Hakkala (2005) searching the evidence for Sweden found that overall offshoring as well as offshoring to low-wage economies tend to shift demand away for workers with upper secondary education. Lábaj (2014) using WIOD investigate the effects of domestic demand on final output and employment in national economies. The small and open countries indicated the lowest importance of domestic demand for their output creation. The Slovak Republic was affected significantly by the collapse in international trade. The decline in demand for domestic products in foreign markets led to an increase of output generated by domestic demand for more than 2 percent. Slušná, Balog et al. (2015) based on the WIOD analyses states that the absolute number of jobs reduced in the majority of developed countries as well as the share of labour in value added creation decrease. The significant changes appeared in the internal structure of the workers. In the Slovak Republic the share of capital and labour in value added creation has unusual unbalanced ratio (high share of capital and low share of labour). High share of capital is typical for the electronics industry. This development is related to the massive inflow of foreign capital. The share of high skilled labour in value added creation in the industry of vehicles production in Slovakia was one of the lowest in the EU. Therefore Slovakia competed mainly with large stock of (foreign) capital and average high proportion of medium skilled labour. Habrman (2013) study showed that export of Slovakia in the examined period 1995 -2009 generates directly and indirectly approximately 40% of value added and employment in Slovakia. Despite the rising importance of export in Slovakia, most of jobs are created by domestic demand.

2. Methods

Model will be based on the translog cost function (see Berndt, Wood 1975) frequently used for empirical analyses. Instead of estimating the translog cost function directly, we estimate a system of cost share equations derived from it. The translog cost function, so-called flexible functional forms, allows substitution elasticity to be unrestricted and they must not even be constant. Cost minimizing relative input demands may depend on the

level of output. Denoting total variable costs “C”, “ w_i ” wages for different skill types and prices of material that are optimally chosen, $i=1, \dots, M$, “ x ” fixed inputs and outputs (fixed input capital K and gross output Y), “ z ” measure of international offshoring and domestic outsourcing (quasi-fixed) the general formulation of the translog cost function is as follows (Foster-McGregor et al 2013):

$$\begin{aligned} \ln C = & \alpha_0 + \frac{1}{2} \sum_{i=1}^M \alpha_i \ln w_i + \sum_{k=1}^K \beta_k \ln x_k + \sum_{y=1}^Y \gamma_y \ln z_y + \frac{1}{2} \sum_{i=1}^M \sum_{j=1}^M \gamma_{ij} \ln w_i \ln w_j + \frac{1}{2} \sum_{k=1}^K \sum_{l=1}^K \delta_{kl} \ln x_k \ln x_l + \\ & \frac{1}{2} \sum_{y=1}^Y \sum_{p=1}^Y \gamma_{yp} \ln z_y \ln z_p + \frac{1}{2} \sum_{i=1}^M \sum_{k=1}^K \theta_{ik} \ln w_i \ln x_k + \frac{1}{2} \sum_{i=1}^M \sum_{y=1}^Y \delta_{iy} \ln w_i \ln z_y + \frac{1}{2} \sum_{k=1}^K \sum_{y=1}^Y \delta_{ky} \ln x_k \ln z_y \end{aligned} \quad (1)$$

Taking first derivatives of the cost function with respect to wages and material we

obtain $\frac{\partial \ln C}{\partial \ln w_i} = \left(\frac{\partial C}{\partial w_i} \right) \left(\frac{w_i}{C} \right)$ where $\left(\frac{\partial C}{\partial w_i} \right)$ represents the demand for input “ i ”. Differentiating the translog cost function (1) with respect to input prices we obtain a set of N cost share equations of the form:

$$s_i = \alpha_i + \frac{1}{2} \sum_{j=1}^M \gamma_{ij} \ln w_j + \frac{1}{2} \sum_{k=1}^K \theta_{ik} \ln x_k + \frac{1}{2} \sum_{y=1}^Y \delta_{iy} \ln z_y, \quad i = 1, \dots, M \quad (2)$$

Taking differences between two periods the equations for wage shares of different labour skill and material in industries “ $n=1, \dots, N$ ” become:

$$\Delta s_i = \alpha_0 + \sum_{j=1}^M \gamma_{ij} \ln w_j + \theta_k \Delta \ln K + \theta_y \Delta \ln Y + \delta_o \Delta \ln O + \delta_{do} \Delta \ln DO + \varepsilon_i \quad (3)$$

Instead of estimating the translog cost function directly, most authors estimate the system of cost share equations because the number of parameters to be estimated is lower. Specification of our model follows approach employed by Foster-McGregor et al (2013) and Hertveldt, Michel (2012) that considers labour and material inputs to be flexible and other inputs to be quasi-fixed. Dependent variables in the model are represented by the shares of each labour type on total variable costs. Total variable costs are calculated as the sum of total labour compensation plus the value of intermediate input purchases. The source of data is the WIOD database consisting of a complete dataset for 35 industries over the period of 1995-2009. In our analysis we consider a broad measure of inter-industry offshoring “ O ” calculated as:

$$O_n = \frac{\sum IIM_n}{V_n} \quad (4)$$

Where “IIM” refers to imported intermediate purchases from industry, “n” is the industry index and “V” refers to value added. Measures of domestic intermediate use “DO” are constructed in a same manner:

$$DO_n = \frac{\sum DIM_n}{V_n} \quad (5)$$

Where “DIM” stands for domestic intermediate purchases, “n” is the industry index and “V” refers to value added. Domestic intermediate use or domestic outsourcing can capture efficiency gains due to a reallocation of production within industries in a country while international offshoring capture efficiency gains due to fragmentation and includes industry specialization across borders. Data regarding labour is split into three different skill categories (low, medium and high skilled) according to ISCED classification. The average wages by education level are calculated as the ratio of labour compensation for each skill type to the total hours worked of each skill type. The values for gross output and capital stock are available directly from the WIOD. The cost functions are estimated as a system of demand equations for all variable factors. The complete system of equations is estimated using seemingly unrelated regression (SUR technique).

3. Results and discussion

Slovak Republic experienced considerable skill upgrading of employment over past decade. The qualification structure of selected sectors reported in next table (Table 1) revealed the reduction of hours worked by low skilled workers (-5.6% change in all sectors). The largest decline experienced the agriculture sector (-8.2%) while data for medium and high skilled labour revealed 7.1% growth of hours worked by medium skilled labour and 1.1% growth for high skilled labour. The share of hours worked by high skilled labour in 2009 was 18.8% in all sectors, 9.5% in agricultural sector 8.3% in manufacturing (electrical, optical and transport equipment) and 6.4% in construction sector. In general it can be conclude that Slovak industrial sectors experienced significant transformation of internal structure of labour force. Therefore it is interesting to examine how offshoring and domestic outsourcing influences these trends. The investigation of offshoring impact on skill structure of labour demand will be focused on the results for all industries (Global) and one particular sector - agriculture, hunting forestry and fishing (Agri). This allow us to compare the different effects of offshoring. Already the first differences appear when analysing the development of offshoring (imported intermediate use on value added) during 1995 and 2009. The level for all industries (0.38 in 1995 and 0.46 in 2009) increased and contrary for agriculture sector the level of offshoring decrease (0.24 in 1995 and 0.21 in 2009).

TAB. 1: The share (%) of hours worked by high, medium and low skilled labour for selected industries in the Slovak Republic in 1995 and 2009 (share in total hours)

		1995	2009	Δ
All industries	H_HS	13.4%	18.8%	5.4%
	H_MS	77.1%	77.3%	0.2%
	H_LS	9.5%	3.8%	-5.6%
Agriculture, Hunting, Forestry, Fishing	H_HS	8.4%	9.5%	1.1%
	H_MS	70.4%	77.5%	7.1%
	H_LS	21.3%	13.0%	-8.2%
Manufacturing	H_HS	6.6%	8.3%	1.8%
	H_MS	83.0%	87.9%	4.8%
	H_LS	10.4%	3.8%	-6.6%
Construction	H_HS	5.2%	6.4%	1.2%
	H_MS	85.1%	89.3%	4.2%
	H_LS	9.7%	4.3%	-5.4%

Source: WIOD, own calculations. Note: H_HS = share of hours worked by high-skilled labour, H_MS = share of hours worked by medium-skilled labour, H_LS = share of hours worked by low-skilled labour. The data are available only for period 1995-2009.

The results presented in Table 2 was calculated according equation (3) and using SUR technique. The mixed set of coefficients describe the influence of different variables on different cost shares. The results suggest that offshoring has reduced demand for all types of labour with exception of high skill labour in case of results for all industries. Interestingly, the offshoring impact coefficient in agriculture sector is largest in absolute value for low-skilled labour while domestic impact coefficient for high-skilled labour contrary to all industries where offshoring coefficient is largest in absolute value. This would tend to suggest that offshoring affect most the low-skilled labour in agriculture sector while the high-skilled labour in case of all sectors. The coefficient for medium skilled-labour in agriculture sector and low-skilled labour in all sectors for both offshoring and domestic outsourcing we find insignificant. The global overview of our results reveal the importance of offshoring on labour demand with stronger impact than domestic outsourcing. It is interesting to note that the impact of offshoring differ, is positive upon the high-skilled labour demand and negative upon the all the other. The positive influence of offshoring on high-skilled labour demand runs counter to the findings of Foster-Mc Gregor et al (2013). Their results confirmed negative influence of offshoring as well as domestic outsourcing on all types of labour demand. When consider the regression coefficients the results showed that the medium-skilled labour in all and low-skilled labour in agricultural sector was hit hardest by offshoring. Such results are consistent with Foster-Mc Gregor et al (2013).

TAB. 2: SUR results for all industries and agriculture sector

	Global	Agri	Global	Agri	Global	Agri
	ΔS_{LS}	ΔS_{LS}	ΔS_{MS}	ΔS_{MS}	ΔS_{HS}	ΔS_{HS}
ΔW_{LS}	0.71676*** (0.22894)	-0.10107 (-0.1602)	-0.01463 (0.03312)	-0.4064*** (-0.0831)	-0.04592 (0.07463)	0.74217* (-0.5244)
ΔW_{MS}	-1.19938 (0.97798)	3.80516*** (-0.5939)	0.42932*** (0.14148)	0.99780*** (-0.308)	-1.12749*** (0.31883)	-3.7875* (-1.9433)
ΔW_{HS}	-0.76868 (0.68867)	-3.4441*** (-0.4119)	0.03894 (0.09962)	-0.3610* (-0.2136)	0.21614 (0.22451)	3.20142** (-1.3478)
ΔW_{II}	-6.14488 (5.74061)	1.68701*** (-0.3095)	0.13617 (0.83046)	-0.1920 (-0.160)	-14.0825*** (1.87151)	-2.992*** (-1.0127)
ΔK	-3.67338* (1.89387)	-1.2243*** (-0.2063)	-0.15409 (0.27397)	-0.0577 (-0.1070)	-3.45320*** (0.61742)	-2.9300*** (-0.6752)
ΔGO	10.3574 (7.91364)	0.52306* (-0.3130)	-0.39333 (1.14482)	-0.2946* (-0.1623)	18.5176*** (2.57994)	5.2532*** (-1.0242)
ΔO	-0.11768 (0.53367)	-1.0953*** (-0.1365)	-0.25507*** (0.07720)	-0.2490 (-0.0708)	0.67607*** (0.17398)	-0.6428* (-0.446)
ΔDO	-0.05972 (0.13345)	0.49446*** (-0.1432)	-0.04784** (0.01930)	-0.0411 (-0.0742)	0.12246*** (0.04350)	-1.10653** (-0.4687)
Constant	8.71865	1.68311	5.81037	7.39581	0.80112	14.9377
R-squared	0.96962	0.98047	0.91892	0.9328	0.98374	-0.7758

Source: own calculations. Note: s- cost share, w- wages, LS- low skilled workers, MS- medium skilled workers, HS- high skilled workers, II- intermediate input, K- capital, GO- gross output, O- offshoring, DO- domestic outsourcing. The set of equations are estimated by SUR, standard errors are reported in parentheses. ***, **, *, Significant at 1, 5 and 10 percent respectively.

Conclusion

The main objective of this paper was to examine how offshoring influenced the different skill-levels of labour demand in the Slovak republic. The offshoring intensities was computed as the share of imported intermediate in value added creation. According to standard measurement a system of cost share equations was estimated using SUR technique. The results indicate that the offshoring contribute to fall in the employment share of all skill levels with exception of high-skill labour. When consider the regression coefficients, it can be concluded that offshoring hit hardest the medium-skilled labour in case of all industries results and low skilled labour in case of agricultural sector.

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THE CHINESE ETS – ANY LESSONS LEARNED FROM THE EU ETS?

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China – emission trading – ETS – ETS pilots – Multi level governance– carbon tax

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Abstract:

According to official Chinese sources the seven regional emissions trading system (ETS) pilots will next year be included in a national ETS. These regional ETS pilots have since 2015 been operating in a macroeconomic context since already in 2010 did the National Development and Resource Commission (NDRC) plan a national ETC. Since the EU ETS is the primary example of an ETS where the “regions”, that is the member states (MS), are at very different levels of development like the regions are in China, there should be some lessons to be learned. First of all the EU ETS is clearly not a success story, since there is a very low carbon price having a very small effect on emissions – if any at all. That rises the questions of alternative methods, in particular a carbon tax instead of an ETS. Secondly there are several issues of governance; in particular the tension between the member states themselves and the EU Commission. Who take the lead, who decides in the final end? The purpose of the paper is primarily to put forward some questions that are missing in the academic literature. Given the limited space, the answers will be short and tentative..

Introduction What can we learn from the origin of the EU ETS

When it comes to the origin of the EU ETS there is two important points worth making. As is described in detail in (Skjaerseth & Wettestad, 2008) it was not given from the early nineties that the EU would end up as the prime example of an ETS in practice. On the contrary – the EU started out sceptical both to domestic emission trading. This should be no surprise since most economic text books – and consequently most economists will generally think a carbon tax is a better solution, for “obvious” reasons. A carbon tax is less bureaucratic, less transaction costs, less uncertainty about prices – and since the Paris agreement makes it imperative to become fossil free – the carbon tax should rise until we are. The great advantage of a tax is that firms and households know the carbon price years ahead, no price volatility. For these and similar reasons EU was also skeptical to the trading of offsets(Skjaerseth & Wettestad, 2008). In a carbon tax system, offsets have no place. But the “team” in Brussels that favoured a carbon tax met

strong opposition from parts of European industry – and the US on an international level, cf. (Convery, 2009), (Christiansen & Wettestad, 2003).

Given the fact that the EU ETS is not working – there is a general consensus about that – one might ask the question why a carbon tax has not been a bigger topic on the agenda, both in the English academic lecture. Because after the failure of the EU ETS after its first more than ten years of operation the key question is: Was or is there a will to make the EU ETS work? Fortunately the criterion for deciding if an ETS is working is very straight forward: Does it get emissions down? If the answer is yes, then the question is: how rapidly does it bring emissions down? Will the ETS make us reach the politically decided targets by the deadlines, 2020, 2030 and 2050? In particular zero CO₂ emissions? From a scientific and economic point of view one should try to get emissions down as rapid as possible, because we do not know where the “tipping points”, that is the points where the further development of the system becomes irreversible. but it is beyond the scope of this short paper to go into the many questions posed by the optimal control problem of reducing emissions to zero – which is a complex interaction between physical facts and political constraints.

1. Method and literature overview

There is a enormous, accumulated literature on the EU ETS, much less so in English on the Chinese pilot ETS. A search using EndNote7 in the “Web of science” with the key words, China, emissions, trading and pilot, limiting the search to the years 2013-2016 will give 41 hits. When the paper refers to the “literature” it is limited to these sources. In particular we refer to the special, supplementary issue of Climate Policy, Vol 15, supplement, entitled “Climate mitigation in China”. Due to the limited space and that the aim of this paper is to raise some questions I do not quote extensively from this literature where there of course is a wide range of different points of view, but which have the common characteristic of avoiding certain fundamental questions.

2. What can we learn from the origin of the EU ETS?

When it comes to the origin of the EU ETS there is two important points worth making. As is described in detail in (Skjaerseth & Wettestad, 2008) it was not given from the early nineties that the EU would end up as the prime example of an ETS in practice. On the contrary – the EU started out skeptical both to domestic emission trading. This should be no surprise since most economic text books – and consequently most economists will generally think a carbon tax is a better solution, for “obvious” reasons. A carbon tax is less bureaucratic, less transaction costs, less uncertainty about prices – and since the Paris agreement makes it imperative to become fossil free – the carbon tax should rise until we are. The great advantage of a tax is that firms and households know the carbon price years ahead, no price volatility. For these and similar reasons EU was also skeptical to the trading of offsets (Skjaerseth & Wettestad, 2008). In a carbon tax

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2.1. Who's will – the question of multi-level governance

As mentioned above the EU started out with the idea of using a carbon tax, but when that met staunch opposition both from US and from various industries in the member states a mentioned above the team working from 1992-1997 was left the EU Commission and the new “horses” went for an ETS. This then raises the question of who was in the driving seat. Was it one or more influential member states that decide that the “line” should be changed from tax to trading? Or was it the “almighty” EC? In the literature this question of power is often discussed using two opposed archetypical regimes called respectively multi-level-governance (MLG) if the initiative for change comes from one of the levels of governance of “Brussels” or liberal integration (LI) if the process is a more horizontal one. Horizontal means that one or more of the MS taking the lead and winning support for their line. It seems fairly clear from (Skjaerseth & Wettestad, 2010) that the EU ETS was a case of MLG, with the EC in the driving seat, framing and shaping to a very large extent how the EU ETS came to be.

In the Chinese case this no possibility of LI, that is of a horizontal process between the regions to decide who was going to be the pilots and how the Chinese ETS should be implemented. But it is still interesting to ask which level of governance prevailed in first of all choosing the pilots and then deciding the more detailed implementation of the pilots. Because the pilots are just that – pilots – that is experiments that one should learn from. Was there a master plan from the NDRC? In a Chinese context it is quite clear that fundamentally the Chinese Communist Party is in the driving seat, but it seems that it is the rather powerful National Development and Resource Commission who took the

initiative. NDRC that is top level of a MLG structure, with the regional Development and Resource Commissions being the next level, with the city-level below that. We have not so far found any extensive analysis of what was the “Masterplan” of the NDRC? First of all: did the NDRC have a masterplan, that met opposition from various interest groups, so that the result was a compromise, a hybrid system that nobody actually wanted – as so often happens in politics when there is conflicting interests and not any common will, common project? In (Zhang, 2015) the author states that:

“These pilot regions were deliberately selected to be at varying stages of development and are given considerable leeway to design their own schemes. These schemes have features in common, but vary considerably in their approach to issues such as the coverage of sectors, allocation of allowances, price uncertainty and market stabilization, potential market power of dominated players, use of offsets, and enforcement and compliance.”

But Zhang gives no reference and in fact there are five big cities and three other regions, so roughly two levels of economic development.

2.2. *The design of the pilot system*

If the starting point is that NDRC shaped the pilots, one must then ask – how “monolithic” is the NDRC? In the literature we find very no discussion of this, so we suppose that if there is “factions” in the NDRC this is not a well-known fact. One could also ask – why only seven pilots? Would it not be better to have as varied as possible set of regions, let’s say 3-4 levels of development – and or mixes of industrial structure? So one group could be predominantly agricultural, another a typical mix of agriculture, extractive industries, a third group could be more urban, a mix of commerce, services, administration and education. The next design question would then be should one try one system in different contexts or different systems in different contexts, but maybe pair-wise, so try one system in different archetypes of regions (rural, rural-extractive, urban-service). If you have three types of regions and three types of ETS – you need nine pilots. There are thirty eight regions, so even if you had 12 pilots, it would still be a minority of the regions being pilots. One might also ask if the experimental design is more of a “treatment” – “no treatment” type of design, that is that the seven pilots are not primarily compared with each other, but with one or more similar regions in order to see what kind of treatment gives the best results. Then of course it is of vital importance not to disclose the experimental design in order to not influence the behavior of the not-treated regions.

The reason why we pose these questions is because in order to understand how why CN-ETS got the design it will get it is important to try to analyze what the NDRC wanted to know when they decided on how many and which regions to ask – or command? – be pilots. In the theory of MLG an important aspect is that it is an “open”

situation, the involved actors on different levels are not very clear about their own preferences; they do not have a clear view of what is the best strategy for them to play in this new game. Fundamentally, because that to a lesser or greater extent depends on what the other players end up choosing as their strategy. There was of course some experiences to draw upon, primarily the EU ETS, the US RGGI, the US sulfur TS.

Since China in many important respects are very different, there could not be a big, detailed master plan from the start. But that does not mean that there was not “action strategies”, that is set of beliefs in what one was fairly confident that would work – or at least had to be a part of any form of CN-ETS - forming a set of hard “constraints”. But given the many uncertainties, there were clearly naturally would emerge different views of what not “constrained” parts of a future CN-ETS that it was most important to test. A typical “given constraint” is the fixed prices for electricity. In a model of a market economy using ETS to reduce emissions a change in the relative prices of goods according to carbon content is the name of the game, the *raison d’être* of the ETS. Electricity based on coal should become more and more expensive and stimulate both larger quantity produced and with that also lower prices for renewable energy – which then in the final end should replace fossil fuel as the basis for electricity production, heating and transport.

So the fixed structure of electricity prices is not something even the mighty NDRC can try to change. So what “parameters” of an imagined future CN-ETS did the NDRC want to test? One “extreme” hypothesis is that the NDRC did not have any clear ideas, so they consciously let the Regional DRCs shape the pilots. That is they consciously left the implementation of the pilots to the RDRCs – then next, lower level of governance. The Regional DRCs does not operate in a vacuum, so then the differences in the pilots should mainly be explained by regional differences in industrial structure, political strategies etc. But is it reasonable to think that the NDRC were so “hands off” the design of the pilots? If not, is there any information of what “mechanisms” they wanted to test? Can we see any pattern when we look at the differences between the pilot trading systems? Many articles make tables of those differences, but none of those we have found discuss explicitly if there is some “test design” behind the differences. Because one must ask – disregarding for a moment which level of governance the design is made – central or regional - what is the real “room of maneuver” for the designer of pilots? Can there be anything but free allocations according to current emissions? Probably not, because there is not anything in the policy documents pointing to a real will to make the CN-ETS really work, that is making the carbon price rise by orders of magnitude. Since everybody knows that the EU ETS does not work due to an enormous, accumulated surplus of emission allowances created out of the fear of the social consequences of a high and rising carbon price. Consequently there is no sign of serious will on the part of the EC or MS to get rid of the allowance surplus in the foreseeable future. Given that the US does not even pretend to do anything about their

emissions it would be strange if China should take the lead in the sense of designing a system that in the next decade or so would lead to a radical higher carbon price, leading to significant reduction of Chinese emissions – at best a slow down in their growth.

3. An ETS or an EES (Energy Efficiency System)?

In most ways it was misleading to call the pilots and the coming national system for an ETS, since the system(s) do not have a cap. The deep economic rationale of emissions rights is to create property rights in order to create increasing scarcity, create changes in relative prices thereby internalizing the potentially infinite costs of global warming. But that is not even formally the stated aim of the Chinese system. So far China has committed itself to increasing its energy efficiency, that is lowering the carbon intensity of GDP (ref), the goal is that GDP should grow faster than the emissions. It is in no way a cap on emissions, a roof being lowered by a linear reduction factor like in the EU. The Chinese will probably not peak before 2030, which given the more and more alarming results from climate science is a very worrying perspective.

The fact that the Chinese system is an energy efficiency system, one should take care not to be too focused on the amount of trading, since that is not a key aspect of the system. If we take the example of electricity production it might be that the intention of the DRC system is to force the coal based power plants to invest in order to be able to produce to the fixed price while reducing emissions, which means increasing the energy efficiency (EE).

Because contrary to the normal, static text book market cross model, in real life there is technological change, there is production taking time, there is long lags from investing to making profits etc. etc. In short – none of the traditional “results” of a static text book model applies. If this argument is correct then the trading part of the system is only a safety valve that should not be used very often, giving small volumes traded and volatile prices. The enterprises are more buying and selling insurance than a real “good”, a factor of production.

What you might see – and what the NDRC would see as the success of the system was technological change. That the enterprises invest in new and better technology, producing more while reducing the emissions, so both unit costs and unit emissions are reduced. This makes sense if coal – or coal indirectly as electricity - is rightly seen as the main problem. Since coal fired power plants cannot change their fixed capital very often, in fact probably with many years intervals (find a ref here?) what they could do is too build storage. Because of the slow reaction of coal-fired power plants to meet peak demand in the evening they have fire up before demand really peaks – and they are not able to reduce production fast enough when demands falls when everybody goes to bed, shops close etc. So for example Germany sends cheap brown electricity to Norway during the night, because Norwegian hydro-power plants have the ability to regulate to

demand on a split second. Then Norway can take some of the peak demand during the evening by exporting renewable electricity. By the same logic it would be rational for coal fired power plants to build storage in the first place to have an more even production of power, taking more and more of the daily, weekly and seasonal peaks from storage. But that storage could also be used for renewable energy, that is wind and solar, which now is mostly a stochastic element on top of the “base load”, resulting even in negative prices when conditions for sun and wind are good. Given the rather massive increase in wind and solar production in China, the question of storage of might have come much higher on the agenda as is starting to be the case in Europe (Lazkano, Nøstbakken, & Pelli, 2016).

3.1. The collapse of the CDM market and the Paris agreement

If this scenario is what the NRDC had in mind in 2010 when it first proposed an ETS we have not have had time to investigate, but probably not. The Chinese ETS that will be implemented is not shaped only by internal Chinese factors. On the contrary, the climate policies are fundamentally global – international. So factors like the collapse of the CDM market – an international market that financed many Chinese wind and solar projects can have changed the attitudes at multiple levels in the NDRC system. Likewise the signing of the Paris agreement might have influenced thinking and priorities. The collapse of the CDM market came just before the first pilots started up. Was that collapse influencing the design? That the EU ETS did not work was fairly clear in 2013, but that nothing would be done about it is a more recent fact. On the other hand – a US governed by Trump might install a carbon tax system, not primarily to reduce emissions but in order to implement a carbon border tax which would protect US industry from coal based from developing countries like India and China, so called “green protectionism”. It would of course be rational for the US to at least have the level of taxes on petrol and gasoline as for example Europe. That would permanently force US car industry to produce more low-carbon vehicles – and in the short run they would be protected by a carbon border tax. In particular if it was of the Nordhaus “punishment” type, where the tax is flat, disregarding totally the actual carbon content of the imported product. With the EU there is also the possibility that there might emerge border tax adjustments, no longer free allocation to enterprises competing on the world market or with imported goods.

So the fact that the national system comes after just 3-4 years of experience with the pilots, might be explained by China wanting to have a national system in place in order to be able to point to the fact that they have – like EU an ETS – and be able to respond with changes in the system to new developments in global climate policy.

3.2. The announced target price – 5 to 15 USD – sign of failure from the start?

It was recently announced that the target price for the new national system would be 5-15 USD range (Carbon Pulse 2016a). In and EU ETS context that price level is a failure, a clear sign that EU emission allowances are not scarce enough. Which in its turn means that they do not drive a technological change. Gasoline is still cheap in use, so no transition to electric or other types of zero emission vehicles, air tickets still cheap – so no incentive to build high speed long distance trains to reduce flying etc.

But unlike the EU ETS the Chinese system does not even have as its prime objective to get emissions down, the objective is increased energy efficiency. So judged on its own stated objective the target price is not obviously a sign of failure. So if there is a measurable change in technology, if CFPPs start to build storage – one might say that the system is a success. Not from a emission reduction point of view of course – and that is the only important point of view given the yet unimaginable catastrophes connected to reaching the tipping points, where the process of global warming gets irreversible, humans can no longer by their action influence the process very much.

Because the reason why there up to now has been no will to make a system where the carbon price really bites (Carbon Pulse 2016b) is that a significant rise in fossil fuel prices would immediately rise create social tension and unrest. The world has historically seen great social unrest due to rapidly rising prices of bread – and rapidly rising petrol prices could easily have the same effect. Rising prices always makes the income distribution a key political question, so it is no big mystery why the electricity prices are set by the central government and are not been allowed to change as part of the ETS. For the country side the low price of electricity is probably important. It is probably perceived as a subsidy paid by the rest of Chinese society. If the CPC had instructed the NDRC to let electricity prices be flexible that is rising that might have meant a business opportunity for the country side to be renewable producers since solar and wind by its nature are diffuse relative to fossil energy, hydro-power and nuclear, so a lot of space is needed – and the country side has a lot of space, not the least more roof space per capita. But also among ordinary people in the big cities a system where ordinary citizens could produce their own electricity and sell – that would be a benefit for them. The transition from status quo to the new regime of much more decentralized solar and wind production is of course a difficult one, but mobilizing ordinary peoples short-term material interest in a higher income is necessary in order to mobilize them for their just as material interest in a stable climate. Aligning short and long term material interests is the key to get real, significant emission reductions.

4. Conclusion – The unavoidable questions

The main point of this paper is that the key question to ask about any climate policy initiative these days is: do they really want it to work? Because this simple question puts the spotlight on the motivation behind a climate policy measure – and sees the

implementation in light of the motivation – and the other way around. When you see the implementation one should in the same manner ask – does this way of implementing the climate policy measure indicate that they want it to work? Why go for a ETS which has not given a high carbon price anywhere, when carbon taxes have clearly less enforcement transaction costs? But just as important is it to locate the “they” – who are the brains behind the current policy?

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MODERN TRENDS IN PROJECT PORTFOLIO MANAGEMENT

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Abstract:

The use of project portfolio management is increasingly becoming a tool for promoting the strategy of the organization, which is a very important role. Using of standard methods or trying to design and apply sophisticated methods based on quantitative analysis is possible for portfolio management. Selection of project portfolio is a dynamic multi-criteria decision-making problem under risk. The paper presents an approach for dynamic project portfolio management based on the Analytic Network Process (ANP) model. An important factor of the proposed ANP model is time. Project portfolio management is associated with a significant level of risk. Decision trees and multi-criteria decision making methods are used. Hybrid procedure for dynamic multi-criteria project portfolio management under risk is proposed.

Introduction

In an accelerating economic world, projects become tools for promoting the objectives of the organization. There is a very extensive literature on the management of individual projects and project portfolios (Larson & Gray, 2011). Projects are in accelerating world rhythm the right option of solving problems of lot of organizations. Nothing is permanent, everything is temporary, and that makes pressure on companies to finish new products or services faster, cheaper and definitely not to fail. Risk is a very important factor in project management. Most project organizations exist in a multi-project environment. This environment creates the problems of project interdependency and the need to share resources. Strategic alignment of projects is of major importance to effective use of organization resources. Selection criteria need to ensure each project is prioritized and contributes to strategic goals.

Ensuring alignment requires a selection process that is systematic, open, consistent, and balanced. All of the projects selected become part of a project portfolio that balances the total risk for the organization. Management of the project portfolio ensures that only the most valuable projects are approved and managed. The key to success in project portfolio management is to select the right projects at the right time (Levine, 2005).

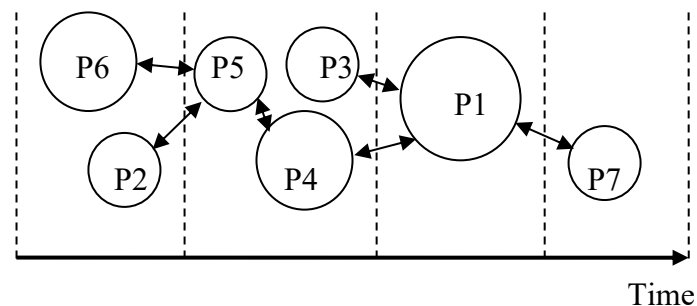
Strategic project portfolio management enables present a framework for organization to complete significant strategic projects. Portfolio management is a process evaluated by multiple criteria. This process must improve over time.

To select a portfolio of projects are basically two approaches, one is based on standard methods used in practice, the second approach is based on searching and applying new sophisticated methods based on quantitative analysis. The paper focuses on the of project portfolio selection problem solved by applying sophisticated models. The aim is to develop a general model, which would be completed for the specific needs of problems. This paper aims to verify the ability to model and solve the problem of dynamic project portfolio using the Analytic Network Process (ANP) model. Portfolio management is a process. This process must improve over time. The organization must decide under risk whether to assign all available resources to present proposals or to reserve a portion of the funds unused for some time and wait for better alternatives that may occur later. We propose to complete our ANP model by a decision tree with multiple criteria and interactive multi-criteria analysis for solving this problem.

1. Project portfolio selection problem

The central act of the new era is to connect everything to everything in deep web networks at many levels of mutually interdependent relations, where resources and activities are shared, markets are enlarged and costs and risk are reduced. Network systems contain both positive and negative feedbacks. A variety of feedback processes create complex system behaviour (Fiala, 2006). The portfolio management domain encompasses project management oversight at the organization level through the project level. Full insight of all components of the organization is crucial for aligning internal business resources with the requirements of the changing environment. Project portfolios are frequently managed by a project office that serves as a bridge between senior management and project managers and project teams. Project opportunities come in time and it is necessary to decide which will be accepted for creating a dynamic portfolio of projects and which will be rejected (see Fig.1).

FIG. 1: Dynamic flow of projects



Source: own

Project portfolio is set all projects that are implemented in the organization at that time. The basic objectives of the project portfolio management include: optimize the results of the entire project portfolio and not individual projects, the selection of projects to start, interruption or discontinuation of projects, defining priorities for projects, coordinate internal and external sources, organization learning from each other project.

It is generally expected that the portfolio should be designed in such a way as to maximize the possibility of achieving the strategic goals of the company. This is consistent with the notion that portfolio selection problem is a multi-criteria decision making. The main goal of each project is to increase the value of the organization, so most managers prefer financial criteria for project evaluation. The most commonly used indicators include net present value, internal rate of return, payback period, rate of return.

In addition to these financial indicators, however, in selecting a portfolio of projects should be taken into account other characteristics, which include for example: the probability of completing the project on time, within budget and within the proposed quality; consistency between strategic and tactical plans; the balance between investment projects and maintenance projects; efficient use of resources; relations between projects; the scope of each project; time-dependent consumption of resources on projects; allocation of expenditure and resources for research and development.

Lot of professionals tried to find sophisticated way to improve techniques for project management in different ways. The paper presents an approach for dynamic project portfolio management based on the ANP model.

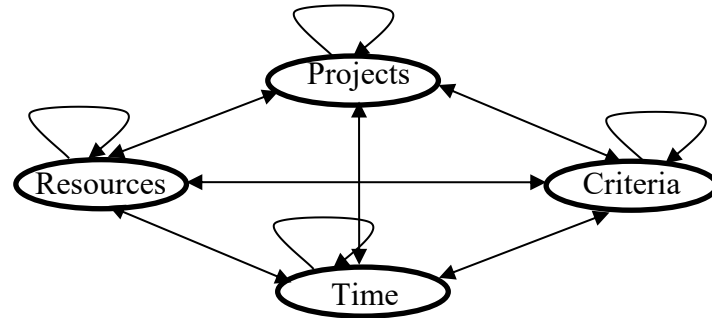
2. Analytic Network Process

The Analytic Network Process (ANP) is the multi-criteria method (Saaty, 2001) that makes it possible to deal systematically with all kinds of dependence and feedback in the performance system. The ANP approach seems to be very appropriate instrument for project portfolio management. Another issue is the appropriate selection of clusters, which would be the basis of the basic model and their fulfilment by system elements. Another specific problem is the creation of sub - networks in the ANP model characterizing the specific important circumstances of the model. The current economic environment is characterized by significant changes. An important problem of the model will be to capture the dynamics that would represent appropriate changes. Time dependent priorities play an increasingly important role in a rapidly changing environment of network systems. Long-term priorities can be based on time dependent comparisons of system elements.

2.1. Elements of ANP method

The structure of the ANP model for dynamic project portfolio (DPP) is described by clusters of elements connected by their dependence on one another. A cluster groups elements (projects, resources, criteria, time) that share a set of attributes. At least one element in each of these clusters is connected to some element in another cluster. These connections indicate the flow of influence between the elements (see Fig. 2).

FIG. 2: Flows of influence between the elements



Source: own

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The ANP model consists of four basic clusters with their elements and influences:

Projects: This cluster consists of potential alternatives of projects of which will be selected a dynamic portfolio. There are priorities among projects for inclusion in the portfolio. The cluster has connections to all other clusters.

Resources: Resources are necessary for the implementation of projects. Main resources are human resources between which are relations important for creating project teams. The cluster has connections to all other clusters.

Criteria: Projects are evaluated according to criteria which include benefits, opportunities, costs, and risks (BOCR). The cluster has connections to all other clusters.

Time: Time is measured in discrete units. Elements of other clusters vary in time and their values depend on the values in previous time periods.

The basic ANP model is completed by specific sub-networks. The sub-networks are used to model important features of the DPP problem. The most important features in our ANP-based framework for DPP management are captured in sub-networks: dynamic flow of projects, time dependent resources.

Dynamic flow of projects: Project opportunities come in time and it is necessary to decide which will be accepted for creating a dynamic portfolio of projects and which will be rejected. The sub-network connects clusters: time and projects.

Time dependent resources: A specific sub-network is devoted to model time dependent amounts of resources. The time dependent amount of resources is given by. The sub-network connects clusters: time, resources and projects.

2.2. Dynamics of ANP method

An important characteristic of project portfolio management is dynamics. Time dependent priorities in the ANP model can be expressed by forecasting using pairwise comparison functions (Saaty, 2007, Fiala, 2006).

Dynamic extensions of ANP method can work with time-dependent priorities in a networked system. There are two approaches for time-dependent pairwise comparisons: structural, by including scenarios, functional by explicitly involving time in the judgment process.

For the functional dynamics there are analytic or numerical solutions. The basic idea with the numerical approach is to obtain the time dependent principal eigenvector by simulation (Saaty, 2007).

Judgment matrix in dynamic form

$$A(t) = \begin{bmatrix} a_{11}(t) & a_{12}(t) & \dots & a_{1k}(t) \\ a_{21}(t) & a_{22}(t) & \dots & a_{2k}(t) \\ \vdots & \vdots & & \vdots \\ a_{k1}(t) & a_{k2}(t) & \dots & a_{kk}(t) \end{bmatrix}.$$

3. Decisions under risk

In each period, the portfolio of projects is reviewed in line with the strategic objectives of the organization. Management may decide to initiate new projects, but also to end of some others that are currently being implemented. Even if the organization has available funds, it is sometimes better to decide not initiate a new project and wait for better one. The organization must decide under risk whether to assign all available resources to present proposals or to reserve a portion of the funds unused for some time and wait for better alternatives that may occur later. We propose to use a decision tree with multiple criteria and interactive multi-criteria analysis for solving this problem.

3.1. Decision trees

Sequences of partial decisions which follow one another frequently occur in assessing potential projects. They are multi-stage decision processes. The task of the decision

maker is to select one of the possible sequences that leads to the best final goal solution. Decision-making takes place in periods $t = 1, 2, \dots, T$. The decision trees are used to solve these problems successfully.

Solution of multi-stage decision problems proceed in two phases. The first phase is the construction of a decision tree and the second phase is its evaluation. The graph tree structure is used by the construction of decision trees that appropriately models the branching options. The decision-maker creates and evaluates its parts in order to find the optimal sequence of decisions. Two types of nodes are considered, decision and chance nodes. The edges of the tree represent branching of decision and chance possibilities. We start with the decision node from which they emanate lines that represent the possible decisions a_i . The ends of these edges are chance nodes on which they rely edges representing s_j possible situations that may occur with conditional probabilities p_j . These edges can be followed by another decision nodes with possible decisions, as well as chance nodes with possible situations, etc. Large decision trees may arise by combining these basic elements. End edges, which are not followed by further decision and chance nodes, represent the possible end sequences of partial decisions that are evaluated.

Evaluation of the decision trees proceed in the opposite direction from the end edges back to the starting node of the decision. The decision-maker selects the decision that cannot affect the occurrence of situations and must take into account all situations with their conditional probabilities of occurrence. The decision from possible decisions is always chosen that delivers a better evaluation. Principle of maximizing the expected value is used in the selection. The optimal sequence of decisions is obtained in this manner.

3.2. Multi-criteria analysis

Multi-criteria decision trees (Haimes and Tulsiani, 1990) are used to select the most suitable strategy for a dynamic project portfolio management. We use standard methods of multi-criteria decision-making for their analysis. We will seek a final compromise strategy for dynamic project portfolio selection. This strategy should be called effective. Effective multi-criteria strategy is one to which no exists other alternative strategy that would be better at least under one criterion, and not worse under other criteria.

Multi-criteria analysis is at two levels: identification of all effective strategies for dynamic portfolio selection, interactive procedure for determining the final compromise strategy for dynamic portfolio selection.

The following simple procedure can be applied for the identification of effective strategies:

Step 1: Starting from the last period $t = T$, identify sub-effective strategy for all decision nodes of the period T .

Step 2: Go to the previous period $t = t - 1$.

Step 3: Identify strategies that meet the conditions of effectiveness for each decision node of the period t .

Step 4: If $t > 1$, go to step 2, otherwise the procedure stops.

Number of effective strategies can be large. It is possible to use a simple interactive process between the decision maker and solver for the selection of the final compromise strategy from the set of all effective strategies. In each iteration q , a set of strategies $S(q)$ is analysed and the ideal alternative $\mathbf{H}(q)$ (vector of best values according to each criterion) and the anti-ideal alternative $\mathbf{D}(q)$ (vector of worst values according to each criterion) are determined. The decision maker compares between such values may vary criteria values. The decision maker is asked about the aspiration levels of criteria $\mathbf{A}(q)$, which he would accept as a compromise strategy. If the decision-maker is satisfied with the proposed strategy, the process stops.

Interactive process to determine the final compromise strategy has the following steps:

Step 1: Iteration $q = 1$, the set of all analysed strategies $S(1)$ is equal to the set of all effective strategies.

Step 2: Determine the ideal alternative $\mathbf{H}(q)$ and the anti-ideal alternative $\mathbf{D}(q)$.

Step 3: Decision-maker is asked to accept anti-ideal values. If yes, go to Step 8.

Step 4: The decision-maker is asked to propose the aspiration levels $\mathbf{A}(q)$. If not, go to step 6.

Step 5: The decision-maker enters aspiration levels $\mathbf{A}(q)$ and he determines the corresponding set of acceptable strategies $S(q + 1)$. If $S(q + 1) = \emptyset$, go to step 4, otherwise to step 7.

Step 6: The decision-maker is asked which anti-ideal value is unacceptable for him. A new set of strategies is defined $S(q + 1)$ which exceed the unacceptable anti-ideal value.

Step 7: Set $q = q + 1$, go to step 2.

Step 8: The decision-maker is asked which criterion should reach the ideal value. The strategy that maximizes this criterion is the resulting compromise one.

Conclusion

The paper presents a proposed methodology for dynamic project portfolio management under risk. The basic ANP model with clusters (projects, resources, criteria and time) was created. The proposed ANP model captures the relationships between the clusters and their elements. An important factor of the ANP model is time. Decision making in the selection of project portfolio decisions is at risk. The solving procedure is an interactive method based on multi-criteria decision trees. The procedure is flexible and can be modified and generalized. The methodology is verified on the projects of an engineering company. The experimental results will affect the specification, completing and extending the model.

Acknowledgement:

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CHANGES OF FOOD SAFETY IN POLAND IN THE YEARS 2001-2014

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food industry – food safety – changes

JEL classification: Q22

Abstract

The article deals with an attempt to assess the changes of food safety in Poland in the years 2002-2014 based on the collected data regarding migration, the population of Poland, the level of expenditure and income of households, the production expenditures of agricultural industry in Poland and the outcomes of agricultural production. It has been stated that as a result of the agricultural policy in the studied period there was a growth of the food safety meant as an increase of production capacity of the country and an economical access of its inhabitants to products. Additionally, the main factors of the observable production changes as well as the farming households in comparison with Polish society are presented.

Introduction

The main role of a state as an institution is to guarantee a national safety. However, it does not mean merely to maintain the military capability of the given region serving to prevent and fight the effects of armed conflicts or natural disasters but also to use capacities to reduce the effects of economic crisis by appropriate management of each element of the social and economic life and in the result it should lead to the state sovereignty. Thus the safety strategy is a theory and practice of managing safety issues of a given entity (in this case a state) by the chief policy-maker (individual or collective) also involving decisions regarding the aims of safety and the means to achieve them (Koziej, 2011), that should include: military, political, social, ideological, information, ecological, cultural and economical safety (Stefański, 2013). Food safety as an element of economical safety is thus a vital aspect in the strategic planning of Polish safety while the dynamically developing Polish food industry (including agriculture as a source of resources supply) needs a special interest and academic and research aid to maintain its current position in the international arena and increasing its development (Firlej, 2014).

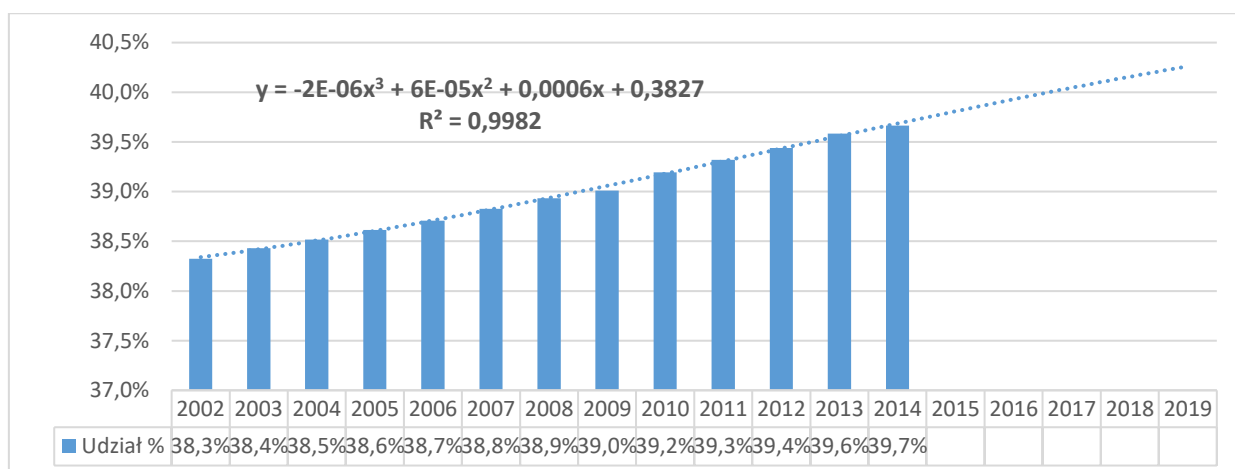
The definition of food safety was formulated for the first time at the International Food Conference in 1974 in Rome. Since that time, as a result of the initiated public debate on the problem, it has been supplemented with an access to food not only in the form of

physical access but also economical and with an approach on both individual and national level (Trade Reforms and Food Security, 2003). It has been accepted that the food safety 'on an individual person, a household, national, regional and global level will be achieved when all the people will constantly have a physical and economical access to sufficient amount of safe and nutritious food satisfying their needs and food preferences for active and healthy life' (Rome Declaration on World Food Security and World Food Summit Plan of Action, 1996). With food safety in a macro scale (understood as a component of national safety) a self-sufficiency is closely connected, which means an economical and physical food access on the domestic market measured mainly with the use of a merchandise trade balance of agricultural and food products (Hałasiewicz, 2011).

The aim of the study is an attempt to present the changes of the level of food safety in Poland. In the conducted research the comparative analysis was performed of the data concerning migration and Polish population, a level of households expenditure and income, production expenditures of the agricultural industry in Poland as well as the outcomes of the production. In order to show the later economic changes better the simple forecast methods based on trend analysis were used.

The analysis of Polish population

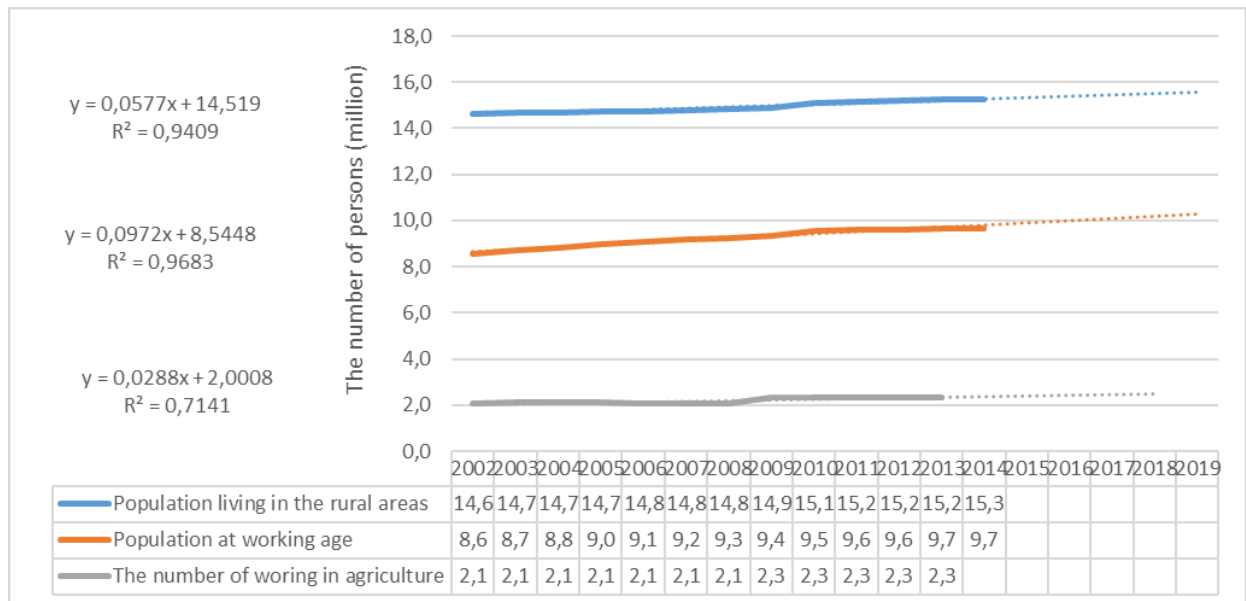
Agricultural enterprises is a sector associated with traditional forms of enterprise based on three primary production factors: farmland, capital and work. In the contemporary geopolitical situation they are also trying to improve their productivity by using new solutions (implementation of innovative production technologies, building relations with the new markets or introducing a new organisation of the industry connected with this sector (Wójcik, 2011), that in their nature are inseparable value of the human capital (Firlej, Palimąka, Mierzejewski, 2016). From the perspective of food safety it is vital to maintain the appropriate farmlands and capital as well as the amount of rural areas inhabitants capable to generate, spread and finally implement new, previously mentioned, solutions. The value and the amount of food industry production contributes to eliminating threats connected with providing food safety in the world, which is increasing with the growth of population and a global demand for food products (Firlej, Żmija, 2015).

FIG. 1: Rural areas inhabitants compared to the whole Polish population

Source: own studies based on The Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

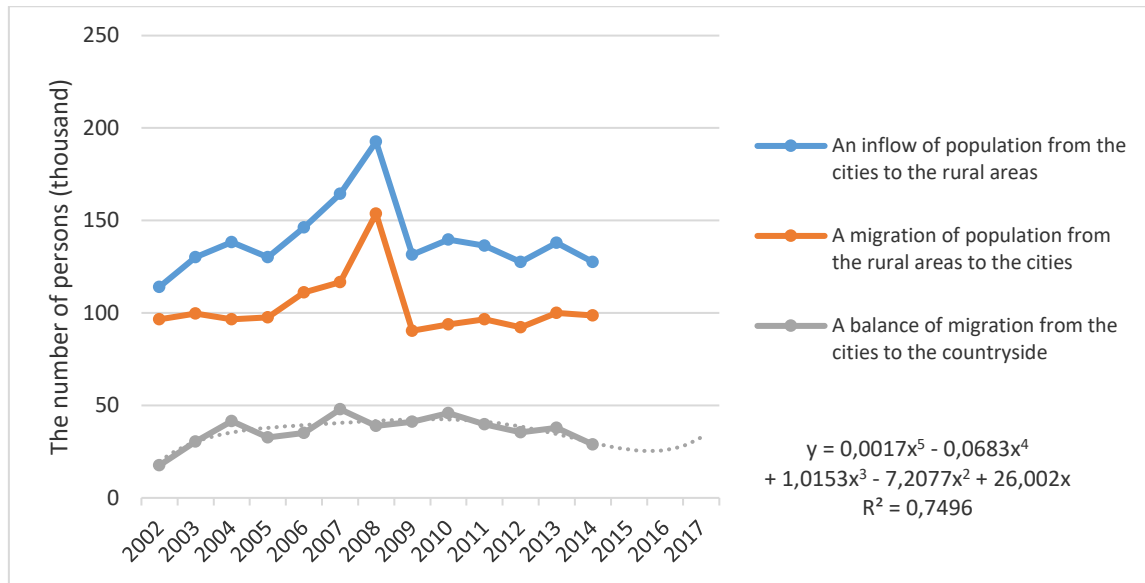
The above figure shows the changes in the share of rural areas inhabitants compared to the whole Polish population. The number of Polish inhabitants in the studied period increased from 38,219,000 to 38,479,000 (The Main Statistical Office, 2016). A positive tendency is being observed in the migration trend between cities and the country during the years 2002-2014 that resulted in the change of the share by 1,4% to the rural areas advantage. On the assumption that the migration situation will not change it may be predicted that in 2017 the country population will constitute 40% of the whole population, which is presented in the figure.

However, it should be added that in the years 2003-2014 an increase of the number working in the agriculture was much lower compared to a growth of the amount of people at working age living in the rural areas – they amounted to respectively 0,2 million and 1 million inhabitants.

FIG. 2: The changes in the amount of people working in agriculture in the rural areas

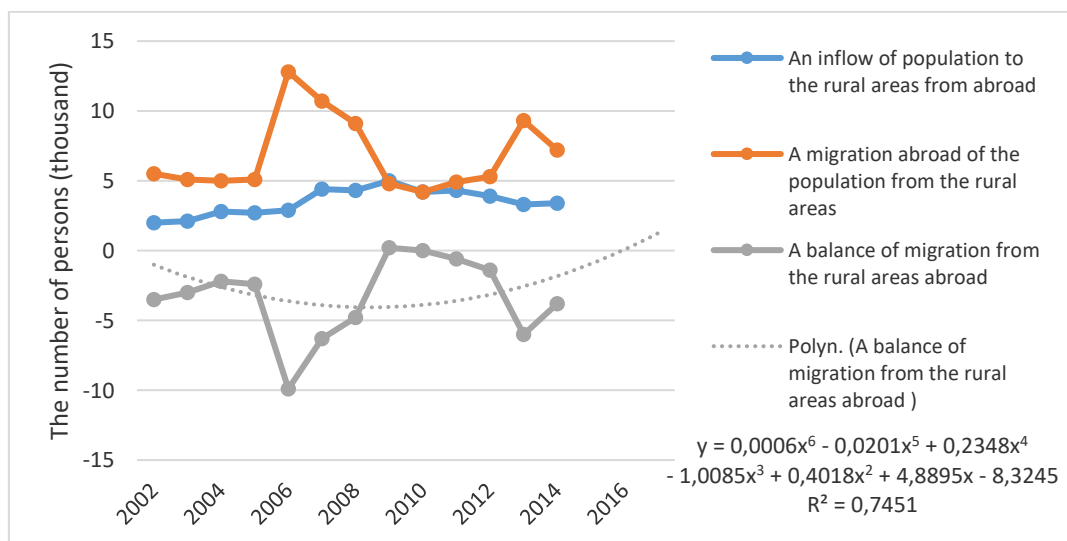
Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

As the above figure presents the dynamics of changes still remains beneficial from the perspective of food safety in the long term. The data from the years 2003-2014 show a slow but consistent growth tendency of employment in this sector ($y = 0,0288x + 2,0008$ for $R^2 = 0,7141$). The decrease of the level of registered unemployment (from 1341,3 thousand in 2002 to 812,1 thousand in 2014) may suggest that with the growing number of country inhabitants and a lower growth of employment in agriculture the significant percentage of the inhabitants of these regions finds an employment in the service industry and production located not necessarily in their place of residence.

FIG. 3: Migrations inside the country in the years 2002-2017

Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

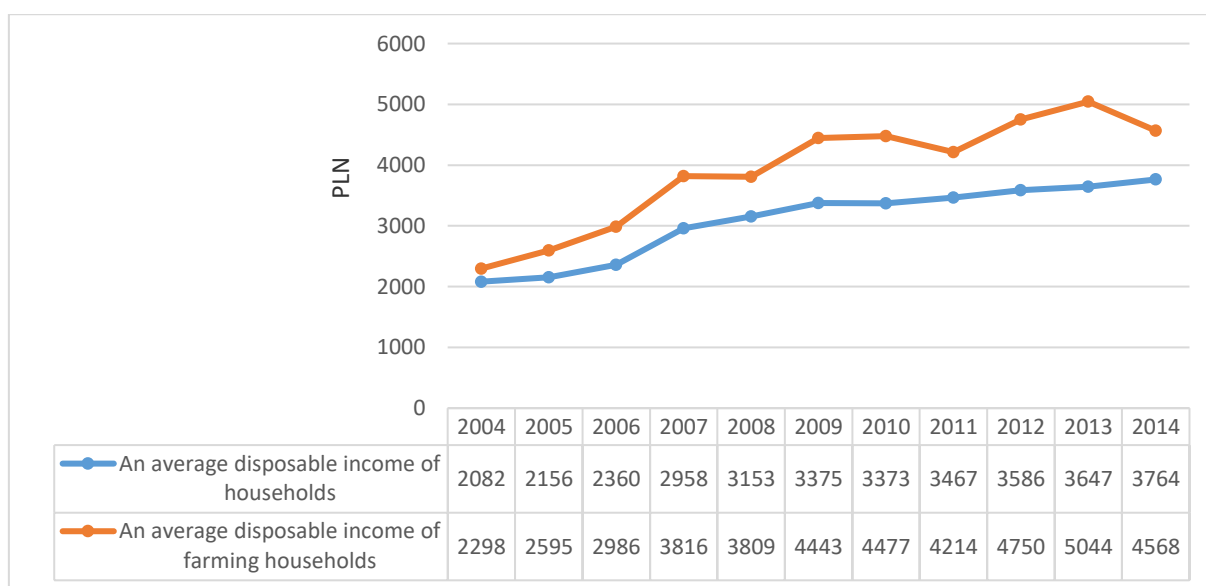
The figure presents the changes of the level of migration and supports the previously proposed thesis that a growth of the amount of population living in the countryside results in, to a large extent, the maintaining positive migration balance from the rural areas to the urban areas. This level is relatively stable and fluctuates from 17,6 thousand in 2002 to 41,6 thousand in 2004.

FIG. 4: International migrations of population from the rural areas in the years 2002-2014

Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

The foreign migrations situation despite the maintaining negative balance contains a little percent of people living in the rural areas (0,02%) so it does not have a significant influence on a development of production capacities of agriculture in Poland. Due to the changes in 1989 there were significant changes in the agriculture sector. The state-owned farms were closed down which resulted in a collapse of income of the farming households and the rural population was forced to abandon the agriculture jobs. On the other hand the industrialization of the agricultural production took place giving hope for stable sources of income (Popow, 2011). The independent factors such as global changes of food demand, fluctuation of oil prices, an increase of speculations on the food market, an increase of the share of agricultural production in biofuel production, new diseases of plants and animals, etc. (Zientek-Varga, 2009) force to search for new solutions in order to guarantee food safety. The significant role in this issue plays the Common Agricultural Policy which is developed by the organs of the European Union. Direct payments as a part of the farmers income pay a significant role not only in developing food safety and wildlife protection (Chądzyński, 2012), but also contribute to reduction of fluctuation of the farming households income, which, as the studies show, do not depend on the level of their development but are the result of a market play and adopted political solutions (Runowski, 2011).

FIG. 5: Changes of households disposable income in the years 2004-2014



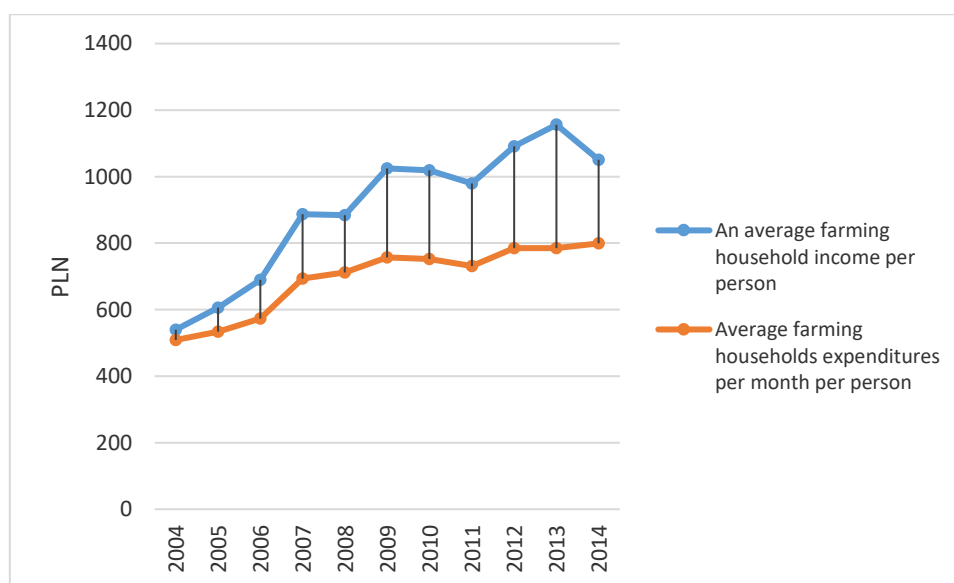
Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

The figure above presents the levels of income of households from 2004 to 2014. As the data show the farming households income was higher than the average households income in Poland during the studied ten years (on average 825,39 PLN per month) with the maintaining growth trend of both of the observed values. This situation indicates not only the improving (faster than average) situation of the farming households but also the

improvement of the food safety level in the context of an economical access to food of all inhabitants and especially people dealing with the food production.

On the other hand, however, there was a simultaneous increase in farmers expenditures and as a result it has an influence on savings generated by this group that can be used for investment and at the same time to improve the discussed safety.

FIG. 6: Changes of the value of the average income and expenditure of farming households in the years 2004-2014

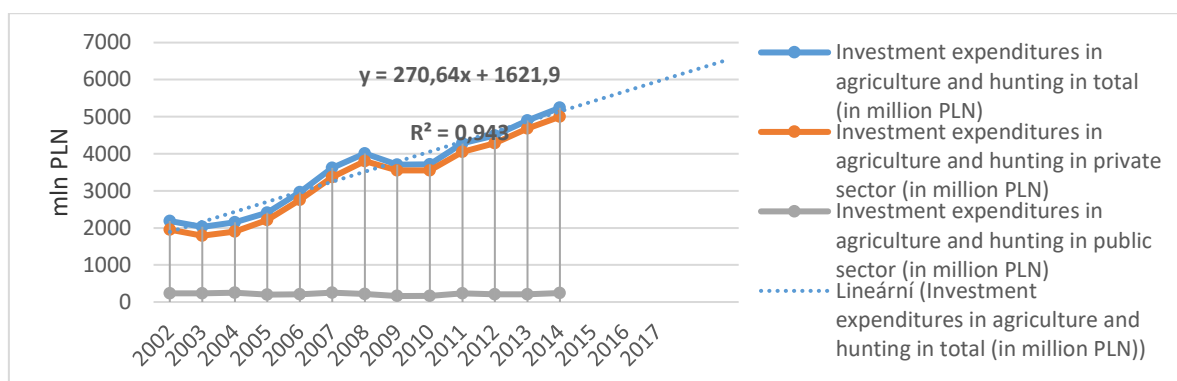


Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

As the above figure shows the presented expenditures values have the lower dynamics than the increase of income – the difference amounted to on average 208,78 PLN per person per month. According to the previous assumption this result should enable the growth of investment that is the effectiveness of agriculture in Poland.

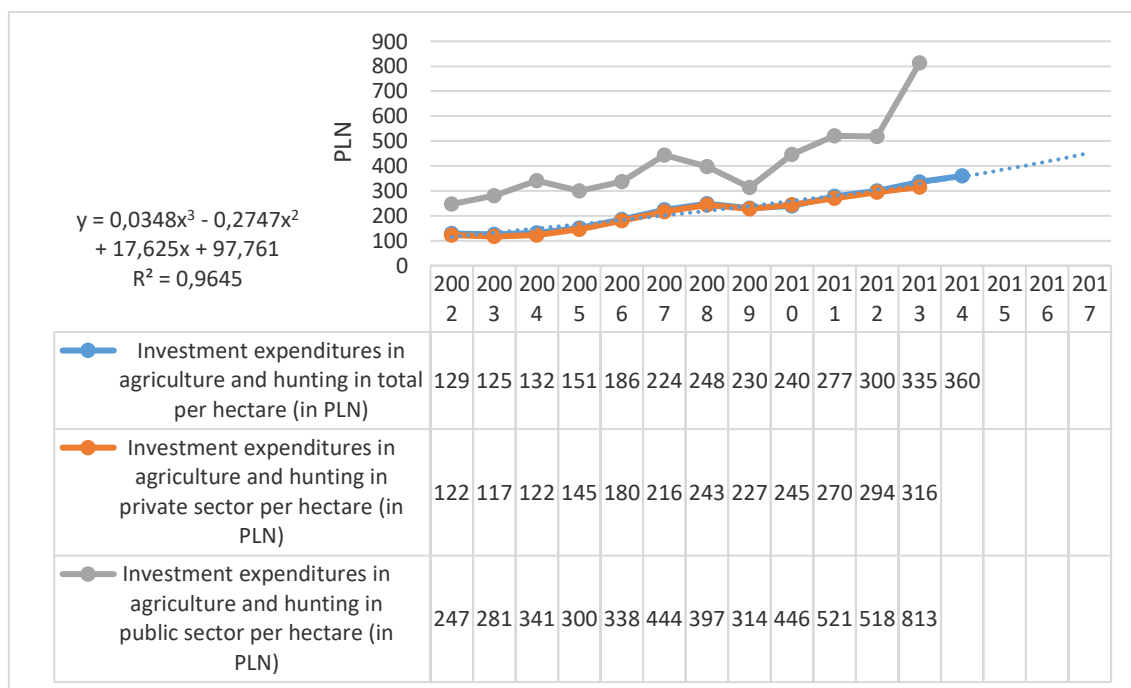
The analysis of effectiveness of agriculture in Poland

The European Union policy oriented to stimulate the economic growth contributed to an increase of demand for agricultural and food products (Zegar, 2009), and that in turn led to a trade deepening of these products (Dzun, Józwiak, 2008). This change resulted in remoulding of macroeconomic environment of agriculture after 2004 and had a direct impact on the prices of agricultural products and the prices of expenditures used for agricultural production (Józwiak, 2009). At the same time the covering of the agricultural sector by the previously mentioned the Common Agricultural Policy, which enabled an investment support of farmers, had a significant influence on the supply situation (Zegar, 2012).

FIG. 7: Investment expenditures in agriculture and hunting in the years 2002-2014

Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

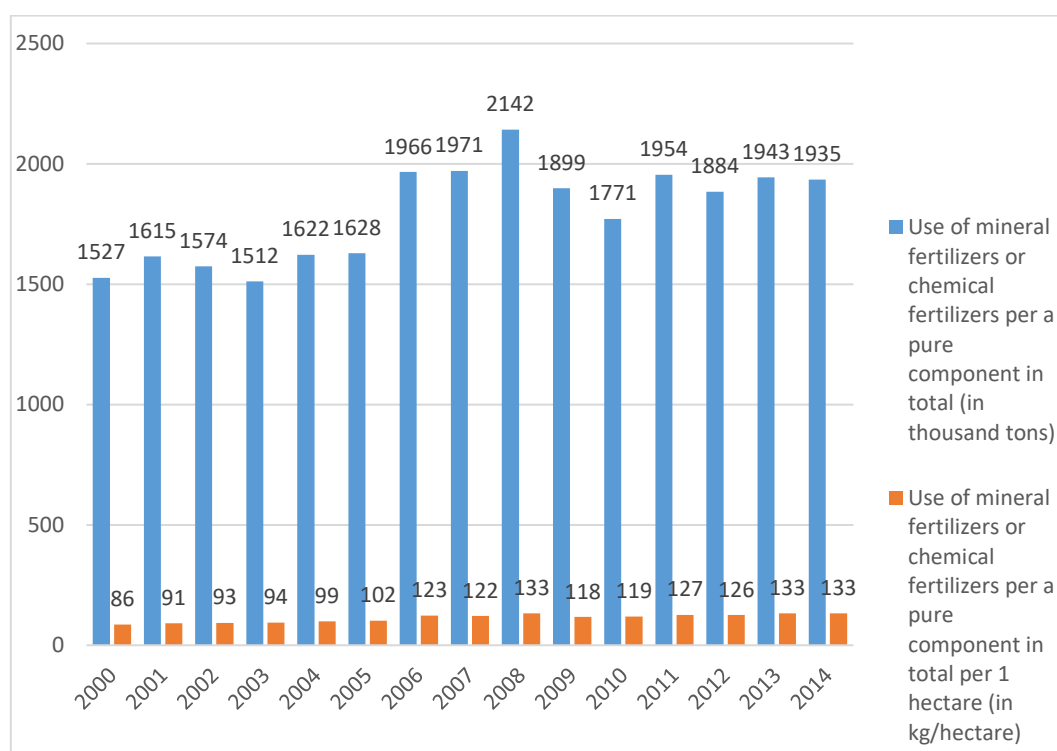
The above figure presents the dynamics of changes of the investment expenditures in total. The result in total is characterized by a stable growth in which the main growth value is generated by previously mentioned (see: “Changes of the value of the average income and expenditure of farming households in the years 2004-2014”) private sector. The noticed increase between 2002 and 2014 amounted to 3045 million PLN. The situation in the public sector is stable – the value of annual investment expenditures fluctuates around 220 million PLN for a given year.

FIG 8. Investment expenditures in agriculture and hunting per hectare in the years 2002-2014

Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

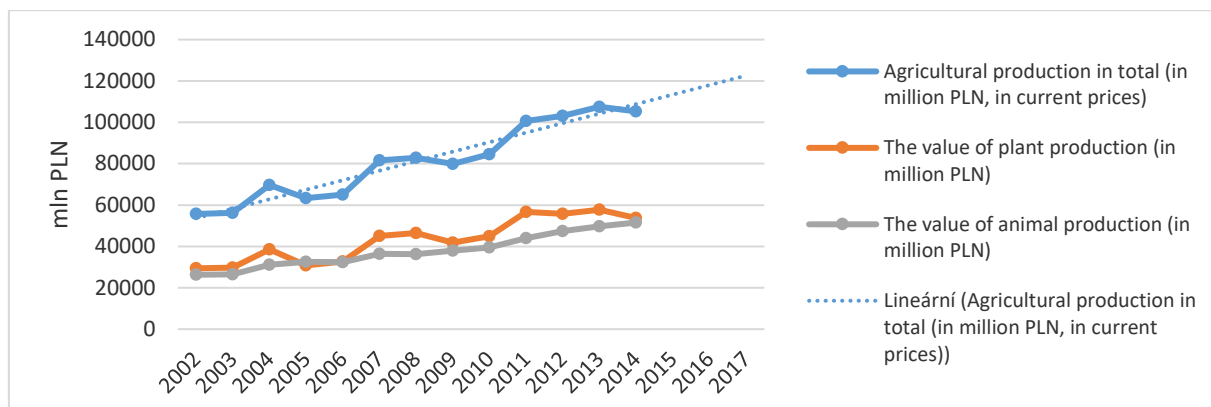
Compering the data in figure 8 with the previously presented data of the investment expenditure, it can be stated that the public sector of agriculture is striving to a decrease of the size of acreage with the simultaneous maintaining of the same investment expenditures. On the other hand, the percentage change of the value of expenditures per hectare between 2002 and 2012 in the private sector was merely 30% lower, which suggests an increase of taking advantage of the capital by the private enterprises and development of their production potential.

FIG. 9: Use of mineral fertilizers or chemical fertilizers in the years 2000-2014



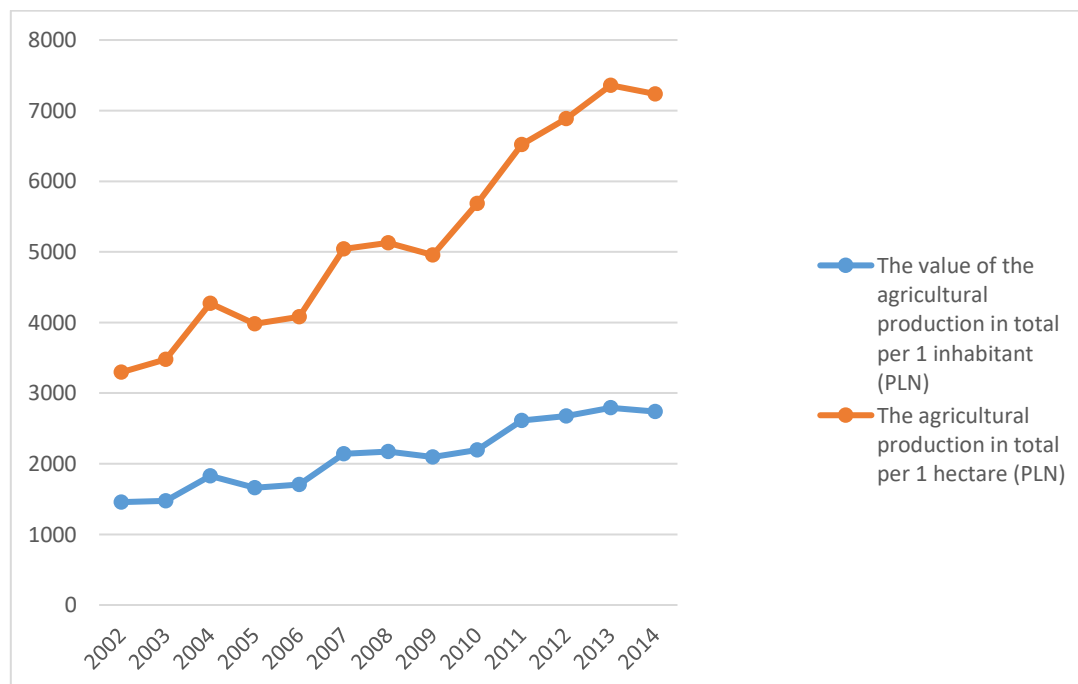
Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

The similar findings suggest the use of mineral or chemical fertilizers presented in figure 9. In the years 2000-2014 in Poland a significant increase of usage of these products in agriculture was noticed, both in general values (increase by 27%) and values per hectare (increase by 55%). Similarly the increase of usage of fertilizers indicates the improvement in productivity of the agricultural enterprises in Poland.

FIG. 10: The value of agricultural production in the years 2002-2014

Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

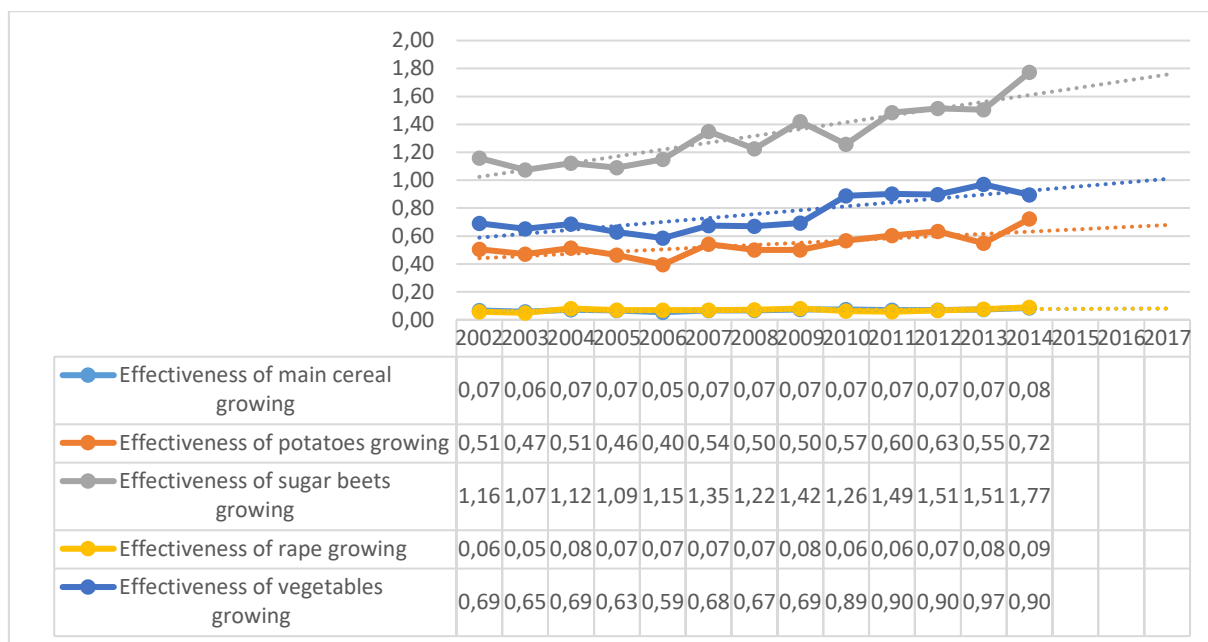
In the years 2002-2014 there was an increase of the value of plant and animal production. Although in case of the animal production the increase of value was connected with larger oscillations, the trends of the both forms of agricultural activity are similar, which is shown in the figure. From the perspective of studying food safety it is also important to indicate that in the Polish agricultural production there is a value balance between animal and plant production – both provided about 52 million PLN in 2014.

FIG. 11: Changes in the agricultural production in Poland in the years 2002-2014

Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

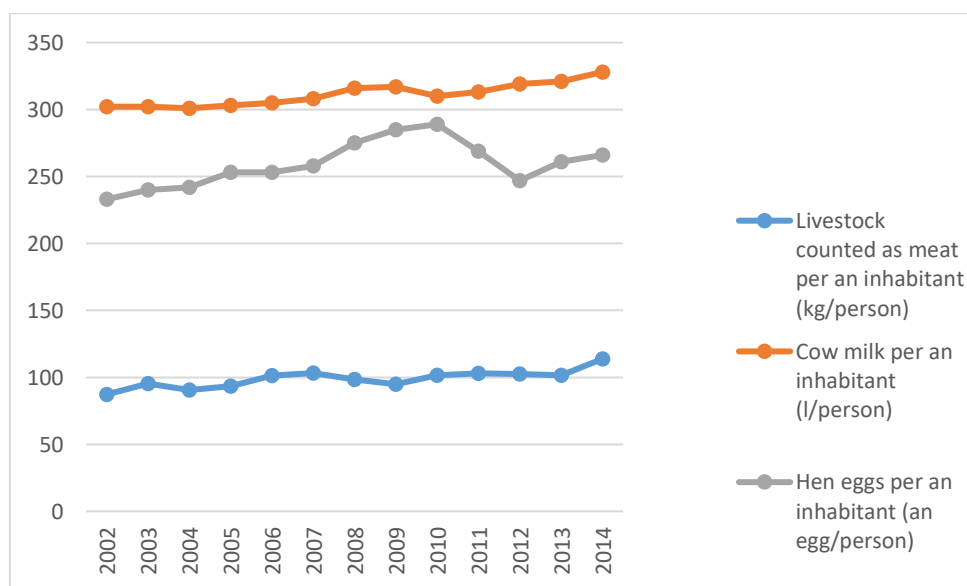
Despite the growing tendency of population in Poland in the years 2002-2014, the value of the agricultural production in total per one inhabitant was increasing, which may indicate a permanent improvement of the capacity of the agricultural production. Similarly, this tendency is noticeable in changes of the value of the agricultural production in total per hectare, which eliminates an improvement of food safety based on an increase of acreage.

FIG. 12: Changes of the effectiveness of farming in the years 2002-2014



Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

In order to assess the changes of food safety in Poland in terms of plant production in the years 2002-2014 the factor of farming effectiveness per one inhabitant was determined, it is presented in the above figure. It shows how many kilograms of the chosen product from one thousand of hectares of the area of its growing fall on one inhabitant in the given year. An increase of its value in time means a growth of the state capacity to provide the physical access of the chosen products to all citizens. In Poland the largest usage of crops per inhabitant is noticed in case of cereal, sugar beets, rape and vegetables growing. Therefore in order to assess the food safety of this region these products were taken into account. As it is presented in the figure in the studied years there was a dynamic growth of the factor value for potatoes and vegetables production and the biggest amounting to 50% for sugar beets production. The values of the other crops (cereal or rape) noticed slight changes but this did not influence significantly on the change of the researched food safety.

FIG. 13: Changes of the production of animal products in the years 2002-2014

Source: own studies based on the Main Statistical Office data, <http://stat.gov.pl/>, downloaded on the 10th of October 2016.

Contrary to the plant production, the animal production, also showing a positive trend, did not notice such abrupt changes. The values of livestock counted as meat per one inhabitant in Poland amounted to about 100 kilogrammes per person. Similarly, the amount of cow milk were a little over 300 litters per one inhabitant. The most dynamic changes were visible in the hen eggs production and their average number per one inhabitant in the years 2002-2014 amounted to 260 eggs a person.

Summary

In the years 2002-2014 there was a sudden development of agriculture productivity in Poland based on an increase of effectiveness of the existing farming by the growth of investment expenditure (buildings and machines) as well as fertilizers used in growing. Poland has suitable natural conditions enabling a production of surplus of food that may be allocated for export and as a result it can lead to expanding the domestic offer by products that are not produced in our country. As a consequence, the structure of food consumption can be significantly varied (Mikuła, 2012).

At the same time there was the growth of population in Poland from 38,219,000 to 38,479,000 that additionally increased the demands concerning the provision of agricultural production. The studies of the social migrations also indicated that the rural areas are becoming more and more popular, which is visible by the increase of countryside inhabitants as well as the growth of a number of people working in agriculture. The results also showed that the income of farming households, as a result

of restructuring of agriculture and changes taking place after 1989, not only equals the income in total but exceeds it by on average 825,39 PLN per month.

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THE PROTECTION OF INDUSTRIAL PROPERTY IN POLISH VOIVODESHIPS IN THE POST-ACCESSION PERIOD

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Keywords:

protection of industrial property – patent system – patents

JEL classification: O32, O33, O34

Abstract:

The study makes an attempt to assess a development of industrial property protection in the Polish regions during the post-accession period. In the theoretical part of the study the main law factors of the protection of industrial property in Poland were discussed as well as the role of protection in a development of innovative solutions by enterprises, scientific research institutes and high schools. In the empirical part of the article a taxonomical analysis of the development of the industrial property protection in Polish voivodeships in the years 2004, 2008 and 2012 are presented. The studies of voivodeships were based on a standardized sum method, statistical ranks and dynamic ranks, which enabled their classification.

Introduction

In the contemporary enterprises, scientific research institutes and high schools that provide economy based on knowledge, intellectual property perceived in broad scope with particular reference to industrial property is the key issue during the process of taking economic decisions. Innovative products, new utility models and trademarks as well as various artistic projects introduced every day on a market are the result of people's innovative character and creativity. The main driving force of such innovations is previously mentioned entities that are not often fully aware of functioning rules of the protection system. The appropriate use of this system enables an effective protection of interests both enterprises and the creators of such solutions (Rybiński, 2006).

A superior role of the intellectual property law ¹ is to ensure an effective protection of human intellect products. They have immaterial character so they may be subject to easy and affordable imitation. What is more, a copying does not mean the quality loss.

¹ Intellectual property law contains copyright and related rights (pieces, artistic performances, phonograms, broadcasting, the first editions and an academic and critical edition) and industrial property law (inventions – patents, utility models, industrial patterns, trademarks, geographical notations and topography of integrated circuits).

On the other hand creating an intellectual property is relatively expensive. This relationship may be clearly presented by an example of advanced computer programs as their development is connected with incurring high expenditures whereas the copying itself is relatively much more cheaper because it requires only a computer and a carrier. With reference to traditional objects the situation appears different because there is no possibility for such cheap and easy copying of a chair or a table. Thereupon the intellectual property requires a specific protection system (Biga, 2014).

The aim of this article is to assess a development of the industrial property protection in Polish voivodeships during the post-accession period.

Legal regulations concerning the protection of industrial property in Poland are included in the domestic regulations, directives and orders of the European Union and international agreements. The most important law is the law from the 30th of June 2000, The law of industrial property (Ustawa z dnia 30 czerwca 2000). The amount of charges paid in the stage of proceedings to obtain and by way of maintaining protection of inventions, utility models, industrial patterns, trademarks, geographical notations and topography of integrated circuits is contained in the Council of Ministers directive from the 26th of February 2008 (Rozporządzenie Rady Ministrów z dnia 26 lutego 2008). This document recommends dividing over time the amount of charges for the invention protection (the cost of maintaining a patent), which refers to the recommendations of theory and practice of the other developed countries. At the beginning for the first three years the fare amounted to 480 PLN is charged in order to protect the Polish Patent Office against the excessive number of applications concerning the inventions of low economic value. From the fourth year the charge is 250 PLN a year and grows consistently to twentieth and at the same time the last year of patent protection when it amounts to 1550 PLN (Czerniak, 2013). It is worth noticing that the level of charges is not very high but it should be remembered that the protected entities are forced to incur costs of services connected with management of intellectual property. They include among other things: the cost of legal services concerning registration of intellectual property law, the cost of monitoring breach of these regulations, out of court and court cost of legal arguments (Kulawczuk, 2009). The possibilities for enterprises to use their own patents are wide and may concern for example an application in new products, processes or services, which allows achieving a competitive advantage on a market. Another way of drawing profits from having a patent that is often used is making a new patented technology available to the other entities by giving them the paid licence (Oleksiuk, 2012).

Patents pay an important role in the process of popularization knowledge and technologies. The store of knowledge and information that would remain covered is increasing because an invention should be precisely documented. On the other hand there are opinions that patents are a barrier to science that becomes more hermetic and costly because the third parties are obliged to incur additional costs in order to have

possibility to use a patented invention. That is why politics and a patent system should be skilfully designed and implemented to maximize benefits and limit the costs for society (Kabat-Rudnicka, 2011).

1. Methods

In this article an analysis of a development of industrial property protection in Polish voivodeships in the years 2004, 2008 and 2012 was performed with the use of selected taxonomical methods. It was based on a set of typological variables characterising the studied phenomena that include such factors as submitted domestic inventions, granted domestic patents, submitted domestic utility models for 1 million of population, admitted domestic protection law and patent applications submitted to the European Patent Office for 1 million of population. The choice of the diagnostic variables was performed with the use of agglomerative communities analysis by Ward method that enabled to indicate two variables, That is submitted domestic utility models for 1 million population and patent applications for the European Patent Office for 1 million of population. At the next stage of the studies standardization was used to normalize the variables. Then the dynamic analysis of the level of development of the industrial property protection in Polish voivodeships was performed with the use of non standard methods: standardized values (sums), statistical dynamic ranks.

The method of standardized values (standardized sums) begins with standardization of variables according to the formula (Stec, 2008):

$$z_{ij} = \frac{x_{ij} - \bar{x}_j}{s_j}$$

where:

\bar{x}_j - arithmetic mean of j characteristic

s_j - standard deviation of j characteristic

If the set of variables contains destimulants they should be converted into stimulants by multiplication of their standardized values by -1. The next step is to calculate an arithmetic mean from the standardized values of variables corresponding to particular objects according to the following formula:

$$q_i = \frac{1}{m} \sum_{j=1}^m z_{ij} \quad i = 1, 2, \dots, n$$

q_i values form a vector:

$$q = \begin{bmatrix} q_1 \\ q_2 \\ \vdots \\ q_n \end{bmatrix}$$

The bigger the value of q_i measure the more developed by the prism of variables used in the analysis is i object.

The second of non-standard methods taken into consideration in the study, that is the rank method, involves leading variables to comparability and additiveness with the use of ranking each of them (from 1 to n in case of stimulants and in the opposite order for distimulants) (Stec, 2008). At the next step the sum of assigned ranks is determined for each object taking into consideration all the studied variables. These values form the following matrix:

$$w = \begin{bmatrix} w_{11} & w_{12} & \dots & w_{1m} \\ w_{21} & w_{22} & \dots & w_{2m} \\ \dots & \dots & \dots & \dots \\ w_{n1} & w_{n2} & \dots & w_{nm} \end{bmatrix}$$

where:

w_{ij} – is the rank given to i object on account of j variable.

At the next stage we calculate a mean value according to the formula:

$$\bar{w}_i = \frac{1}{m} \sum_{j=1}^m w_{ij}$$

Thanks to that we obtain values of a development measure for each object. The smaller \bar{w} value the better the given object is developed in the aspect of variables taken into account.

2. Results

Within the synthetic factor of standardized sums and statistical ranks the best results in 2004 were observed in the following voivodeships: Mazovia (3,274; 1), Lesser Poland (2,159; 2) and Lubuskie (2,100; 3), the worst in: Świętokrzyskie (0,373; 16), Podlasie (0,428; 15) and Warmia-Masuria (0,441; 14). In 2008 the best results have the voivodeships: Mazovia (3,033; 1), Lesser Poland (2,326; 2) and Silesia (1,889; 3), and the worst: Warmia-Masuria (0,000; 16), Podlasie (0,104; 15) and Lubuskie (0,385; 14). Similarly, in 2012 the best were the voivodeships: Mazovia (2,935; 1), Lesser Poland (2,236; 2) and Lubuskie (1,922; 3), and the worst: Warmia-Masuria (0,218; 16), Podlasie (0,235; 15) and Świętokrzyskie (0,370; 14) (tab. 1).

The value of the synthetic factor of standardized sums has increased since 2008 compared with 2004 in 11 voivodeships and decreased in five. The biggest growth was in Lubelskie voivodeship (1,359) and the biggest drop in Lubuskie (-1,715). The value of this factor in 2012 against 2004 increased in seven voivodeships and dropped in nine. The higher increase was observed in Łódź voivodeship (0,454), and the biggest drop in Mazovia (-0,339). Similarly in 2012 against 2008 there was an increase in six

voivodeships and a drop in ten. The biggest increase was in Lubuskie voivodeship (1,537) and the biggest decrease in Lubelskie voivodeship (-1,169) (tab. 1).

Analysing the dynamic ranks, the best results may be seen in Mazovia voivodeship (1, 2 and 3 position in the years 2004, 2008 and 2012) and Lesser Poland (4 and 5 position in the years 2008 and 2012). The worst are the results in Warmia-Masuria voivodeships (48 and 46 position in the years 2008 and 2012), Podlasie (47 and 45 position in 2008 and 2012) and Świętokrzyskie (44 position in 2012) (tab. 1).

The comparison of rankings of the synthetic factors of standardized sums, statistical and dynamic ranks for the whole period shows the high agreement regarding the positions taken by particular Polish voivodeships. Greater Poland, Lubuskie, Kuyavia-Pomerania and Lubelskie had small shifts up or down by two positions, Dolnośląskie by one position (tab. 1).

TAB. 1: The assessment of the level of the industrial property protection development in Polish voivodeships in the years 2004, 2008 and 2012

Voivodeship	Synthetic factors of standardized sums			Statistical ranks			Dynamic ranks			Ranking of synthetic factors of standardized sums	Ranking of statistical ranks for the whole period	Ranking of dynamic ranks for the whole period	Increase or decrease of the level of development		
	2004 year	2008 year	2012 year	2004 year	2008 year	2012 year	2004 year	2008 year	2012 year				in 2008 against 2004	in 2012 against 2004	in 2012 against 2008
Mazowieckie Mazovia	3,274	3,033	2,935	1	1	1	1	2	3	1	1	1	-0,240	-0,339	-0,099
Małopolskie Lesser Poland	2,159	2,326	2,236	2	2	2	6	4	5	2	2	2	0,167	0,077	-0,090
Śląskie Silesia	1,996	2,129	1,889	4	3	4	10	7	12	3	3	3	0,132	-0,108	-0,240
Wielkopolskie Greater Poland	1,316	1,370	1,294	5	6	6	16	15	17	6	4	4	0,054	-0,022	-0,076
Łódzkie	1,120	1,688	1,574	8	5	5	23	13	14	5	5	5	0,568	0,454	-0,114
Lubuskie	2,100	0,385	1,922	3	14	3	8	42	11	4	6	6	-1,715	-0,177	1,537
Dolnośląskie	1,143	1,149	1,174	7	8	7	22	21	19	8	7	7	0,006	0,030	0,024
Kujawsko-Pomorskie Kuyavia Pomerania	1,171	1,221	1,007	6	7	9	20	18	25	9	7	8	0,050	-0,163	-0,214
Lubelskie	0,661	2,020	0,851	11	4	11	34	9	28	7	9	9	1,359	0,189	-1,169
Pomorskie Pomerania	0,781	0,823	0,876	9	10	10	30	29	27	10	10	10	0,042	0,095	0,053
Podkarpackie Sub-Carpathian	0,657	0,694	1,025	12	11	8	35	31	24	11	11	11	0,037	0,369	0,331
Opolskie	0,559	0,894	0,677	13	9	12	38	26	33	12	12	12	0,335	0,119	-0,216
Zachodniopomorskie West-Pomerania	0,684	0,636	0,580	10	12	13	32	36	37	13	13	13	-0,048	-0,104	-0,056
Świętokrzyskie	0,373	0,391	0,370	16	13	14	43	41	44	14	14	14	0,018	-0,003	-0,021
Podlaskie	0,428	0,104	0,235	15	15	15	40	47	45	15	15	15	-0,325	-0,193	0,132
Warmia-Masuria	0,441	0,000	0,218	14	16	16	39	48	46	16	16	16	-0,441	-0,222	0,218

Source: own studies based on the carried out research.

Conclusions

On the grounds of the performed analysis in the area of industrial property protection in Polish voivodeships during the post-accession period the following findings may be formulated:

- a) The effective system of industrial property protection is an important determinant of economic entities innovation because it protects their rights and enables them getting benefits from the developed innovative solutions, industrial patterns, trademarks as well as other artistic and creative solutions. The lack of the appropriate protection of the industrial property especially of patent law unfavourably influences on the companies involvement in a research and development activity because the profits from the development of a new product may be very limited;
- b) The correctly functioning system of the industrial property protection from the aspect of patent law should be a compromise between the encouragement of entrepreneurs to develop innovative products and solutions and their availability for a society. An inappropriate degree of protection will refrain from undertaking the research and development activity and too high will prevent the other entities the use of the previous results with the aim of conducting further studies;
- c) The analysis of the level of development of the industrial property protection in Polish voivodeships in the years 2004, 2008 and 2012 based on the standardized sums method, statistical ranks and dynamic ranks allows to select three best voivodeships: Mazovia, Lesser Poland and Silesia and three the worst: Warmia-Masuria, Podlasie and Świętokrzyskie.

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PERFORMANCE IN FAMILY SMALL AND MEDIUM-SIZED COMPANIES: EVIDENCE FROM THE CZECH REPUBLIC

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Keywords:

family business – non-family (external) manager – Czech Republic – performance

JEL classification: G320, M12

Abstract:

This article presents selected results of a pilot survey and concerns an ownership aspect, concretely a family ownership in relation with performance of a company. The performance is evaluated by Return on Assets, Return on Equity and Return on Sales. In framework of these aspects, the article shows the difference between family and non-family companies in the period from 2011 to 2014. Next, it describes if presence of external manager in a family firm and level of family ownership influence the performance.

Introduction

Family business have not long tradition in recent history of the Czech Republic (Hesková et al., 2008). The tradition was interrupted after the World War II. Business began to develop again after 1989 (Rydvalová et al., 2015). The estimation of contribution of family businesses to national economic is 30% of GDP (Svobodová, 2015). Next estimation states that 30% of all enterprises in the Czech Republic are family businesses (Koráb, 2008). But the estimation of contribution of family firms in other countries ranges from 60% to 90% (IFERA, 2003). These are some reasons why a topic of family business is very actual nowadays in the Czech Republic.

Family-owned companies very often solve the principal-agent problem. Trust within the family reduces costs for monitoring opportunistic agent. Hence, many family businesses do not want to hire an external manager. Next, they have risk aversion and do not want to give any influence and information to non-family member (Miralles-Marcelo et al., 2014). But a problem can appear in family businesses: altruism, nepotism (Koráb, 2008) or lack of talent. Professionalism of family company plays role in the performance of the firm (Miralles-Marcelo et al., 2014).

1. Methods, literature overview

The report of London Economics (2002) states there are many researches examining differences in performance of family and non-family businesses. Some of them present that non-family businesses outperform family firms because family businesses have risk aversion. Next researches show an opposite. Others argue that there is no significant difference between performance of family and non-family firms.

Similar results are in comparison of family and non-family manager in a company. On the one hand, a study of Gonzales-Cruz, & Cruz-Ros (2016) argue that in case of small and medium-sized family businesses, a family manager is a necessary condition for higher performance. On the other hand, Miralles-Marcel et al. (2014) observe that family manager has a negative impact on financial performance. San Martin-Reyna&Duran-Encalada (2012) state that the performance of family firms (better or worse) is depended on the context of each country.

This article describes results of pilot survey which is based on primary data collected in NUTS II Severovýchod. Financial data was obtained from Bisnode MagnusWeb database and from financial statements. Respondents were companies which are on the market at least 5 years. Respondents could choose to fill a questionnaire created in MS Word or directly within a web interface where the questionnaire was created in the online software MonkeySurvey. In this case, family business are companies which identified themselves as family businesses.

Performance was measured by frequently used profitability indicators (Machek et al. 2013a). Specifically by Return on Assets (ROA) where earnings before interest and taxes (EBIT) are divided by total assets. Next, Return on Equity (ROE) as a ratio of net earnings over equity and Return on Sales (ROS) where EBIT is divided by sales (sum of revenues from sales of own products, services and sales of goods). EBIT was used because it abstracts from sector specifics.

The obtained data was evaluated by using descriptive statistics in MS Excel. An analysis between selected variables was performed by means of Statgraphics XVII (SGP). In case of missing data, pairwise method was used. The data files were tested on normal distribution. Due to the negative outcome it was not possible to use ANOVA method. Non-parametric Kruskal-Wallis test was used in case of dependence analysis. An independent variable was numerical and a dependent variable was nominal or ordinal.

2. Results

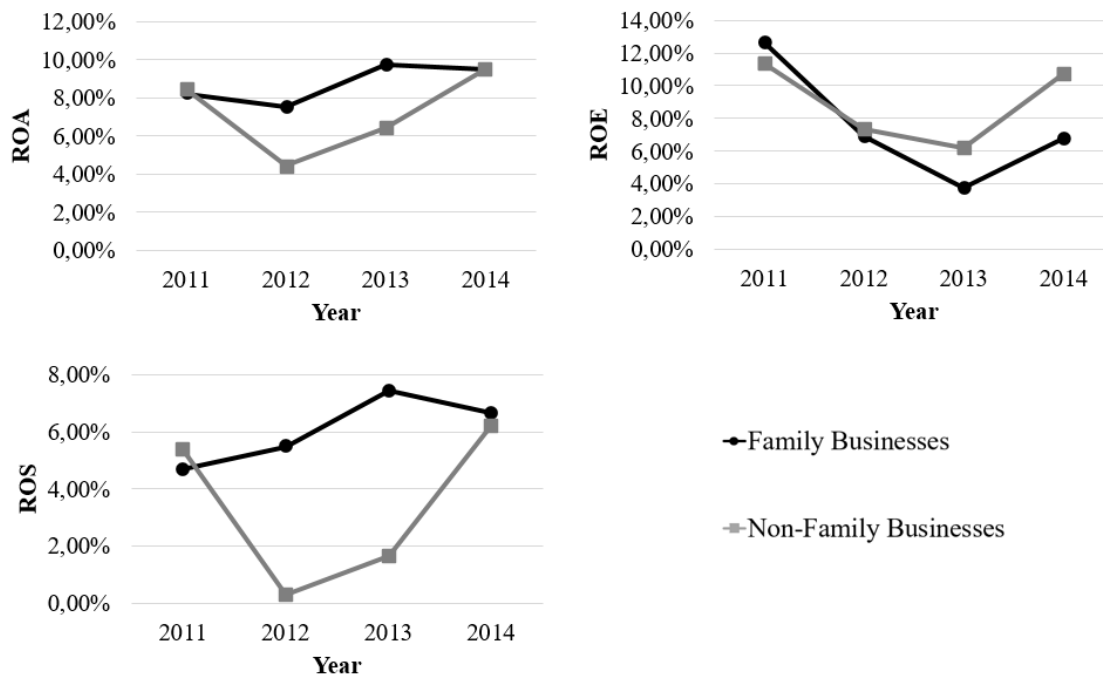
This research includes 114 small and medium-sized companies. There is 56 of family firms and 44 of non-family types of companies. Remaining 14 companies did not express their status of the ownership structure. Further, one of the family firms had to be

excluded because of missing financial data. First part presents performance comparison of family and non-family businesses. Second part states dependence analysis of family business performance on type of management. The last part describes dependence of family firm performance on ownership shares.

2.1. Performance Comparison

Performance indicators (ROA, ROE and ROS) were measured for the period from 2011 to 2014. Year 2015 was not taken into account because there is a lot of data missing which would influence results. Fig. 1 shows performance trend of family and non-family companies.

FIG. 1: Performance Comparison of Family and Non-Family Businesses



Source: own processing

In case of ROA (Fig. 1, top left), there is observed that family businesses outperformed the non-family ones (with the exception of 2011 and 2014 when results are similar). ROS values (Fig. 1, bottom left) are also higher in case of family firms (with the exception of 2011). Significant difference was in 2012 and 2013. This result is different from the assumption. Family businesses have problem with extending the company (problems with obtaining capital only within the family) and have risk aversion (loss of market opportunities) (Koráb, 2008). Hence, it was supposed lower ROA and ROS in family firms. Curves also show stability of family firms.

Results of ROA and ROS curves (family businesses outperform non-family firms) are similar to results of Machek et al. (2013b) who examined performance of small, medium-sized, and big Czech family businesses. He also found higher ROA and ROS in case of family firms.

Higher ROE of non-family businesses was supposed. Long-term view is typical for family firms. Hence, they make financial reserves from own resources, especially in the post-crisis period (Rydvalová et al., 2015). This assumption was filled, with the exception in 2011 (Fig. 1, top right).

2.2. Dependence of Performance on Type of Management

This part presents results of dependence analysis between performance and type of management. Profitability indicators like ROA, ROE and ROS represent company's performance in 2014. Management was divided into three types: only family manager, only non-family manager and both together (family and non-family manager) in a company.

TAB. 1: Dependence of Performance on Type of Management

Hypothesis H0	Normal Distribution	Kruskal-Wallis test (P-Value)	Dependence
ROA is not dependent on type of management	No	0.4988	Do not reject H0
ROE is not dependent on type of management	No	0.4123	Do not reject H0
ROS is not dependent on type of management	No	0.8817	Do not reject H0

Source: own processing (processed in SGP)

Three hypotheses were pronounced (Tab. 1 above). None of H0s cannot be rejected on the basis on Kruskal-Wallis test. P-Value is greater than 0.05: there is not a statistically significant difference amongst the medians at the 95% confidence level. This survey did not prove dependence between financial performance and type of management.

In case of these hypotheses there was assumed that companies with external manager will have higher performance than these with family manager. Professional management extends the company because he/she has not as high risk aversion as family member. This fact causes that the manager does not avoid to debt financing (which increases ROE) and business opportunities.

2.3. Dependence of Performance on Ownership Shares

This second part presents result of dependence analysis between performance and ownership shares. Profitability indicators like ROA, ROE and ROS represent company's

performance in 2014. Ownership was divided into four groups. Companies where family owns 75-100% of shares, next 51-74% of shares, 50% share and 26-49 % of shares.

TAB. 2: Dependence of Performance on Ownership Shares

Hypothesis H0	Normal Distribution	Kruskal-Wallis test (P-Value)	Dependence
ROA is not dependent on level of family ownership	No	0.0375	Reject H0
ROE is not dependent on level of family ownership	No	0.0277	Reject H0
ROS is not dependent on level of family ownership	No	0.0291	Reject H0

Source: own processing (processed in SGP)

Three hypotheses were pronounced (Tab. 2 above). All of H0s were rejected on the basis on Kruskal-Wallis test. P-Value is less than 0.05: there is a statistically significant difference amongst the medians at the 95% confidence level. This survey found dependence between financial performance and level of family ownership.

On the basis of Poutziouris's et al. (2015) article, the assumption of these hypotheses was that companies with minor ownership shares outperform these with the higher family ownership share. The article states that the performance of family firms increases until family has one third of company's shares, beyond this level the financial performance declines. Box Plots of this research show that companies with 50% share have the lowest performance. Further, companies with 75-100% of family shares have the second lowest results. Compare to that, firms with 26-49% of family ownership have the highest performance. Results are similar with the results in the mentioned article.

3. Discussion

Comparison of performance results with other researches has some limitations. Research is affected: e.g., by number of respondents, size of companies, definition of family businesses, research period, used methods and country conditions. Future research should focus on family SMEs in the Czech Republic, because as Machek et al. (2013b) stated: "...most of the Czech family businesses belong to the class of small and medium enterprises (SMEs)..." The main problem is in distinguishing family businesses in the Czech Republic because a unified definition does not exist and it is hard to obtain necessary data from companies.

Conclusion

The article shows performance differences between family and non-family businesses in the period from 2011 to 2014. Next, it discusses an issue of external (non-family member) manager in a family company and if this fact influences performance. Further, the article indicates if there exists relation between performance and share of family ownership.

Results show that Return on Assets and Return on Sales are higher in case of family businesses. In contrast, Return on Equity is higher in case of non-family firms in the considered period. Exceptions are in 2011. Reasons of these exceptions may be the subject of another research.

Then, dependence analyses were made. Concretely: if the performance is dependent on the type of management (only family manager, only non-family manager, family and non-family manager together). In case of this analysis was not proved dependence between these factors.

Dependence was found in case of other hypotheses: the performance is dependent on the level of family ownership. Box plots showed that family firms with 50% ownership share have the lowest performance. The highest performance was proved in case of businesses with 26-49% of ownership shares.

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VIRAL VIDEO AS AN EFFICIENT TOOL OF MODERN MARKETING

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Keywords:

viral marketing – viral communication – marketing – cyberspace – viral video

JEL classification: M31

Abstract:

The article captures the power of viral video as a powerful aid to virtual environment. Such a tool enables the information about trademarks, goods or companies to reach directly the visitors to cyberspace. The pilot research of our survey, presented in chapter two, introduces individual features of the tool following a respondent from the point of view of their own video perception. It was revealed that 90% respondents had already encountered some viral campaign. Over $\frac{3}{4}$ respondents encountered a viral campaign on social networks at least once a week. 51% admit spreading an already seen viral video further on. The presented percentages clearly indicate enormous potential of such a kind of video. Because of its youth and novelty, viral video is still considered an unverified mean of advertising by conservative users.

Introduction

Cyberspace offers enormous possibilities of action within such dimension, and also useful tools, viral video included. Such a modern and not well used tool of virtual environment actively develops the present-day marketing. It is not time-consuming but easily accessible, which helps it reach the clients in a discreet but also active way. This aid has found its own position in the cyber world. The low costs of viral video offer an extensive marketing power. No wonder that a quality viral video often overshadows some traditional marketing tools. When such help enters the lives of individual users, it becomes their inevitable part, without the users realizing that they start spreading the given materials, either for their contents or entertainment. Modern virtual environment keeps overloading us with lots of information. A virtual environment visitor is becoming more and more demanding, and that is why a successful and actively shared video is hard to create. Only videos with elaborated strategy can aim at concrete users. A selection of communication channels, creation of strong stories, as well as the final form mean a lot of hard work. Even a minor mistake made during the process of strategy and preparation may lead to irreparable harm to the advertised trademark. Once such a video is released, there is no way it can be stopped. This article is a follow-up to an article published abroad in 2015. (Frendlovská, Kusovský, 2015)

1. Viral marketing

The term viral marketing is really new, and that is why there is a variety of its definitions. For the purposes of this work, we chose the two that describe viral marketing the best. According to Kotler (2007) „The Internet version of word-of-mouth marketing. E-mail messages or other marketing actions that are so contagious that a customer wants to share them with friends”.

The term viral marketing is attributed to Jeffrey Rayport, who probably used it first in the article “The Virus of Marketing” for Fast Company magazine in 1996. The author equates the desire of marketers to viruses behaviour – with the aim of having the greatest possible impact (fastcompany.com;1996).

Among the pioneers in the use of viral marketing in practice belongs the case of hotmail.com. In 1996, Sabeer Bhatia and Jack Smith launched an e-mail service which was available via a website from any computer with the Internet connection. At the time when the Internet was accessible mainly by means of corporate computers, it was a brilliant idea. To attract the user’s attention, it was enough just to add a short sentence at the end of each e-mail sent this way: “Get your free email at hotmail.com” (Livingston 2008, p. 17, 22). This notice spread worldwide. In 1997, Hotmail was bought by Microsoft for 400,000,000 US dollars. This example shows the enormous potential of viral marketing. (Kusovský, 2015)

The concept of viral marketing can be translated into the Czech language as “viral” marketing. Although the term virus evokes negative emotions in most people, this form of marketing earned its name according to the way it spreads, similar to epidemics. Most Internet users do not spread a communication because of branding, but because it is fun, shocking, informative, etc. That is why they want to share it with others, and such process ranks among the word-of-mouth methods. (Vašítková, 2014)

A viral campaign is not time or space limited, and it can return in waves. A viral campaign submitter has minimum power over the course of spreading. Therefore, they must consider all impacts that the campaign might bring. In case the message contents are selected inappropriately, the entire campaign may turn against the original focus. People can parody the campaign and thereby destroy the company’s reputation (Jurášková, 2012).

We need to understand that there is a sophisticated strategy behind most successful viral campaigns. The actual publishing of video on a website is not always enough. Unsuccessful viral campaigns often remain unknown to us.

“Viral marketing is a weapon that directly calls for sophisticated applications, for it can create tremendous response from consumers, who are becoming more and more immune against traditional forms of marketing communication”

1.1. Positive and negative sides of viral communications

In case of a successful campaign, the positives are easy to measure:

- a) Higher number of web page hits, it indicates exponential growth, the number of goal-focused visits grows, too;
- b) Low-cost efficiency, especially in view of the number of people addressed;
- c) Builds the company reputation effectively;
- d) It is easy to combine with other methods of promotion.

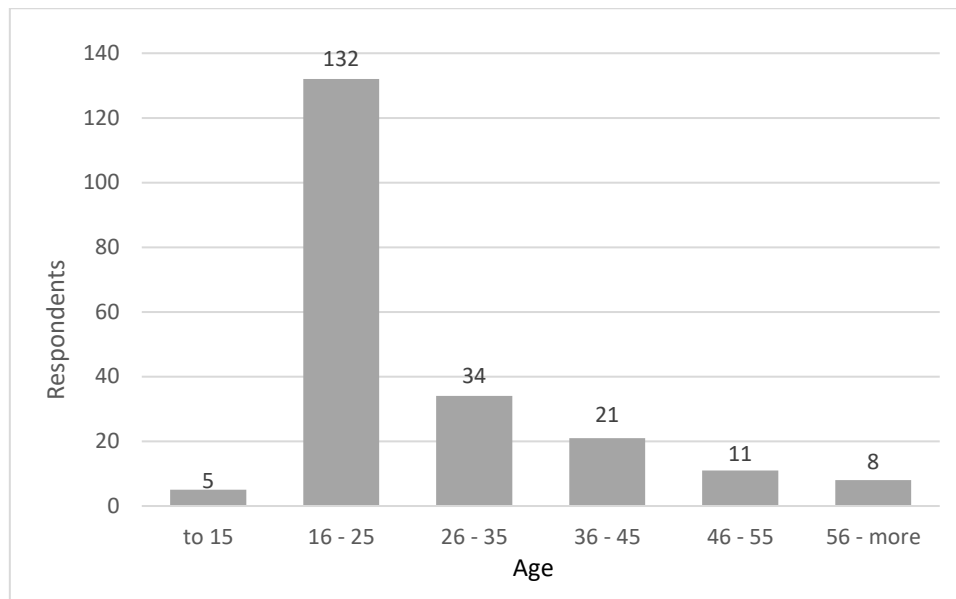
We are exposed to an incredible amount of new information. Every second, there are over 40,000 inquiries entered into Google search engine, more than 2 million e-mails sent, and over 95,000 videos seen on Youtube (livestats.com, 2015). Considering such amounts of information, it is really difficult to break through as a commercial/advertisement communication.

- e) Extreme effort to provoke viral communication – people are exposed to some campaigns all the time, but such a situation can never make an individual share the communication and help the submitter launch the campaign;
- f) Negative Buzz – people may respond negatively to some information. Even such things can be spread extremely fast;
- g) The matter of ethics – viral campaigns may be seen as deceitful practices because people are concerned about the way their personal data are used. The worst possible impacts should be considered;
- h) Difficult to measure – it is hard to set criteria used to measure the viral campaign's success. Is it the rise in number of website hits, in watching video, in varied media appearance? Such questions need to be asked before a campaign is launched (livestats.com, 2015).

2. Mapping the respondents' experience

We used a questionnaire method to map the experience and knowledge of respondents. They answered 24 questions, but only those closely related to viral video issues were processed. We used the method of snowball – the questionnaire is distributed through respondents who have already participated in the research (which is similar to the way viral campaigns work today). For the pilot survey, 211 respondents were chosen, 40% of which presented their answers in paper form (83 questionnaires). The questionnaire was distributed in both paper and electronic forms. 124 women and 87 men took part in the survey, which means 58.7% and 41.2%. The difference can be related to social networks use. According to data presented by Petr Michl on the server m-journal.cz (2013), the social networks used in the research to distribute the questionnaire are visited more by women. There are 58% women on Facebook, and even 64% on Twitter. The same principle can be observed in the users' activity with 18% women contributing daily, but only 11% of men. On the other hand, male users find social media, like Google or LinkedIn more. Figure 1 illustrates the age structure of respondents.

FIG. 1: Diagram of the age structure



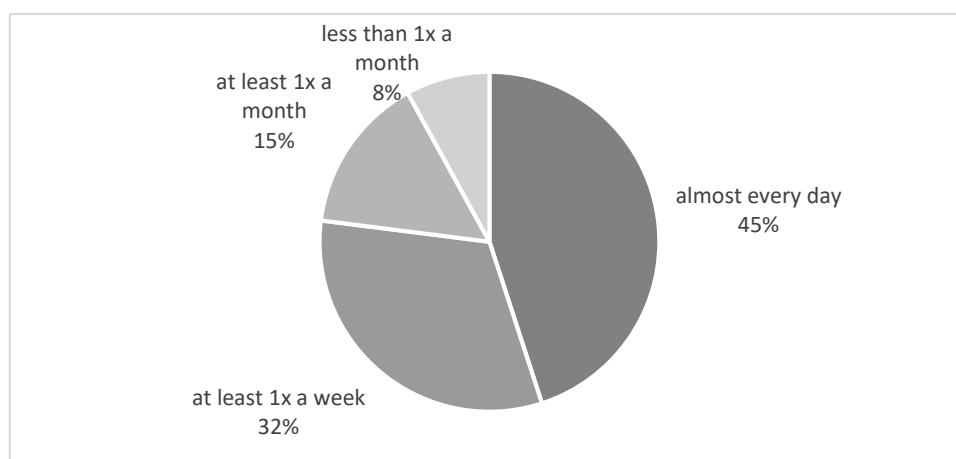
Source: Custom processing

Number of respondents who encountered viral campaign in the past

Having learned what a viral campaign means, 90% respondents said they had encountered some form of viral campaign before. The pie chart below presents the respondents' answers to a question how often they encounter a viral campaign (this question included 190 respondents out of 211 who claimed having encountered a viral campaign in the past).

2.1. Frequency of viral campaign encounters

FIG. 2: How often respondents encounter a viral campaign

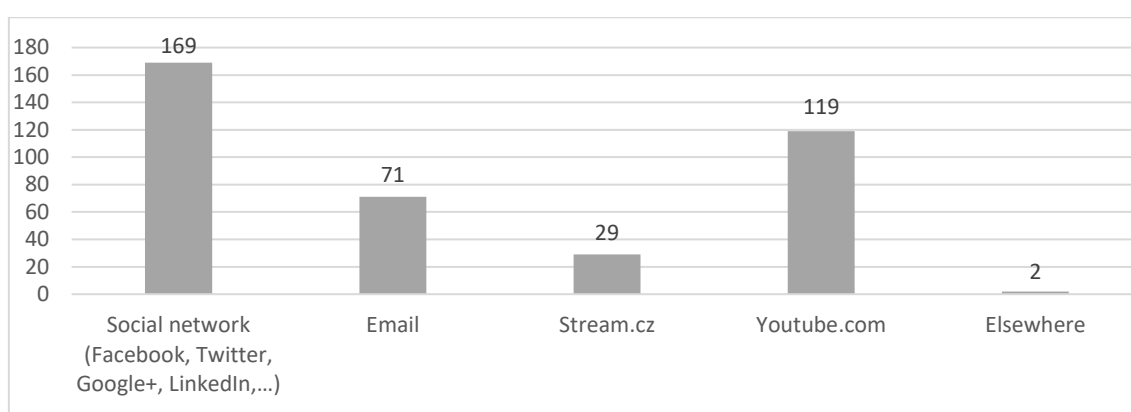


Source: The processed questionnaire data

According to the frequency of viral campaign encounters, we may estimate that a lot of users are flooded with a large number of viral campaigns every day. Over three quarters of users encounter a viral campaign at least once a week – it is difficult to introduce a new campaign, interesting for the users, in terms of unimaginable quantity of new information they daily come across. That is why we also tried to find out which social media the respondents use and thereby encounter a viral campaign. This might help us decide whether using another environment would be more efficient, or if the remaining one quarter could then encounter a viral campaign in this way.

2.2. *Websites on which respondents encounter viral campaign*

FIG. 3: Websites on which respondents encounter viral campaign



Source: Processed data

Only two respondents chose the answer Elsewhere, specifying “a lecture at school” and “spoken communication”. As the bar chart shows, it is social networks and Youtube.com that are used to spread viral campaigns most. The Email answer was mostly chosen by generation 36+. We assume it is due to the ways of communication these people prefer to use.

2.3. *Willingness to share viral communications*

The questionnaires revealed further important information concerning the respondents' willingness to forward received a viral communication or share it with other users. Out of total 190 respondents who had encountered a viral communication, 51% shared it further on. Most of these respondents were 35 and younger, but their percentage did not differ much in comparison with the other age groups. The reason might be active questionnaire respondents, thanks to which the older generation may appear as active as users aged 35 and younger.

3. Summary

Chapter 2 presents the results of our survey that is mapping the issue of viral video and viral campaigns. For the pilot research into the matter, there were chosen 211 respondents, out of whom almost 40% answered in paper form (83 questionnaires). 124 women and 87 men took part in the research, with the rate 58.7% to 41.2%. This difference can be explained by the rate in using social networks. What is important is that 90% respondents claimed having encountered some form of viral campaign. We may presume that each cyberspace user is actively attacked by various forms of viral communication. Over three quarters of social networks users admit encountering viral campaigns every day. It is with no doubt that a new and interesting campaign, which not only attracts the client's attention but also supplies them with enormous amount of information they come across every day, is extremely difficult to introduce. Clients encounter a viral campaign mainly on social networks and Youtube.com. The email response was mostly chosen by generation aged 36 and more. 51% respondents continued sharing a viral communication they had encountered before. The above presented percentages clearly indicate that the power of viral video has not been fully utilized in practice so far. Active involvement of this modern marketing tool can lead to cheap and fast spreading of information among large groups of clients and passing it on to them in this way.

Conclusion

The article presents the issue of viral video and viral campaigns. It makes readers acquainted with the issue itself and also with partial research into the matter. Chapter 2 presents results of a survey carried out early in 2015. The survey found more than $\frac{3}{4}$ respondents to be active social networks users, who encounter viral video every day. 90% respondents claimed having encountered some form of viral video, and 51% respondents continued sharing a viral video they had encountered before. The results clearly indicate enormous potential of viral marketing. Cyberspace has been considered a powerful help. Still, its unlimited possibilities in terms of marketing tools have not been fully applied in practice. The issue of viral video itself is undergoing further development.

The partial research was described in the thesis meant to be the principal tool for pursuing the issue and the theme. Thanks to popularity with respondents and readers interested in the issue, another research is being prepared these days. It is going to include a much wider variety of segmented respondents.

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MODELLING THE ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM DIFFUSION WITH THE USE OF LOGISTIC REGRESSION

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Keywords:

ISO 14001 system diffusion – logistic regression – forecasting

JEL classification: C22, O33

Abstract:

The article presents research results on the modelling of the number of ISO 14001 environmental system adoptions globally, in Europe, and in Poland. The empirical analysis was based on a logistic function which often characterizes innovations in diffusion. A database with the number of certificates issued from 1999 to 2014 was applied for the analysis. The source of data were publications on ISO Survey of Certification. Logistic regression models were applied to forecast the number of ISO 14001 globally, in Europe, as well as in Poland. The models thus created allowed for comparisons of the maturity of ISO 14001 system diffusion worldwide, in Europe, and Poland.

1. Introduction

Green production is a business strategy and an innovation that focuses on effectiveness and profitability through environmentally friendly production, procurement, and delivery processes (Too and Lee, 2014). Various voluntary actions in environmental management have, since the mid-1990s, been adopted by firms around the world. One of the most popular practice is, in this area, the adoption of ISO 14001 environmental management system. This system is included in the ISO 14000 family of standards. It helps organizations to minimize their negative influence on the environment through the continual improvement of environmental performance. Since the release of the system in 1996 the number of organizations certified under ISO 14001 system has dynamically increased. However, the level of diffusion of ISO 14001 certification differs across regions and countries (Delmas 2002).

The aim of the article is to compare the level of maturity of ISO 14001 environmental management systems in the world, in Europe, and in Poland. Europe stands out as the most developed region in the world. Poland represents the fast developing countries, faced with relatively high level of environmental pollution. The achievement of the main aim was possible through the empirical analysis of data concerning the number of

ISO 14001 certificates issued in 1999–2014, available on the ISO Survey of Certifications website (<http://www.iso.org/iso/iso-survey>). The logistic regression was applied for the data modelling. 2017 year was assumed as a prognosis horizon. The application of the logistic function enabled the specification of the level of saturation of ISO 14001 numbers as well as the indication of a time point at which a rapid growth of ISO 14001 certificates turned into a phase of slower increases.

2. Method

2.1. Foundations

Human population growth is, amongst all natural processes, one of the best examples of an evolutionary process where competition for resources is among the important drivers for these evolutionary constraints. In the case of socio-economic processes however, it is advance knowledge (both scientific and technological), innovation and market competition, as well as other social and political variables, that constitute the important driving forces for growth and development. The adoption of innovations by societies might, thus, be considered analogously to natural process e.g. spread of diseases, and consequently economists and/or managers borrowed mathematical models from nature to model the diffusion of innovations (Bass 1969, Rogers 1979). Diffusion of innovation theory has been widely used to explain and understand the process of adopting technological and organizational innovations and to predict its results (Kurnia et al. 2015). The cumulative adoption of innovations over time follows an S-shaped or sigmoid curve, reflecting the fact that few members of a social system actually adopt any innovation during the first stages, but with the passage of time the rate of adoption of innovation rises until the process approaches its saturation level, whereupon growth rate begins to fall (Marimon et al. 2006).

2.2. Model

The above-mentioned S-shaped function (McBurney et al. 2002) in this paper refers to the special case of the logistic function. Its analytical form is given by the formula (O’Kelly 2001):

$$y_t = \frac{a}{1+be^{-ct}} \quad t = 1, \dots, n; a, b, c > 0 \quad (1)$$

where: a , b , c are parameters, y_t is the t -th observation of the endogenous variable, and t is a time variable. In order to have a guaranteed existence of an inflection point we also assume that $b > 1$. Generally the inflection point has the following coordinates: $(1/c) \ln b$ – for the time variable and $y=a/2$ – for the endogenous variable. The saturation level of the examined phenomenon is defined by the horizontal asymptote ($y=a$) of a fitted trend function. Since a logistic function is non-linear in respect of the parameters, we need to use nonlinear methods of estimation to find its values. The parameters were, in this

paper, calculated using a Solver which is one of optimization tools. In the optimization procedure, we obtained values of parameters by minimizing Sum Squared Error (SSE) defined by:

$$SSE = \sum_{i=1}^n (y_i - \hat{y}_i)^2, \quad (2)$$

where y_i stands for empirical values and \hat{y}_i for theoretical values of the examined variable.

2.3. Fit

As a measure of the fit of the model, we first employ a compatibility coefficient (Rosner 2006):

$$\phi^2 = \frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{\sum_{i=1}^n (y_i - \bar{y})^2} = \frac{SSE}{SST}. \quad (3)$$

It takes values from the range of [0,1]. The smaller the coefficient, the better the fit of the model. Another measure of fit is a standard error of estimate (Se):

$$S_e = \sqrt{\frac{1}{n-m-1} \sum_{i=1}^n (y_i - \hat{y}_i)^2}, \quad (4)$$

where n is the number of observations, m is the number of independent variables. This measure is a component of a coefficient of variation as presented below:

$$w = \frac{S_e}{\bar{y}_t} \cdot 100. \quad (5)$$

It shows what percentage of the predicted variable is the standard deviation of the residuals. Similarly, the smaller the coefficient of variation, the better the fit of the model. For the model to be acceptable we need this coefficient to be less than 10% (Grzebyk and Stec 2015). As a measure of fit of the model, we also apply an indicator of the mean relative fit of the model (Ψ):

$$\Psi = \frac{1}{n} \sum_{t=1}^n \frac{|e_t|}{|\hat{y}_t|}, \quad (6)$$

where $|e_t|$ represents the absolute values of residuals and $|\hat{y}_t|$ represents absolute theoretical values of the model. We assumed the acceptable threshold value of Ψ indicator at 0.1 level (Gładysz and Mercik 2007).

3. Results

The average annual growth rate of ISO 14001 certificates in 1999–2014 globally, in Europe, and in Poland reached the values of 23.3%, 20.8%, and 25.7% respectively. The growth rate in Poland was higher than the world rate, and in Europe. This fact may be explained by a high dynamics of Poland's economic development in the examined period as well as a strong commitment to solving problems of natural environment pollution.

Values of parameters of the logistic function as well as the measures of models of fit, calculated according to (3)–(6) formulas, are provided in Table 1.

TAB. 1: Logistic models of ISO 14001 system diffusion globally, in Europe, and in Poland

Parameter	World			Europe			Poland		
	a	b	c	a	b	c	a	b	c
Estimation	357712.2	23.3	0.3	136250.8	17.6	0.3	2479.2	20.2	0.3
Se	5222.0			2498.7			101.1		
ϕ^2	0.002			0.003			0.016		
R ²	0.998			0.997			0.984		
w	3.33%			3.90%			0.089		
Ψ	0.050			0.049			0.142		

Source: own study

The values of the compatibility coefficient (ϕ^2) for the global, Europe and Poland's regression models are 0.2%, 0.3%, and 1.6% respectively. These values show that the dependent variable (ISO 14001 number) was unexplained by proposed models only to a small extent. Similarly, the other fit measures prove the acceptable goodness of the fit of the models, thus permitting their acceptance and use for forecasting purposes. The application of the logistic function also allowed for the designation of the saturation level as well as the inflection point for the world, Europe, and Poland's ISO 14001 diffusion models.

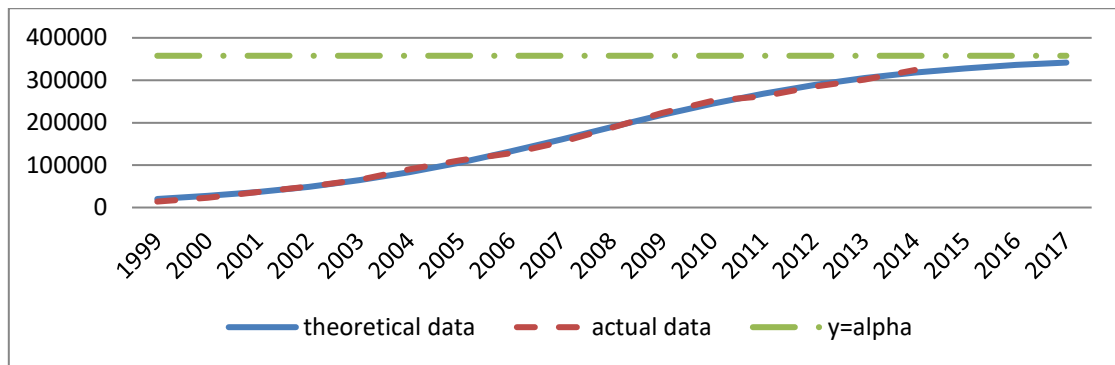
TAB. 2: Logistics functions characteristics

Model	World	Europe	Poland
Inflection point (tip, Yip)	(9.63; 178,856.10)	(9.04; 6,8125.4)	(9.23; 1,239.59)
Saturation level	357,712.20	136,250.85	2,479.18

Source: own study

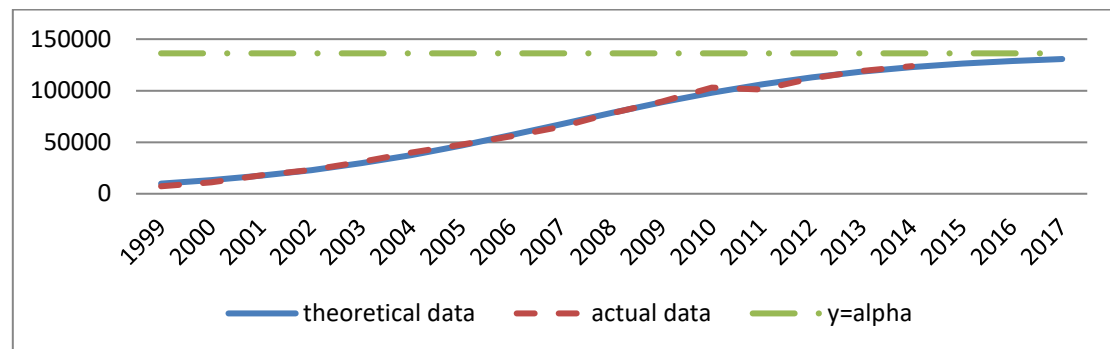
Each of the model has already started a slow growth rate. The moment of inflection in the world, in Europe and Poland models occurred in 10th time point, i.e. in 2008. It first happened in Europe's model ($t=9.04$), then, followed by the model for Poland ($t=9.23$), and finally in the world model ($t=9.63$).

FIG. 1: Logistic regression model of number of ISO 14001 certifications (world)



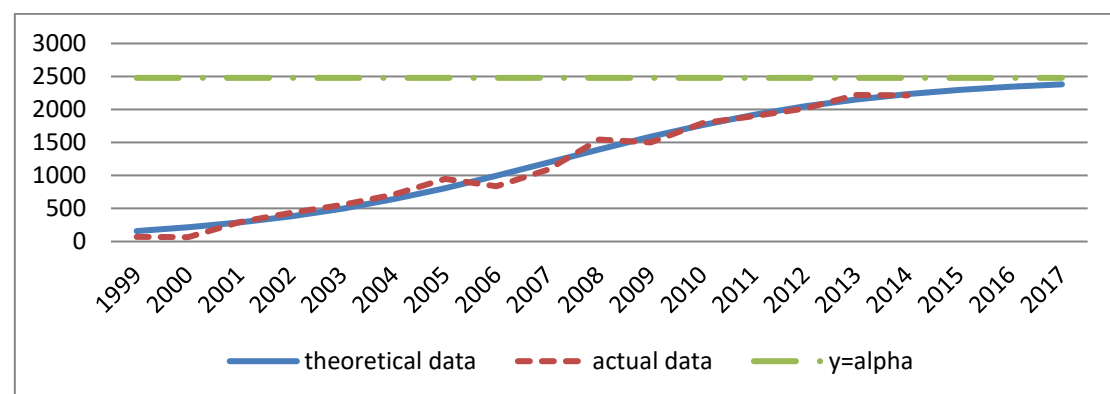
Source: own study

FIG. 2: Logistic regression model of number of ISO 14001 certifications (Europe)



Source: own study

FIG. 3: Logistic regression model of number of ISO 14001 certifications (Poland)



Source: own study

These results show that the process of ISO 14001 certification has already entered its mature phase. In the next few years the number of organizations with ISO 14001 certificate will be gradually saturating. First, it will be observed in Europe, in fast

developing countries such as Poland, and then globally. It also means that the process of ISO 14001 system diffusion is most mature in Europe, in Poland, and then in the world.

4. Discussion

ISO 14001 has a widespread popularity and recognition among businesses. Firms adopt ISO 14001 as a source of competitive advantage and in response to institutional pressures for being green. The results presented confirm existing findings e.g. by Too & Lee (2014) who indicated that ISO 14001 system adoption follows a life cycle for e.g. technology and innovation diffusion. They are in line with the results of Marimon et al. (2011) who showed that the process of ISO 14001 system diffusion will saturate in the following years tending to a steady state. The findings of the study illustrate that the diffusion of ISO 14001 closely resembles a logistic function and the number of ISO14001 certificates tends to saturate at 357,712 worldwide, at 136,251 in Europe, and at about 2,479 in Poland. The phase of dynamic growth of adoption of ISO 14001 system has already entered its slow down phase.

Conclusion

New ideas and practices are usually adopted by organizations from developed countries that possess more resources, than through a collaboration among firms in cross-country supply chains. ISO 14001 has diffused from better developed to less developed countries around the world (To & Lee, 2014). The rapid growth of the number of ISO 14001 certificates has already started to slow down. At present, a greater interest in ISO 14001 system adoption may be predicted rather in less developed regions in the world.

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TAX AUDIT IN POLISH COMPANIES

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Keywords:

tax - tax audit

JEL classification: H2

Abstract:

The article presents the issue of a tax audit, which in the contemporary economy is more and more important. Complicated tax system makes that entrepreneurs must take all kinds of measures to minimize tax risk. This applies to both indirect and direct taxes. The audit has been shown in the context of taxpayers required to maintain accounting records. The analysis of the phenomenon using the case study confirmed that the system of tax audit is essential in today's enterprises, because not only helps to eliminate errors in tax returns, but also helps to eliminate the tax risk.

Introduction

Modern companies aware of the many dangers that may lurk in every period of activity seeks to eliminate the risk (Stańczak 2014). For this reason, the owners and management companies decide to solutions that can properly help eliminate the risk. In particular, attention is paid to the state of public accounts - legal, which are carried out with public institutions. This area is heavily exposed to the danger of tax arrears, interest or penalties provided for penal code of the tax in respect of an offense or a fiscal offense (Łukaszewicz - Obierska, 2013).

One of the many ways to implement a tax audit, which is to help manage the financial management of the company and at the same time mitigate or prevent the occurrence of errors in the tax return. The purpose of this article is to present the issue of a tax audit, as a special tool that allows you to verify whether the company properly fulfill obligations imposed upon the tax. Tax audit is usually carried out in large capital companies. Avoids errors tax and penalties from the IRS.

1. Tax audit as part of the internal audit

In Poland, the internal audit within companies it is not mandatory. National legislation is introducing an obligation to appoint an internal auditor in the public finance sector units (Jackiewicz, Szeląg, 2012).

Bearing in mind the very modest literature for the purpose of this publication was developed its own definition of a tax audit. The issue of a tax audit for the company will include comprehensive measures, which will include the correct tax settlements with both the central budget and the budgets of local government units to diagnose and reduce or eliminate irregularities and errors, as well as tax risks. Tax audit can be both character:

- internal - carried out by the audit function as provided for in the organization chart of the company,

- external - performed by external bodies, eg. Authorized tax advisors. Frame the issues subject to tax audits may be varied in nature and include:

- a) taxes titles such as e.g. : corporate tax, income tax on individuals (both perform the functions of the taxpayer and payer), value-added tax, excise tax, local taxes.
- b) business areas such as: sale and purchase, investment, marketing and advertising, receivables, transfer prices.
- c) specific transactions or business events (Knedler, 2014).

2. Tax audit settlements of income taxes

The area associated with income taxes is particularly important in determining the correct tax liability. First of business entities employing persons under a contract of employment, acting as a tax payer, they will be required to calculate deductions, download and deposit payment for income tax on salaries paid (Dobija, 2014).

Tax audit activities of the payer should include the following actions:

1. Arrangements or persons designated as workers have an important and faultless employment contract with the entrepreneur analyzed, because it is necessary to check whether a taxable income arising from the employment relationship.

- to check whether a person employed by an appropriate statement on the tax form PIT-2 for the calculation of monthly advances on income tax paid his dues. Making this statement gives the right to reduce the payment of 1/12 of the amount decreasing the tax in 2016. It amounts to 46,33 PLN monthly, annually 556.02 PLN. This amount results from the annual income no-obligation to pay tax, 3091 PLN. In the context of the statement made taxpayer declares that:

- does not receive a pension through the payer, does not reach the income from membership in agricultural production cooperative or other cooperatives engaged in agricultural production,

- did not receive any income from which is obliged to pay an advance on the basis of art. 44 paragraph, 3 of the act on PIT, ie. Income from economic activities referred to in art. 14 of this act and rent or lease,

- does not receive cash benefits from the Labour Fund and the Guaranteed Employee Benefits Fund,

- the establishment of work is appropriate for the application of this decrease.

2. Verify that made use of the correct amount of deductible costs, because they are necessary for the proper determination of the amount of tax due from the remuneration paid. The costs depend on the place of residence or employment forms. The first one is 111.25 PLN. The rate of so-called basic, applied to the employment relationship when the worker resides in the village of the same, in which the workplace. The second amount of deductible costs are 139,06 PLN (increased costs), which is used in a specific case. The employee must reside in other than the one in which the workplace and do not receive the expatriation allowance.

As part of the business, which is taxed at the income tax, can be made very wide tax audit. However, most often it amounts to the following steps (Ustawa, 1991):

- analysis of the arrangements as a result of the financial accounting and tax at the end of the fiscal year, and the review and assessment of the correctness of the procedures applied by the Company in this regard,

- analysis relevant to the activities of business transactions emerging tax obligation

- to examine the correctness of classifying revenues and expenses within operating, non-operating, financial,

- overview of tax procedures adopted by the company in terms of their effectiveness and compliance with applicable laws,

- identify areas of activity giving the chance for tax optimization,
- analysis of tax risk within the business and identify areas of activity or specific transactions that may be the subject of a dispute with the tax authorities,
- analysis and identification of related party transactions that may create the risk of transfer pricing,

- identification of costs which are not deductible and income exempt from taxation,
- identification of the correct application of tax provisions relating to the moment of recognition of income and expenses for tax purposes,
- control method of determining the initial value of fixed assets used in the course of
- review of the depreciation rates used in the amortization table for the resource property,
- analysis of the correctness of recognition of the Company's foreign exchange settlements and bank account,

- analysis of expenses associated with the improvement of fixed assets having the nature: modernization, adaptation, reconstruction, superstructure, reconstruction
- analysis of spending on advertising costs, and the costs of representation of the Company,
- verification of costs related to the amortization of trademarks, know-how, etc.
- verification of the activities of the payer of income tax and corporation tax personal income (Marzec, 2016).

Above indicated a typical list of activities, which may be subject to tax audits. The area and the auditing tasks in the field of income taxes are always tailored to the individual company and the situation in the existing one (Krzywda, 2012).

2. Tax audit settlements indirect taxes

A very important aspect of the tax audit is to analyze the correctness of the settlement of tax on goods and services. The authors of the article "Audit of tax on goods and services as a tool for verifying reliable / unreliable bookkeeping" indicate that the said issue is part of the audit of the books, which is a difficult matter of law and accounting - tax, because taxpayers have difficulty interpreting laws. For this also there are inconsistent judicial decisions (Ustawa, 2004).

As part of activities it draws attention primarily to the settlement of tax due and input. In particular, the analysis will address: correct calculation of VAT due on the selected domestic supplies, correctness deduct input VAT shown in the invoices and purchase, the correctness of the declaration of examples of intra-Community transactions, the correctness of the declaration of a sample of transactions for export and import, rules for determining the place of supply for VAT, VAT invoices to purchase and sell from the perspective of qualifying for the relevant tax periods and the recognition in the VAT registers, calculation data was included in the declaration of VAT (eg. The correctness of calculations), identification of the main risks related to the application for a VAT refund from a different date of return, analysis of activities in terms of the use of tax rates on goods and services, the correctness of invoices and VAT invoices adjustments. Businesses clearing tax on goods and services often use bad debt relief, which requires a number of conditions are met. According to the art, 89a of the Act on tax on goods and services, if after 150 days from the due date contained in the invoice or contract, despite the efforts of entrepreneurs failed to collect the debts, it may take relief and thus regain escorted to the tax office value-added tax .

To take advantage of relief for bad debts, it is necessary first of expiry of the period of 150 days from the date of payment. In addition is accordance with Article, 89a paragraph. 2, the relief is possible, if:

- delivery of goods or services is made in favor of the taxpayer referred to in Article. 15 paragraph. 1, is registered as a VAT payer active, non proceedings for insolvency or

liquidation,

– on the day preceding the adjustment for relief of both the creditor and the debtor are registered as VAT payers factors, while the debtor is not under bankruptcy or liquidation,

– from date of invoice documenting the claim is not passed more than 2 fiscal years, from the end of the year in which the invoice was issued.

A creditor who chooses to use the relief inform the relevant tax authority. Together with the declaration of VAT, which was reduced in the amount of tax due for a correction resulting from arrears, you must submit a notification of VAT-ZD. The correction may take place in the settlement for the period in which the irrecoverable debt is considered as probable, provided that the date of submission of the creditor's tax return for the period of the debt has not been settled or disposed of in any form. The behavior of the rules provided for settlement of bad debt relief is difficult and time-consuming for clearing value-added tax, in the case where an entity has a number of outstanding claims from contractors, where the term exceeds 150 days, you need a thorough analysis, which are eligible for correction. Thus, the tax audit carried out with a focus on the correctness clearing bad debt relief should give adequate results (Jackiewicz, 2012).

Conclusion

Presented in a short outline of the tax audit in the company pointed to the main areas that should be included in the study or business operations are accounted for properly in terms of tax. The Polish economic reality, where the tax system is unstable and inconsistent, and the tax authorities and administrative courts often take a contrary decision on tax matters, tax audit is of particular importance for enterprises. In conclusion we should also point out that the tax law provides for five-year limitation period tax liabilities, and this affects the tax risks, which can affect the long-term affect on the economic activity of the taxpayer. The argument tells considered tax audit as one of the most important elements of financial audit helps in particular:

- analyze and supervise the business operations and records associated with the formation of the tax base of goods and services and other indirect taxes, which significantly affect the transparency and reliability of the data necessary for the preparation of tax returns,

- eliminate errors in the system account the financial result and the related procedures of shaping tax earnings.

Tax audit should become an integral part of economic activity in Poland. These areas of audit should be continuously analyzed in order to reduce the risk of tax

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ECONOMIC EFFICIENCY OF CULTURAL INSTITUTIONS

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Abstract:

The aim of this article is the efficiency evaluation of statutory subsidies granted to cultural institutions. From the economic point of view, the financial analysis of cultural institutions shows economic inefficiency of all institutions. Most of them are institutions that are sustained by subsidies of the organizer, generating low own revenue in relation to incurred costs. This situation might be caused by a lack of adequate incentives to increase own revenue due to organizer's (local government's) subsidies ensuring, at least theoretically, coverage of costs of facility maintenance and the costs of their activities.

Introduction

The concept of “culture” is one of the toughest and most capacious concepts. The eighteenth-century philosopher Johann Gottfried Herder summarized already that: “there is nothing more indeterminate than the word culture” (Herder, 1964). Owing to the fact that culture has long been a problem of public funding, there are other distinguishing characteristics of cultural activity. David Thorsby mentions three basic characteristics of cultural activities: they require creativity, they generate and transmit a symbolic meaning and their results are covered by intellectual property rights (Thorsby, 2010). The debate over the concept of culture (Thorsby, 2001) does not fall within the abovementioned topic, however, the concept of economics of culture is appearing increasingly in the realm of finance (Lewandowski, 2006; Thorsby 2001). Nevertheless, due to the fact that culture is usually publicly funded, the concept has gained a fairly precise normative definition. The National Strategy on Development of Culture for the period 2004 - 2020 (Ministry of Culture and National Heritage, 2003) specifies that: “Culture is an essential factor of preparation for life in society – it creates social attitudes, norms and aesthetic, moral and ethical values. High competencies in terms of understanding of products of culture, their evaluation, reading of sociocultural codes, are a pillar of a tolerant society that understands its own culture and the culture of others” (Ministry of Culture and National Heritage, 2003). Cultural activity consists in creating, disseminating and protecting of culture, and the state under the law (Ustawa o

organizowaniu, 1991) exercises patronage over cultural activities by supporting and promoting creativity and cultural education. The state also supports cultural activities and initiatives, and it takes care of monuments (Ustawa o samorządzie, 1990).

For the purposes of these considerations the authors adopted the concept of culture as an institutional and non-institutional sector organized by professions, facilitating artistic creation and activities in the realm of performing arts. This area includes also artistic education that contributes to build creative competencies, to broaden knowledge about the importance of culture, and to gain competencies for multiplying all forms of creative activity (Głowacki, et al., 2009). This sector also includes protection and sharing of objects of material and spiritual heritage (including libraries, museums, archives, documentation centers), but this study will be based solely on financial data from public theaters and music institutions in cities with population over 100 000.

Cultural institutions that are funded from budgets of local governments or, less frequently, from the state budget predominate in Poland, which might be the reason of identifying culture with subsidized entities. The number of private entities involved in cultural activities is very small (Wnuczak, 2014). The development of culture depends on the level of expenditure of local government budgets and the state budget, and only to a small extent it is due to private sector investment.

Cultural institutions are organizations whose scope of core business comprises activities in the area of broadly understood culture (Ustawa o organizowaniu, 1991). These institutions can take different organizational forms. The concept of “a cultural institution” is reserved for organizational forms operating under the abovementioned Ustawa o organizowaniu i prowadzeniu działalności kulturalnej (Act on Organizing and Running Cultural Activity, 1991), and its founder is a minister or a head of a central office (national cultural institutions), or a local government (local government cultural institutions) and he is called “the organizer”. The organizer of culture, who is creating a cultural institution, is providing it with necessary assets that become the assets of the new legal entity at the moment of registration of the institution.

The authors are interested in the problem of financing of theaters as cultural institutions because of the arising conflict between the objectives set by the organizers of the institutions and the objectives that managers and artists consider as the most important for the public cultural institutions (Lewandowski, 2006).

The model of financing theaters by municipalities in Poland in comparison to the generated costs, as well as in comparison to the household expenditure, indicates that this is an example of public financing of culture. On the one hand, the expenditure on theater and music institution tickets accounts for nearly the smallest percentage of the structure of household expenditure on culture - about 3.7% (Głowacki et al., 2009). On the other hand, more than 80% of theaters are financed by subsidy from the budget of a

local government or from the state budget. A higher level of subsidy than theaters show museums, libraries and cultural centers (Głowacki et al., 2009).

The aim of this article is the efficiency evaluation of statutory subsidies granted to cultural institutions. The authors state the thesis that there is no relationship between the amount of the statutory subsidies of cultural institutions in Poland and their financial results. The authors assume that similar amounts of transfers should provide a comparable range of performed tasks, and thus the access to the supplied goods and services. From the point of view of economic efficiency of public expenditure, one can assume that the amount of own funds produced by cultural institutions is the result (however indirectly, and not exclusively) of the outlay - it means of the organizer's statutory subsidies. Seemingly, the higher the level of own revenue regarding the particular subsidy, the more interest of a local society towards the cultural offer of an institution, therefore the economic efficiency is higher. Yet, if own revenue is much lower than the revenue of other institutions, given a particular subsidy, it can be concluded that a local community is much less interested in the cultural offer of the institution. Thus, economic efficiency is lower.

To achieve the abovementioned objective and to verify the thesis, the authors analyzed: firstly, the size of granted subsidies, including statutory subsidies, secondly – whether the size of the subsidies is related to own revenue achieved, thirdly – whether the size of the subsidies is related to the total incurred costs, and to the financial result.

1. Methods, literature overview

The subject of the study of measuring the economic efficiency of the expenditure of cultural institution are public theaters and music institutions in large cities, i.e. with the population of one hundred thousand to a million. The authors limited the object of the study to cultural institutions whose core business (according to the statute of the institution) includes musical activities consisting in satisfying the needs and cultural inspirations of the society by creating theater performances and by dissemination of performing arts in the form of operetta performances, shows and musical events, ballet, etc., in other words theater, concert hall and ballet. However, the authors took into account only those institutions whose organizer is a municipality. The division for the study constitutes a homogeneous group (convergent nature of the performed activities, equal access to resources, operating in a similar environment, the criterion of population).

While fulfilling the set objective of the study and while verifying the hypothesis, the authors used the graphical method, descriptive statistics, as well as methods of statistical inference. They analyzed legal regulations determining the rules of financing cultural institutions valid until 2015.

The study was to approve or reject the hypothesis, according to which there is no relationship between the amount of the statutory subsidies of Polish cultural institutions and their financial results. Data for the study was obtained through individual inquiries via Internet concerning reports on implementation of financial plans of municipal cultural institutions for the years 2010-2015. The group of surveyed entities included municipal theaters, concert halls and opera and operetta. Inquiry was sent to 30 cities, and answers were given by 27 entities. Institutions from nine cities were excluded from the study due to the lack of cultural institutions whose organizer was municipality or due to the lack of data.

Cultural institutions can receive both statutory subsidies – dedicated for current operations, and specific grants. However, the authors took into account only statutory subsidies provided by the organizer. This choice is due the sustainability in providing of them by the organizer. Specific grants are not of this nature, moreover, they do not occur regularly and can significantly distort the final result and interpretation of data.

Extracting of statutory subsidies helped to determine that in all surveyed institutions this subsidy represented at the same time the majority subsidy, therefore any situation of visible financial interference of other entity than the organizer did not happen in the analyzed period.

For the sake of better transparency of data, the authors introduced a distribution of features into four compartments, in which the results will be classified. These compartments, called quartiles (Q), correspond to the distribution of the data included in the boxplot, which will be used for the presentation and interpretation of the data result.

In order to measure the efficiency of management, the authors used an indicator determining the ratio of the financial result to certain quantity that influences the result (profitability indicator). The indicator presented in such way sets usually the ratio of profit/loss of the institution to financial expenditures incurred for its activities (Bednarski & Waśniewski, 1996; Bednarski, 2007; Nowak, 2008; Sierpińska & Jachna, 2009).

In turn, the Spearman rank correlation coefficient allowed to determine whether there is a relationship between the level of statutory subsidy in overall revenue and the financial result expressed in overall costs.

Spearman rank correlation formula:

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)} \quad (1)$$

where:

p = Spearman rank correlation

d_i = the difference between the ranks of corresponding values X_i and Y_i

n = number of value in each data set

The authors drew conclusions about the level of variation and position (distribution) of the data of the examined characteristic.

The analysis of the public expenditure efficiency is not any new problem in the literature. Significance, amount and range of financing some benefits from public funds constitute a persisting dilemma for scientists and interest groups. The dilemma is also a part of the socio-political debate. Paul Samuelson (1959) was the author of the theory of public goods, whose disposer is the collective consumer. The use of the good by one consumer does not exclude the possibility of use of the same good by others. Producers of culture create and share their works with all interested in it - at least theoretically, they should care about this, and the production costs do not always depend on the number of recipients (Thorsby, 2001). Also the universal accessibility justifies government intervention regarding financing culture because culture, whatever its demand, is a socially acceptable good due to positive externalities (merit goods) (Baumol & Bowen, 1966). The importance of culture as a prerequisite for sustainable development has been emphasized many times, what also justifies the subsidizing of cultural institutions (Thorsby, 2010). Bendixen (2001), when looking for links and relations between market-driven economies and culture, concluded that modern economies could not develop without the contribution of culture. At the same time he emphasized that, due to the specific nature of cultural institutions and their social mission, it was extremely difficult to determine the boundary between effective spending of money for cultural activities and wasting of them (Bendixen, 2001). Costs and the financial result were also subjects of analysis in terms of technological progress, because unlike production it influences creators of culture. Even in the United States, performing arts such as theater or ballet were processes absorbing costs and usually losing. On the basis of century-old observation of such performances, a theory called "cost disease" evolved (Baumol & Bowen, 1966). This cost disease is the reason for permanent deficits affecting cultural production. The cost disease results also from the demand for cultural goods and thereby from the price that consumers are able to pay for the use of these goods. Due to that, in the literature, the subsidizing of cultural activities has long been justified, and John Maynard Keynes himself got involved in building public support for cultural institutions (Ilczuk, 2011, 2015). The theory of cost disease has often been positively verified, among others by the abovementioned Thorsby (2010). Furthermore he argued that cultural institutions "are not commercial organizations fighting for profitability in a competitive market, even if the state is interested in their economic results, measured in terms of the ability to increase revenue, cost efficiency, market efficiency, etc. (Wavell, Baxter, Johnson & Williams, 2002).

Although in the literature subsidizing of cultural activities is considered to be justified, again and again a need for further development of tools and guidelines to evaluate activities of cultural institutions, and thereby to determine the efficiency of public expenditure, is arising. The authors of the report *Impact Evaluation of Museums, Archives and Libraries: Available Evidence Project* (Wavell, Baxter, Johnson & Williams, 2002) made an attempt of such an analysis, stating at the same time that the developed tools should be universally and easily accessible to employees of these institutions. Also D. Thorsby indicates areas where reconciling of “market-“ and “missionary” elements is less controversial: “*Nevertheless, when managing internal operations, such institutions may reach for strategies used in the private sector and aimed at increasing the effectiveness of their activities and their management ...*” (Wavell, Baxter, Johnson & Williams, 2002).

Apart from the need to create objective indicators of efficiency of spent funds, authors also point out the possibility of adapting to the particularity of cultural institutions. *Controlling* tools used in management can be implemented in them (Wnuczak, 2014). Such *controlling* instruments include, among others, widely understood reporting systems, cost accounting and budgeting. Budgeting as an element of managing cultural institutions appears also in Byrnes’ publications. He emphasizes the great importance of creating budgets for cultural institutions (Byrnes, 2009). He writes that the budgeting process should be preceded by the determination of the organization’s mission, and the budget should result from the organization's mission, and reflect its intentions. Therefore, the efficiency of the spent funds refers to the implementation of statutory objectives, but there are also elements of economic efficiency that is understood as revenue-expenses ratio, in other words - the performance (Lewandowski, 2006). The authors of this study will focus exactly on economic efficiency, ignoring other aspects of efficiency. The analysis of fields of efficiency in European cultural institutions, in which the changes reach much deeper (and they often result from the principles of market-driven economy), shows that the measures used in Poland are hardly related to financial economy of a cultural institution and to its external financing. As a result, there are no good evaluation methods of effectiveness and economic efficiency of cultural policy (Lewandowski, 2006).

2. Results

The results of the study show that the problem of subsidizing, self-financing and economic efficiency of the examined institutions is very important. From a purely economic point of view, the analysis of their finances indicates inefficiency of all institutions. Most of them are institutions that are sustained by subsidies of the organizer. They generate low own revenue in relation to the incurred costs. At the same time these are institutions that do not need, by definition, to generate any profit, and that, apart from their cultural activities, carry out educational activities, animating the

life of local, and sometimes regional, communities: they perform their social mission that will never have a chance of balancing in terms of economics.

2.1. The structure of revenue of cultural institutions between 2010 and 2015

Own revenue, independently generated by a cultural institution, is particularly important for maintaining continuity and for developing its activities, because it shows the potential for financing the activities. Particularly, the share of own revenue in the total revenue should be taken into account (further below it will be also referred to as an indicator of self-financing).

The study showed that most of cultural institutions are characterized by a very low share of own revenue in the total revenue. Between 2010 and 2015, the minimum value of the indicator of self-financing fluctuated around 1%, while the maximum value accounted for 51% of the total revenue of a cultural institution. In a half of the examined cultural institutions, the indicator of self-financing did not exceed a maximum of 23% of the total revenue. In the majority of the examined cultural institutions - in 54 cases, which represents more than 90% - the share of own revenue in total revenue did not exceed the 51.

TAB. 1: Distribution of the share of the statutory subsidies in the total revenue of the respective cultural institutions, according to Q

year	min. value	lower Q	median	upper Q	max. value
2010	32%	60%	75%	80%	96%
2011	25%	57%	70%	79%	96%
2012	39%	59%	72%	78%	97%
2013	36%	60%	67%	77%	91%
2014	40%	60%	69%	77%	93%
2015	41%	59%	67%	76%	88%

Source: Own elaboration based on reports on the implementation of financial plans of municipal cultural institutions between 2010 and 2015.

Between 2010 and 2015, four theaters reached a significant value of the examined indicator. Compared to the other theaters, these values are quite impressive. These are three theaters in Warsaw with the average of the share of 78%, 74% or 62%) and one theater in Cracow with the average of the share of 58%. The level of own revenue of most cultural institutions did not allow for their self-financing. In the analyzed period, in most of the cultural institutions their own share of revenue was lower than 50% of the total revenue. The study proved that statutory subsidies are an important factor of the revenue of cultural institutions. While these institutions generated relatively low own revenue in relation to the total revenue, the share of subsidies in the total revenue is

significant. Subsidies accounted for 25% (in 2011) up to almost 100% of the total revenue (TAB. 1).

TAB. 1 shows that in the subsequent years of the analyzed period the variation of the distribution of the data of cultural institutions was decreasing. This is a satisfactory trend showing that the spread of the level of subsidies is decreasing. In the first year of the study the values of the parameters were in the range of 32% to 96%, whereas in the last year of the study, the minimum amount of the subsidy ranged from 41% to 88%. The median fluctuates around 70%. The maximum value in 2012 was even 97%. This means that in the analyzed sample there are theaters whose statutory subsidies accounts for 97% of the total revenue. In all the years of the analyzed period the interquartile range was similar and ranged from 57% to 80%. This indicates that over six years, a half of the examined cultural institutions were receiving subsidies that accounted for 57% to 80% of their total annual revenue. Whereas the indicator of co-financing of a quarter of cultural institutions reached up to 80% and more.

The outliers were extremely small during the whole period. This means that among the examined theaters there were also theaters characterized by an extraordinary low share of subsidies in relation to the total revenue. These were three theaters in Warsaw. On average, the share of subsidies for those theaters did not exceed 17% (Theater Square), 15% (Comedy Theater) and 30% (Roma Musical Theater). The rest of the resources were developed by the theaters. A high indicator of self-financing, and thus a low indicator of subsidizing, indicate a high efficiency of managing public funds by these cultural institutions. This begs a question, why the other institutions do not generate similar results? Perhaps, beyond the purely economic aspect, the cultural aspect should be measured, since it could be that the repertoire of these theaters is “easier” and it is more like entertainment than culture. This would have led to an increased demand for tickets, and thus to an increased economic efficiency. It should be considered, whether entertainment is synonymous with culture, and if not, how the concepts should be distinguished. Due to the large population of Warsaw, it is impossible to state clearly, whether a high share of own revenue and low share of subsidizing are solely the result of activities of the abovementioned theaters. In fact, the abovementioned Warsaw theaters have the largest “sales market” compared to other cultural institutions performing their activities in smaller towns. However, the theaters in large cities, such as Warsaw, Wrocław, Cracow, Łódź and Poznań, are characterized by a low indicator of self-financing and a high indicator of subsidizing.

In order that the economic efficiency of public expenditure regarding the respective cultural institutions is better reflected, the authors measured the share of the statutory subsidies provided by the organizer in the costs incurred by these institutions. The value of the indicator determines, firstly, what amount of the cost is financed by public resources, and secondly, whether the amount of subsidies depends on the incurred total costs.

TAB. 2: Distribution of the share of the statutory subsidies in the total costs of the respective cultural institutions, by Q.

year	min. value	lower Q	median	upper Q	max. value
2010	17%	53%	69%	77%	90%
2011	16%	49%	61%	76%	91%
2012	22%	54%	65%	76%	81%
2013	25%	52%	65%	73%	81%
2014	14%	47%	64%	71%	90%
2015	44%	56%	67%	74%	87%

Source: Own elaboration based on reports on the implementation of financial plans of municipal cultural institutions between 2010 and 2015.

Between 2010 and 2015, the share of statutory subsidies in the operating costs of the respective cultural institutions fluctuated from 14% (in 2014) to 91% (in 2011). For three quarters of the cultural institutions it was higher than 47%. This means that for only 25% of cultural institutions the subsidy did not exceed a half of the cost. It points to the conclusion that subsidies are the primary financing source for most of the institutions. A high share of subsidies in total costs means that not only costs of building maintenance and administration are covered, but also programming activities depend on the organizer's subsidy.

2.2. Financial result as a yardstick of economic efficiency (of the management of public funds)

An important yardstick of the efficiency of public funds is also the financial result reflecting both the level of revenue and the level of the incurred costs. The financial result is a result of the activity of an institution in a certain period of time, which is

TAB. 3: Distribution of the financial results in relation to the total costs of the respective cultural institutions, according to Q [PLN]

year	min. value	lower Q	median	upper Q	max. value
2010	-8%	-5%	-1%	1%	5%
2011	-11%	-5%	1%	2%	5%
2012	-13%	-5%	1%	1%	8%
2013	-13%	-5%	-2%	0%	8%
2014	-12%	-6%	-2%	0%	8%
2015	-8%	-3%	0%	2%	7%

Source: Own elaboration based on reports on the implementation of financial plans of municipal cultural institutions between 2010 and 2015.

expressed in monetary terms. It is one of basics yardsticks of assessing an institution. Its amount informs about the management efficiency. The financial result can be a positive value – what means that the institution has made a profit, or a negative value – meaning an incurred loss.

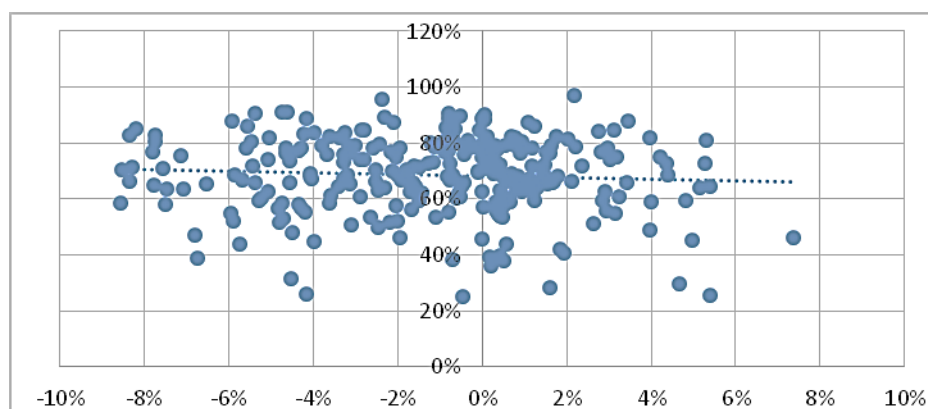
The study allows to formulate some basic conclusions.

Firstly, the distribution of financial results is similar for the respective institutions. The financial results of the cultural institutions were between 13% and 8% of their total costs. A slight improvement is visible in the last year of the study, particularly in relation to the minimum value and the lower quartile. Some theaters were beyond the indicated range. The analysis of the data indicates that there are so-called outliers that are extremely small.

Secondly, a negative indicator of the financial result to the costs indicates a lack of economic stability of the respective theaters in relation to the homogenous rules of their financing. Compared to the costs, the losses were relatively small, fluctuating around a few percent. Most of the cultural institutions justified their negative financial result by a high depreciation.

Thirdly, there is no relationship between the amount of the statutory subsidies expressed in the total revenue and the financial results expressed in the total costs. The Spearman rank correlation coefficient for the studied features was $-0,04417$. This should be interpreted as a lack of any relationship between the studied features. (Fig. 1)

FIG. 1: The relationship of the share of the statutory subsidies in the total revenue and of the share of the financial results in the total costs between 2010 and 2015



Source: Own elaboration based on reports on the implementation of financial plans of municipal cultural institutions between 2010 and 2015, The correlation coefficient was calculated without taking into account the extreme values.

After having analyzed the data of the financial results, the authors emphasize that the FR is affected by more factors, not solely by the structure of revenue and costs. Many

institutions perform activities that go beyond the basic offer, including activities aimed at social inclusion and education of e.g. young children. These are initiatives that should be seen as an investment in the future which does not immediately generate any tangible economic benefits reflected in the funds of the institutions. Therefore, the authors suggest to carry out an in-depth analysis of cultural institutions, including also substantive values (the number of spectators, premieres, performances, the space of the theater, etc.).

Conclusion

The system of financing municipal cultural institutions is predominantly based on statutory subsidies from the organizer's budget. Therefore, statutory grants play an important role in creating income and in stabilizing finances of cultural institutions. Their share in the total amount of revenue of the examined cultural institutions persisted at a high level throughout subsequent years of the studied period. Cultural institutions which use less subsidies, and which finance their activities with their own revenues, are much more efficient. However, statutory subsidies significantly improve the financial situation of cultural institutions. Unfortunately, the study showed that only few cultural institutions were characterized by a high indicator of financing. This proves the thesis, that there is no relationship between the amount of the statutory subsidies of cultural institutions in Poland and their financial results.

In conclusion, despite similar principles of granting statutory subsidies, cultural institutions show different levels of economic efficiency. There were many outliers extremely large or small or both, in each year of the study. It means that there are cultural institutions which are able to manage their finances more efficiently than the others. It is worth to ask a question: Why some cultural institutions are characterized by higher economic efficiency than the others? The authors will try to answer this question in subsequent dissertations.

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A SEM¹ RESEARCH ON SUBJECT FACTORS OF TACIT KNOWLEDGE LEARNING AND ENTERPRISE INNOVATION PERFORMANCE

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Keywords:

tacit knowledge learning – enterprise innovation performance – structural equation modelling

JEL classification: O310, O320, M100

Abstract:

Many factors influence enterprise innovation, from the perspective of tacit knowledge management, structural relation between subjects' factors of tacit knowledge learning on enterprise innovation is important. Based on the enterprise innovation performance as the object and 318 enterprises survey data from 15 Chinese cities, it verified the structure relationship between subject factors of tacit knowledge learning on innovation performance. The subject factors of tacit knowledge learning include absorption ability, relationship quality, cognitive differences, learning motivation, and the shared tendency. These five factors have significantly different effects on innovation performance. The effect of absorptive capacity, relationship quality, cognitive difference and sharing tendency on innovation performance was significant, and the utility of absorptive capacity is the largest, the cognitive difference and relationship quality is the second, and the utility of shared tendency is the least in the whole structural equation model. Learning motivation has no significant effect on innovation performance.

Introduction

Tacit knowledge is the important source of enterprise innovation and the competitive advantage. But an empirical study of relationship between tacit knowledge learning subject factors and innovation performance is not common. Retrieved through the Emerald database and "tacit knowledge" and "innovation performance" research found that only a small number of studies related to the topic. "Tacit knowledge" and "innovation performance" as keywords, through the Emerald database retrieval, found that only a few articles related to this research topic. Among them, Harold (2008) from the TKI (Tacit Knowledge Index) perspective, using the general linear regression method to study the relationship between tacit knowledge, innovation performance and financial indicators,

¹ SEM: Structure Equation Model

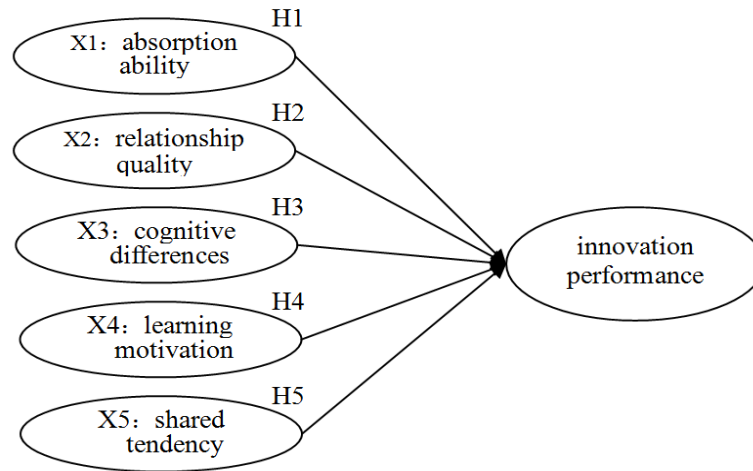
but the TKI did not reflect many main factors in the tacit knowledge learning, and innovation performance are mainly concentrated in the choice of product innovation. Chaminda et al. (2007) from the conversion of tacit knowledge, especially the perspective of externalization, study the tacit knowledge of external impact on the performance of the hotel industry, Marianna (2007) research focus in the construction industry, which both are lack of universality, and there is no focus on the content of the innovation performance. Jack (2003) emphasized the Australia stand at the national level to face other OECD (Organization for Economic Co-operation and Development) economies to solve the key challenges in knowledge contest. The study did not focus on the content of the enterprise level.

Existing research shows that the tacit knowledge learning subject factor to the enterprise innovation performance is a synergistic effect, the influence of each factor is not independent, must put the elements in a unified structure research. In a structural equation model to discuss the role of various subject factors on innovation has a certain value. In this paper, through literature review, it establishes the conceptual model and related assumptions about tacit knowledge learning subject factors and innovation performance, through the questionnaire survey to collect data, using structural equation model to test the conceptual model, finally identify and verify the structure relationship between tacit knowledge learning subject factor and innovation performance.

1. Methods, literature overview

1.1. The conceptual model and assumptions

In this study about the tacit knowledge learning subject factors including five variables, namely the "absorption capacity", "relationship quality", "cognitive differences", "learning motivation", "shared tendency", the basic hypothesis of the five variables on innovation performance including H1, H2, H3, H4, H5. This article set innovation performance as endogenous latent variables, and the "absorption capacity", "relationship quality", "cognitive differences", "learning motivation", "shared tendency" as exogenous latent variables. The concept of tacit knowledge learning subject factors and innovation performance model are shown in figure 1 below.

FIG. 1: Conceptual model of tacit knowledge learning subject factors and innovation performance

Source: own research

Absorption capacity and innovation performance

As Cohen and Levintal (1990) proved that learners' absorptive capacity has a positive and important role in enterprise innovation. As Lane (2006) proved that absorptive capacity can increase the speed and frequency of innovative activities, especially progressive innovation activities. As Yong and Park (2004) proved that the relationship between absorptive capacity and enterprise's key knowledge is significant, it is the knowledge of manufacturing process and product development. As Escribano et al. (2009) proved that absorptive capacity will help enterprises to improve the efficiency of the use of external knowledge, so as to improve the performance of innovation, absorptive capacity is an important element in the competitive advantage of enterprises. The aforementioned learners absorb ability is refers to the dominant knowledge absorption ability. This study assumes that the knowledge absorptive capacity of learners plays a positive role in the innovation and efficiency of the enterprise, so the following assumptions are put forward:

Hypothesis 1 - H1: Learners' ability to absorb tacit knowledge has a positive effect on firm innovation performance.

Relationship quality and innovation performance

Relationship quality affects the innovation performance of enterprises through two dimensions, namely, trust and satisfaction. First of all, the trust between learners is essentially a learning mechanism, a kind of system, this system reduces the cost of the process of knowledge sharing, knowledge exchange frequency and increase opportunities for new knowledge, improve the diversity of organizational innovation. As proved Norman (2004) proved that trust makes the tendency of the protection of the shared

subject to decrease, which improves the efficiency of knowledge transfer and the opportunity to improve the new knowledge. As Weber and Christiana (2007) proved in his empirical study that the positive correlation between the degree of trust and the effect of knowledge learning. Secondly, relationship satisfaction is a kind of evaluation of the past emotion accumulation. As Smith and Barclay (1997) proved that satisfaction affected the stability of the relationship between the subjects, and the subject of persistent high satisfaction more willing to establish long-term and stable relations, and in order to communicate knowledge to create convenient environment, improve the success rate of knowledge exchange. Based on the above analysis, this study put forward the following hypothesis:

Hypothesis 2 - H2: the relationship between the subjects has positive impact on the enterprise innovation performance.

Cognitive differences and innovation performance

As Phan et al. (2000) proved that alliance enterprise organizational culture difference is too high, it is not conducive to inter firm learning or knowledge creation. As Kostova (1999) proved that the higher the value identity of parent company and subsidiary company in organizational culture, the higher the success rate of the parent company's strategic knowledge transfer. As Li (2005) proved that Value cognition is the common value and the common belief in the organization and cooperation. It provides the basis for the knowledge exchange and the innovation of the organization. This paper puts forward the following hypothesis according to the specific learning situation of tacit knowledge learners:

Hypothesis 3 - H3: the cognitive difference between the subjects of tacit knowledge learning has a negative effect on enterprise innovation performance.

Learning motivation and innovation performance

As Cummings 2006 proved that from the perspective of the subject of learning, the key factor to ensure the successful transfer of knowledge is not only the sharing motivation of knowledge providers, but also the learning motivation of knowledge recipients. The learner's learning motivation stimulates and drives the innovation activities. As Amabile (1993) proved that Different types of motivation play different roles in different stages of innovation. As found in the stage of the problem, the role of internal motivation is more conducive to the creation of innovative thinking; in solving the problem stage, the external motivation is more conducive to the implementation of solutions. As a result, this paper puts forward the following assumptions:

Hypothesis 4 - H4: the learning motivation of tacit knowledge learners has positive impact on enterprise innovation performance.

Shared tendency and innovation performance

As Guo Liang Zhang (2010) proved that the internal motivation of the sharing motivation has a direct and significant impact on the individual innovation behavior, especially the psychological satisfaction of the passion and challenge in the internal motivation. As Amabile (1996) proved that the synergy factors in the external factors can help individuals to complete the task, rather than the synergy factors for the innovation performance of the negative correlation. This study proposes hypotheses:

Hypothesis 5 - H5: the shared tendency of tacit knowledge output has a positive impact on enterprise innovation performance.

1.2. Data collection

This study chooses subjective indicators to measure innovation performance and other exogenous variables, and collects data by means of questionnaire survey. As Chandler and Hanks (1994), Brush and Vander (1992) proved through empirical research that subjective performance and objective performance are significantly related to the statistical significance. Instead of objective indicators, subjective indicators will not affect the reliability and validity of the study.

This study extends the scope of the questionnaire focused on the EMBA, MBA, senior class of professional managers, CEO class of students in Northwest University. Questionnaires were distributed to 15 cities. A total of 500 questionnaires were issued, 427 were recovered and the recovery ratio was 85.4%. In the recycling questionnaire, the incomplete questionnaire, the extreme data questionnaire, the error questionnaire and other invalid questionnaires were excluded, and 319 questionnaires were completed. The final questionnaire was 108, and the effective rate was 63.8%.

2. Results

The results of Amos for the first time are model S1 shown in TAB. 1.

TAB. 1: Fitting index summary

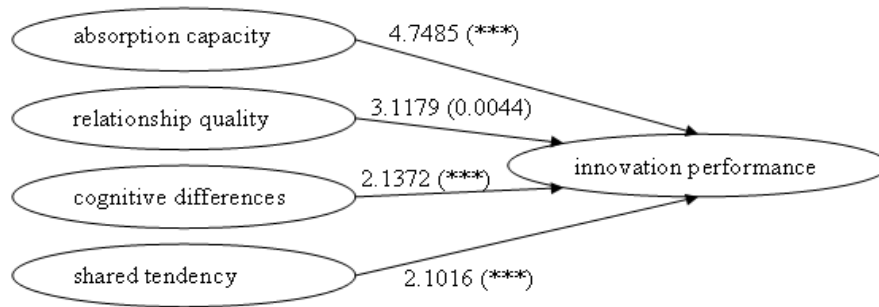
Model	CMIN	DF	CMIN/DF	RMR	GFI	AGFI	NFI	RFI	CFI	RMSEA
S1	3184.0756	843	3.7771	.6505	.6599	.6183	.7532	.7357	.8049	.0900
S2	1594.3892	805	1.9806	.3505	.8195	.7879	.8764	.8614	.9342	.0515
S3	852.4576	450	1.8944	.1035	.8596	.8250	.9049	.8884	.9523	.0476

Source: own research

The fitting index of the concept model S1 in AMOS is passed, but the quality is insufficient, and the concept model is modified according to the MI of AMOS. Remove the path between "learning motivation" to "innovation performance" because T value

significant is very small ($t = 1.3904$). After first modifying, the fitting index was improved as shown in TAB. 1 model S2. Followed by second modification, the model S2 was changed to S3, and the fitting index was revised as shown in TAB. 1. Figure 2 is the standard path coefficient of the modified model S3. After two revises, the chi square/freedom degree of S3 is significantly lower than the S1; the fitting index has improved significantly, which indicate that the differences between S3 and the sample data were further reduced. S3 model fitting results can be accepted.

FIG. 2: Standardized path coefficient



Source: own research

TAB. 2 shows the estimated results of model S3 obtained by the maximum likelihood estimation method, including the path coefficient estimates, the standardized path coefficient, the standard error, the T value and the significant level.

TAB. 2: Structure model S3 estimates

			Estimate	Standardized Estimate	S.E.	C.R.(t)	P
Innovation performance	<---	absorption capacity	4.7441	4.7485	.0621	11.9856	***
Innovation performance	<---	relationship quality	3.1230	3.1179	.0432	2.8490	.0044
Innovation performance	<---	cognitive differences	2.1469	2.1372	.0444	3.3111	***
Innovation performance	<---	shared tendency	2.0785	2.1016	.0516	1.5198	***

Source: own research

From TAB. 2, we can see that the direct effect of absorptive capacity on innovation performance is statistically significant at the level of $P=0.001$, H1 is confirmed. The direct effect of relationship quality on innovation performance is statistically significant at the level of $P=0.005$, H2 is confirmed. The direct effect of cognitive difference on innovation performance is statistically significant at the level of $P=0.001$, but the direction is negative, which is opposite to H3. The learning motivation has not found its direct effect on the innovation performance in the results. H4 is not supported. The direct

effect of sharing tendency on innovation performance is statistically significant at the level of $P=0.001$. H2 is confirmed.

3. Discussion

The effect of absorptive capacity on innovation performance is reflected in the "absorb" and "use". First of all, the absorption ability is strong, the receiver of study has certain knowledge accumulation, can identify and receive the content of new knowledge. Secondly, absorptive capacity provides the ability of knowledge transformation and application, and the innovation of knowledge is largely due to the ability of knowledge application. Third, external knowledge acquisition ability will improve the potential absorptive capacity, internal knowledge flow can improve the realistic absorption capacity, absorption capacity is by improving the knowledge flow inside the enterprise to improve the knowledge utilization efficiency, and improve the success rate of innovation.

The positive effect of relationship quality on innovation performance is exerted through two dimensions of trust and satisfaction. First of all, trust makes both sides maintain relationship stability; trust makes the protection of the subject to reduce the tendency to improve the openness of tacit knowledge transfer process. Trust as a learning mechanism exists between the learning subjects; it increases the efficiency of knowledge exchange through reducing the cost of tacit knowledge transfer process, thereby increasing the opportunity to generate new knowledge. Secondly, the high degree of satisfaction makes the subject have positive expectation to the tacit knowledge learning process and increase the persistence of the learning process. High quality of tacit knowledge exchange atmosphere promotes the sustainable production of new knowledge.

The hypothesis of cognitive differences on innovation performance is negative in this study, structural equation model validation results are positive. Possible reasons include: The cognitive differences decrease can reduce the tacit knowledge transfer barriers, but for knowledge innovation, more cognitive difference existing means that we can provide abundant differentiated knowledge source, more heterogeneous knowledge source will lead to rich knowledge cooperation and innovation. The high homogeneity of cognition among organizations is not conducive to the generation of new knowledge.

The positive effect of learning motivation on innovation performance is not supported in structural equation modelling. The reason is that different learning motivation has different effects on innovation. The learner's internal motivation has guiding effect on innovative activities. Information external motivation also has positive effect on innovation activities, and the control external motivation has a negative effect on innovation activities. That learner expects to obtain the exclusive personal benefit from tacit knowledge, and it will be over protection of tacit knowledge, which blocks the spread of tacit knowledge. The result is that innovation activity is suppressed.

The role of shared tendency to innovation performance is demonstrated in the model. Knowledge owners' willingness to share knowledge includes three dimensions: economic motivation, self-motivation, and mutual motivation. But from an innovative point of view, innovation means the creation of knowledge. In Nonaka's SECI model, it is mainly embodied in the process of combination and internalization. The subject of innovation is the knowledge learners, and the sharing tendency of knowledge owners does not play a key role, so its effect on innovation performance is not significantly different than that of absorptive capacity, relationship quality and cognitive difference.

Conclusion

Many tacit knowledge learning subject factors have influence on innovation performance. This study included five factors of absorptive capacity, relationship quality, cognitive difference, learning motivation, sharing tendency and innovation performance in a unified structural equation model. The results showed that the effect of the subject factors on innovation performance is different in the structural equation model. The utility of absorptive capacity is the largest, it is by improving the knowledge flow inside the enterprise to improve the knowledge utilization efficiency, and improve the success rate of innovation. The utilities of cognitive difference and relationship quality is the second. Cognitive difference provide abundant differentiated heterogeneous knowledge source which can improve knowledge cooperation and innovation. Relationship quality increases the efficiency of knowledge exchange through reducing the cost of tacit knowledge transfer process, thereby increasing the opportunity to generate new knowledge. The utility of shared tendency is the least in the whole structural equation model. Learning motivation has no significant effect in this study. The reason is that different learning motivation has different effects on innovation. It needs to further refine the research level of the impact of learning motivation on innovation performance.

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AGRICULTURAL RESOURCES IN REGIONS OF THE EUROPEAN UNION (ATTEMPT TO ASSESS THE DIFFERENCES AND CONSISTENCY)

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Keywords:

agriculture – resource conditions of agriculture – regions of the European Union

JEL classification: E02, H23, Q18

Abstract:

The aim of the article was to answer the question of whether can man distinguish areas with similar resource conditions for agricultural production in the European Union. It was hypothesized that the European Union is characterized by considerable heterogeneity of resource conditions of agriculture, but there can be areas, which are clusters of the EU regions with similar conditions for agricultural production, distinguished. There was cluster analysis, using the Ward method and Euclidean distance, performed. As a result, it identified three clusters of the EU regions significantly different from each other in terms of land, capital and labor resources in representative farms. Time range covered the years 2007-2013, spatial scope - various regions of the EU, and the subjective range concentrated on representative farms of those regions. In the conclusion of performed analysis the hypothesis that the EU is characterized by considerable heterogeneity conditions of agricultural resources, but there can be areas, where conditions are similar distinguished, has been positively verified.

Introduction

The effects of farming, as well as in non-agricultural sectors are determined by the use of production resources. Whereby an important role not only meet the volumes of these resources, but also their quality and the relationship between them in production process (Kołoszko-Chomentowska 2007; Gołębiewska, Szymańska 2005; Parzonko 2007). Already W. Petty acknowledged agricultural land and labour as the primary factors of national wealth. As relevant but subordinate factors he recognized professional qualifications and a variety of resources that make labour more efficient (Kunasz 2006, p. 34). Later considerations of representatives of classical economics were focused on the production factors and basically their prices (wages) as determinants of value of goods for the manufacture of which they were used. For example, according to A. Smith in the early stage of development of the society in which the agricultural land was seen as a free good, and the importance of the capital was not perceived, the value of goods

stemmed solely from the cost of labor. Such an approach was contained also in the theory of D. Ricardo and Marx, for whom only labor was a factor of value creation. Assigning the value of goods mainly to one factor (the most often to labor) was a simplified approach.

In the real world price of goods is defined by cash production costs, which include wages, rents and interests as remuneration of traditional factors of production, respectively labor, land and capital, which has been spotted in the later theory of Adam Smith and became the basis of the formulation of the so-called "Smith's dogma". The theory was developed further by J.B. Say's, who saw the value creating role of capital and land, and thereby rejected the theories of value based solely on labor (for more see Blaug 2000, p. 59, 108-109, 236-237, 246-248, Kunasz 2006, p. 35). This also applies to agricultural products. Therefore, the aim of this article was to answer the question of whether man can distinguish areas with similar resource conditions for agricultural production in the European Union. It was hypothesized that the European Union is characterized by considerable heterogeneity of resource conditions of agriculture, but there can be areas, which are clusters of the EU regions with similar resource conditions, distinguished.

Equipment in the production resources determines, according to economic theory, production costs, which in turn translates into the relative differences in the prices of identical products manufactured in regions significantly different in this equipment. Distinguishing the regions with similar equipment of agriculture in the traditional production factors, so in the land, capital and labor, thus permits under the listed views to expect similar levels of prices of agricultural products produced in their area, and significant differences between the prices of identical agricultural products in regions significantly different in possessed levels of production factors. This would verify the views of representatives of economic theory, basing on the current experience of the agricultural sector in the EU. In this context, the article is an introduction to further consideration, allowing answering the question of which regions in the EU are characterized by similar resource conditions for agricultural production, and which differ significantly from each other in this regard. This is the introductory part for further analysis, in order to answer the question whether the differences in the equipment of production factors results in differences in prices of agricultural products. Determination of regions in the EU with similar and different resource conditions for agricultural production is therefore in this context the added value of the study and proves the validity of the considerations made in the article.

1. Methods

The aim of the study was to evaluate differences and consistency in terms of resource conditions for agricultural production in different regions of the EU. For this purpose there was a cluster analysis using Ward method and Euclidean distance performed,

which made it possible to isolate clusters of EU regions characterized by similar agricultural land, capital and labor resources in representative farms. Resource conditions associated with land factor were determined by the average farm size in hectares, labor by labor input in AWU and capital by farms equipment in fixed assets in euro after the elimination of agricultural land value. There were average values for the period 2007-2013 used. Due to the lack of information in the EU FADN statistics on representative farms from certain regions of France (Guadeloupe, Martinique and La Raunion), Hungary (Közép-Magyarország, Közép-Dunántúl, Nyugat-Dunántúl, Dél-Dunántúl, Észak-Alföld, delta Plain, Entre Douro e Minho, Tras-os-Monte) and Portugal (Entre Douro e Minho / Beira Litoral Norte e Centro and Tras-os-Montes/Beira interior) these regions has been excluded from the analysis. The statistical significance of differences between clusters of regions in terms of equipment of production factors was assessed using t-test for independent samples (in terms of clusters), because the number of regions was above 50 (Stanisz 2007). Time scope of analysis concerned last EU Financial Framework (2007-2013), spatial range covered various regions of the EU, and the subjective frame concentrated on representative farms of those regions.

2. Results

There were three clusters of regions which differed from each other in resource conditions for agricultural production in 2007-2013 in the European Union (see. Fig. 1). The smallest cluster (A), including only seven EU regions, was characterized by far the best fitting with each production resources than regions in two other clusters. This follows from the analysis of the average values for the years 2007-2013 (see. Table 1) and was confirmed by t test, which proved that the differences between the fitting with agricultural land, capital and labor resources between the regions of clusters A and B and between regions from clusters A and C were statistically significant. This cluster consisted of five German regions (Brandenburg, Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt, Thuringen), the Czech Republic and Slovakia.

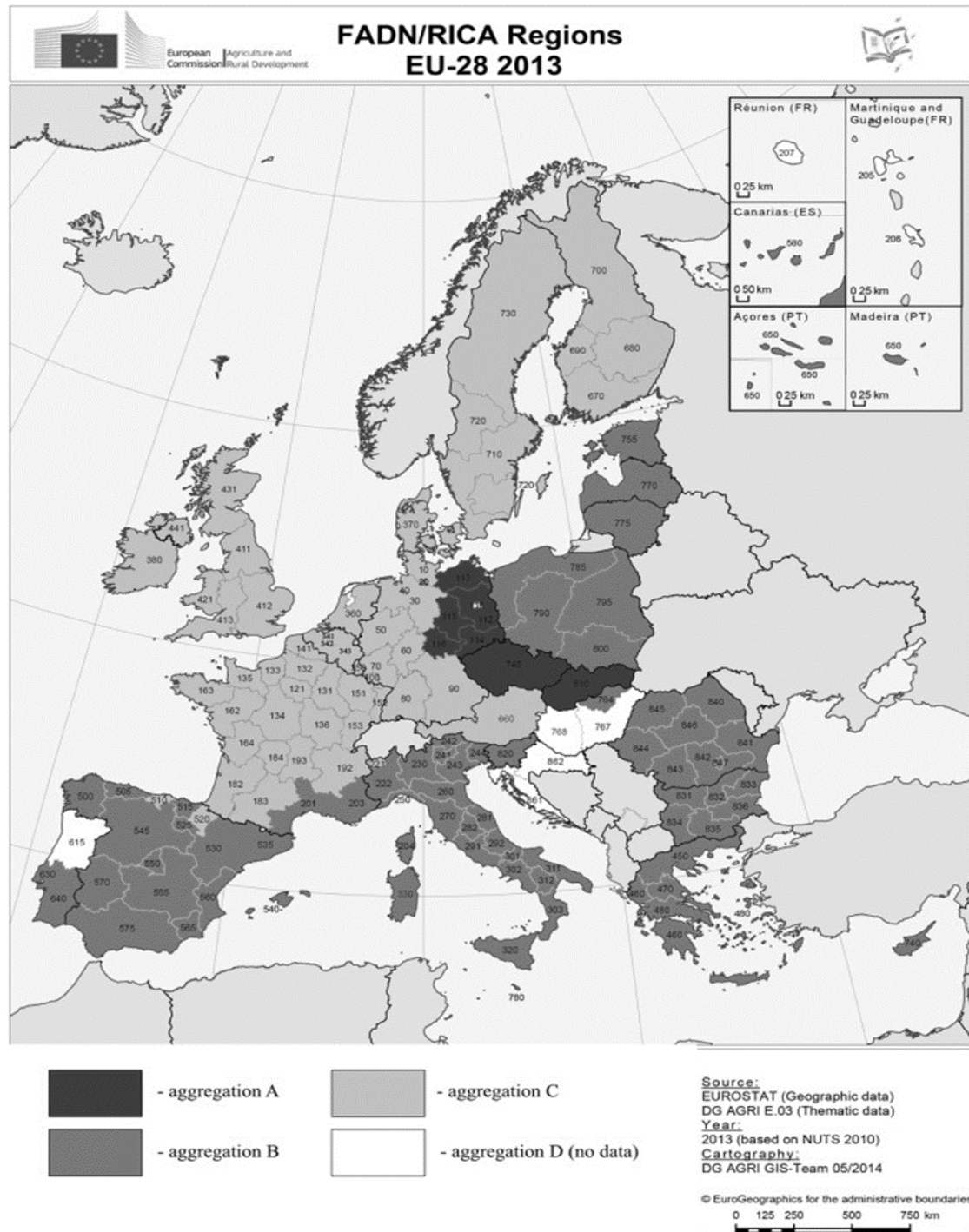
TAB. 1: Average values of production factors in clusters of the EU regions in 2007-2013

Cluster	Number of regions	Land [in ha]	Labor [in AWU]	Capital [in EUR]
A	7	420.72	7.49	639395.82
B	71	26.69	0.44	55786.63
C	50	87.86	0.48	215105.51
Total	128	72.14	0.84	149936.70

Source: own study on the basis of EU FADN data

Other German regions belonged to the cluster C, covering 50 European regions. This cluster consisted also of all Scandinavian regions, Great Britain, Ireland and France (with the exception of two regions, namely Languedoc-Roussillon and Provence-Alpes-Cote d'Azur, which belonged to the cluster B), Belgium and the Netherlands. On the background of representative farms from cluster A, cluster C was characterized by almost 5 times lower land resources, up to 15 times lower labor resources and more than 3 times lower capital resources. At the same time in the cluster C there was much higher average values of agricultural land (3 times) and fixed assets (almost 2 times) than in concentration B, whereas farms of both of these clusters (B and C) did not differ when it comes to labor factor (see table 1). The results of evaluation of statistical significance of differences between the average values of the various resources, made using t-test, confirmed that between regions belonging to the clusters B and C there were significant statistical differences in the equipment of the factor of land and capital (p levels in both cases amounted to less than 0.05). In the case of equipment in the labor factor p was 0.10 which proved that the differences in this regard between the regions of clusters B and C was statistically insignificant. The largest in terms of frequencies was cluster B, covering regions characterized against to the other two clusters by the lowest equipment of the production resources of representative farms. It covered the majority of regions from the EU-12 countries (except the Czech Republic and Slovakia), as well as all the regions of Spain, Italy and Greece. Based on the results of the analysis we can therefore say that among the regions which form each cluster there was similar average values of production factors in representative farms. At the same time farms from different clusters differed significantly from each other with equipment in the traditional production factors. The exception was labor resources, because the differences in this regard between farms from the concentration B and C were statistically insignificant.

FIG. 1: Clusters of regions of the European Union differing in resource conditions for agriculture



Source: own study on the basis of EU FADN data.

The results of cluster analysis enabled to distinguish regions in the EU with similar resource conditions for agriculture and significantly different from each other in this regard.

Conclusion

Resource conditions, understood as an fitting with traditional factors of production, determines the efficiency of production by affecting on the prices of products. This has been spotted for the first time by representatives of classical economics and emphasized in the theories concerning value creating role of these factors. Fitting with production factors plays also a significant role in agricultural production by causing a diversity of agriculture in certain area. Already in the classical theory of the location its representatives stressed that while differentiating agriculture the society is able to use the best resources and values of the environment. In particular, this applies to agriculture, which stems from the very fact of dependence of agricultural activities on natural resources. The article shows that between clusters of the EU regions there are different resource conditions for agriculture, as reflected in the size of representative farms, as well as in labor and capital input in these regions. It has been also proven that in the EU there are three clusters of regions significantly differing in average values of traditional factors of production. A hypothesis, proclaims that: The European Union is characterized by heterogeneity of agriculture resource conditions, but there can be areas distinguished, which are clusters of regions where conditions are similar, has been positively verified. In further studies there should be attempt taken to answer the question, whether found in the paper heterogeneity of resource conditions for EU agriculture is reflected in the prices of agricultural products.

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ESTONIAN TAX SYSTEM ANALYSIS

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Keywords:

tax system – tax competition – tax competitiveness index – tax burden

JEL classification: H21

Abstract:

The article deals with the issue of the tax system with a special focus on Estonia that is ranked by the International Tax Competitiveness Index (ITCI) as a country with a highly competitive tax system in the EU and among OECD countries. It takes into account which countries provide the best environment not only for business and investments, but also to ensure economic growth and employment. The aim of this contribution is to identify and generalize principles, particular features, and benefits of Estonian tax system in a broader sense as a part of the macroeconomic environment. The Estonian tax system evaluation provides some incentives for tax reform development in the Czech Republic.

Introduction

Taxes are a crucial component of a country's international competitiveness when businesses, people, and money can move relatively easy. The structure of a country's tax code is an important factor for businesses when they decide to invest and in which countries to invest. National governments are facing pressures to compete with one another by reducing tax rates or by offering special tax incentives.

Nowadays, there are many different ways to measure tax competitiveness and tax burden. The initial and simplest method is to compare the statutory tax rates. This method does not reflect the different structure of the tax base in each country, temporary or permanent supplement rates and discounts. The better indicator for the real economic tax burden comparison are effective tax rates based on three different approaches: micro backward looking, micro forward looking and macro backward looking. Micro approaches to the tax rates are calculated from financial statements of individual companies, which include either empirical or theoretical data. Differences between the approaches are caused by varying data and degrees of its aggregation.

Most of analyses points to the negative impact of high corporate taxes on investments, production or economic growth and recommends to decrease corporate tax rates. (Macek, 2015) When searching for optimal tax strategy, there are used game theory and

the matrix model. Problems of taxes are perceived as conflict of opposite interests, government versus tax payer. (Dubrovina & Peliova, 2015)

Macro approach calculates the effective tax rate on aggregate macroeconomic data contained in the national accounts of individual countries as a tax/GDP ratio. The World Tax Index (WTI) is an overall multi-criteria indicator of the tax burden that combines hard tax data with soft data expressing Qualified Expert Opinion (QEO). There is a tendency to include other important aspects in the tax burden ratings that are connected with the progressivity of taxation, administrative demands of tax collection, extent of tax exceptions, deductions, tax credits, etc. (Kotlan & Machova, 2015) An international comparison is difficult because national economic indicators can be distorted by methods used for measuring GDP on the one hand and by tax-revenues assessment on the other. (Hájek, 2003)

As one of the best methods of comparing tax competition and incentive for national tax code improvement to be more competitive appears the *International Tax Competitiveness Index* (ITCI) published by the Tax Foundation every year. The Tax Foundation is declared as non-profit educational and research organization founded in 1937 that collects data and publishes research studies on tax policies in the world and tries to measure the business competitiveness of national tax systems. (Tax Foundation, 2015)

In 2015 Estonia was ranked by the ITCI as a country with a highly competitive tax system in the EU and among OECD countries. ITCI criteria are very detailed, developed to a high degree of complexity, considering which countries provide the best tax environment for investment, business, economic growth and employment.

Estonia is developed, highly opened small economy with 1.3 million inhabitants attracting high amount of investment, provides financial freedom and property rights while the top income and corporate tax rates are relatively low, compared with other countries. Major and quickly growing economic sectors are information and communication technologies (ICT), electronics, machinery, wood processing, logistics and transport, food, and bio-medical technologies.

Estonian economic growth measured by GDP achieved approximately 10% in 2007 than world financial and economic crisis started. Economic recession was surpassed and economic growth in 2011 7.6% was the fastest in the EU. The same year Estonia entered to Eurozone and national currency kroon was replaced with euro. It has been very positive landmark, which stimulates investments, trade, and tourism. State budget is balanced and public debt around 11% of GDP is lowest among Eurozone countries. (Focus Economics, 2015)

1. Methods, literature overview

Tax systems are evaluated by the ITCI when methods of description, analysis, comparison, and abduction are applied. Abductive reasoning as a logical inference tries to find the best explanation for Estonian phenomenon. The aim of this contribution is to describe and analyse ITCI criteria for tax code evaluation, to identify and generalize principles, particular features, and benefits of Estonian tax system in a broader sense as a part of the macroeconomic environment. The Estonian tax system analysis reveals some incentives for tax reform development in the Czech Republic. The data are obtained from the Tax Foundation, Government Office of Estonia, OECD, UN, and from other sources cited.

Tax Foundation highlights *principles of sound tax policy as simplicity, transparency, neutrality, stability, no retroactivity, broad bases and low tax rates*. The Foundation recommends low business taxes, excise taxes, tax preferences for the housing industry, and prefers the tax credits. A tax credit is used to encourage investment, parenting, etc. It directly reduces tax bills, unlike tax deductions and tax exemptions, which indirectly reduce tax bills by reducing the size of the tax base.

A competitive tax code should stimulate businesses and investments to ensure sustainable economic growth and investment to create more jobs, higher wages and standard of living. Capital is highly mobile and businesses can choose to invest in various countries in order to maximize their after-tax profitability. Simultaneously, an optimal tax code must also be neutral, it means to raise the most revenue with the fewest economic distortions. E.g. it should not prefer consumption over saving, as in the case of capital gains, dividends taxes, and estate taxes.

The further important aspect of neutrality is the proper definition of business income. In business practice profits are defined as revenues minus costs, but tax code can use a different definition. Some countries do not allow firms to include the full cost of investments and therefore income and profit are artificially increased for tax accounting. This reduces the after-tax profitability on investment and diminishes the incentive to invest. (Tax Foundation, 2015)

The ITCI follows more than 40 tax policy variables measuring the specific burden of a tax, but also how a tax is structured. The most important categories for rating are taxes on corporate income, individual income, consumption, property, and foreign earnings.

TAB. 1: International Tax Competitiveness Index Rankings – 2015

Country	Overall Score	Overall Rank	Corporate taxes rank	Consumption taxes rank	Property taxes rank	Individual taxes rank	Intl. tax rules rank
Estonia	100.0	1	1	9	1	2	17
New Zealand	91.8	2	21	6	3	1	16
Sweden	83.2	4	6	11	6	21	5
Netherlands	82.0	5	16	12	23	6	1
Slovak Republic	76.0	8	17	32	2	7	8
Ireland	71.6	10	2	24	16	22	23
United Kingdom	71.5	11	14	16	30	18	2
Czech Republic	69.9	14	7	31	9	11	11
Finland	69.8	15	4	14	18	27	20
Austria	69.5	16	19	23	8	30	6
Germany	69.2	17	23	13	13	31	7
Denmark	65.8	21	13	20	10	29	22
Hungary	65.1	22	11	34	24	20	3
Belgium	62.5	23	28	28	20	10	12
Spain	56.0	29	32	15	31	26	14
Poland	55.8	30	9	33	28	17	27
Italy	50.9	33	27	19	33	33	19
France	43.7	34	31	17	34	34	24

Source: 2015 International Tax Competitiveness Index (Tax Foundation, 2015)

2. Results

According to above mentioned methodology *Estonia has the most competitive tax code in the OECD*. Corporate taxes and property taxes were ranked in ITCI as the best in the OECD countries (1st position). Estonia top score is based on *four positive features* of its tax code: 20% tax rate on corporate income that is only applied to distributed profits; 20% tax on individual income that does not apply to personal dividend income, property tax applies only to the value of land rather than taxing the value of real property or capital; territorial tax system that exempts 100% of the foreign profits earned by domestic corporations from domestic taxation.

Estonia is the most advanced digital society in the world based on following principles:

- Decentralization*. There is no central database, and every subject gets to choose its own system in its own time.
- Interconnectivity*. All the elements in the system have to be able to work together smoothly.
- Open platform*. Any institution can use the public key infrastructure.
- Open-ended process*. As a continuous project to keep growing and improving organically.

3. Discussion

The Estonian tax system can be evaluated on a background of the tax administration and tax collection in the Czech Republic. There are *two key elements in Estonian infrastructure: X-Road and e-Identity (e-ID)*. The X-Road connects all the decentralized

components of the system together. *E-ID* is the nationally standardized system for verifying a person's identity in an online e-Services (e.g. Digital Signature, e-Business Register, e-Court, e-School, e-Prescription, Electronic Health Record, Social Welfare e-Services, State e-Services, Population Register, e-Residency, e-Tax, etc.). Over 2,000 services are used over X-Road in Estonia.

Electronic ID card affects as an on-line passport that enables sign contracts remotely, to use it as the national health insurance card, to pay for public services, mobile phone, vote online, receive digital prescription from the doctor, apply for government aid, declare tax online, create a new company in 18 minutes, etc. Estonia became the first nation to hold general elections over the Internet (for the municipal elections in 2005). *In Estonia wireless internet is everywhere, free and fast.* Wireless internet access points can be found in most locations as restaurants, airports, trains, bus stations, but also in squares, parks, on a beach or in a forest. Estonia is implementing plans to connect up the country to the next-generation broadband network with a transmission speed up to 100 Mbit/s by the year of 2018. (E-Estonia.com, 2016)

Japan was the first large country implementing a digital personal identification card as an initial step on the way to digital society according to the Estonian example. Japanese MyNumber National ID project was announced in October 2015, following a meeting between the Estonian Prime Minister and the Japanese Finance Minister. Distribution and use of ID cards was launched in January 2016.

The overall freedom to conduct business in Estonia is well protected under a transparent regulatory environment. Foreign and domestic investments are both equally treated under the law, and this makes Estonia one of the leading countries in Central and Eastern Europe in terms of attracting foreign direct investments (FDI). There is a growing number of industrial parks and supply of high quality commercial and office property. The establishment of 4 free zones has further enhanced Estonian attractiveness to foreign investors. *Enterprise Estonia* (EAS) is one of the largest institutions within the national support system for entrepreneurship, providing financial assistance, advisory, cooperation opportunities and training for entrepreneurs, research establishments, public and the third sector.

This system was introduced in 2001 and allows databases to interact, making integrated e-Services possible and institutions are not locked into any one type of database or software provider. This increases the speed and efficiency of public administration, set up a business, reducing bureaucracy. Digital Society allows citizens to do everything from vote to pay taxes.

Estonia has the most efficient tax filing system in the world. The system allows individual income taxes, business taxes and excises to be filed electronically. (E-Tax Board/e-Customs, 2016) Using a secure ID, a *filer simply completes pre-made forms*

and approves the document with a digital signature. The process takes an average of five minutes. This system was introduced in 2000 and nowadays all tax declarations are filed electronically. (E-Estonia.com, 2016)

The income tax return is pre-filled. It means that information on a taxpayer and his/her income and expenses that is available in the Tax and Customs Board's databases has been entered into the income tax return. Pre-filled income tax returns can be submitted in the e-Tax Board/e-Customs or requested in any service bureau of the Tax and Customs Board. Entry in the e-Tax Board/e-Customs is possible e.g. with ID card, with mobile ID or via Internet banking.

Data entered into a pre-filled income tax return include address of a taxable person in the population register, bank account number and the bank account owner's name, employer's information relevant to calculation of income tax (payments subject to income tax and income tax withheld, unemployment insurance premiums, contributions to a funded pension, etc.), benefits for temporary incapacity for work (sickness pay), pensions, training expenses paid, gifts, donations, pension insurance contributions and payments made, data of the Estonian Central Register of Securities on the transactions in transfer of securities.

Corporate income tax is not based on accrual accounting, but on payments and expenses on a cash basis calculation. *The profit of an Estonian entity is not taxed until distribution.* Therefore, there is no need for tax depreciation rules. Estonia has few withholding taxes and can therefore be a favourable holding jurisdiction. The cost-based Estonian tax system with its Deferral of taxation shifts the time of taxation from the moment of earning the profits to that of their distribution. Thus, undistributed profits are not subject to income taxation, regardless of whether these are reinvested or merely retained.

Flat rate of 20% is considered one of the most unique and simple tax regimes in the world. Estonia has effective agreements on the avoidance of double taxation and the prevention of fiscal evasion with respect to taxes on income and capital with 49 countries. (Estonian Investment Agency, 2016)

Estonia offers e-Residency, i.e. a transnational digital identity available to anyone in the world interested in administering a location-independent business online. E-Residents can:

- a) digitally sign documents and contracts,
- b) verify the authenticity of signed documents,
- c) encrypt and transmit documents securely,
- d) establish an Estonian company online,
- e) administer the company from anywhere in the world,
- f) conduct e-banking and remote money transfers,
- g) declare Estonian taxes online.

In Estonia there are introduced VAT and EORI numbers. The EORI (Economic Operator Registration and Identification) number is assigned to importers and exporters and is used in the process of customs entry declarations and customs clearance for both import and export shipments travelling to or from the EU and countries outside the EU. The information is used by customs authorities to exchange information, and to share information with government departments and agencies.

The Czech Republic belongs to the group of countries with the lowest tax burden measured through the share of total tax revenues on GDP. In ITCI ranking took the 14th position despite of bad evaluation of consumption taxes (31st position), but owing to high evaluation of corporate taxation (7th position).

Conclusion

International Tax Competitiveness Index (ITCI) highlights effective tax codes to stimulate investments and economic growth. Simultaneously, it gives strong incentives to improve tax codes in the same way all over the world. In the tax competition, national governments attempt to harmonize or coordinate their tax systems in the EU or in the framework of the OECD member countries.

Tax competitiveness of Estonian tax system is linked with *Digital Society* and based on:

- a) simple and clear tax system,
- b) tax system without any need for separate tax accounting,
- c) zero per cent corporate tax rate on undistributed profits,
- d) fast and cheap business registration and operation for economic subjects,
- e) VAT and EORI numbers,
- f) quick and simple electronic tax declaration (the income tax return is pre-filled),
- g) developed legal system,
- h) transparent regulatory environment,
- i) high business culture,
- j) membership in the European Monetary System and euro as a single currency,
- k) Internet services are widely available,
- l) well-functioning e-government,
- m) e-Residency (owners of the company may be non-residents of the EU).

Estonia is the most advanced e-society in the world. At the turn of the millennium Estonia has changed the base, approach and framework for social, economic and institutional development, for public and corporate governance, as well. The main phenomenon of Estonian tax competition is its all-encompassing Digital Society.

There are two key elements in the infrastructure to be introduced, i.e. *e-Identity (e-ID) and X-Road*. *E-ID is the nationally standardized system for verifying a person's identity in an online e-Services. The X-Road connects all the decentralized components of the system together.* Czech tax competitiveness and its efficiency can increase radical change in the whole tax system functioning based on digital society. It has strong

potential dramatically reduce costs of tax collection, tax avoidance and stimulate businesses, economic growth, employment, and increase government tax revenues.

Rather than using expensive and lengthy public tenders for partial Internet services, the government should follow Estonian example which would be implemented and coordinated by a government agency. The first step is *to introduce the MyNumber National ID system*. E-ID is possible to implement in several months on the bases of intergovernmental agreement like Japan. The project of digitization based on Estonian experience can be adapted and developed to exploit the potential of Universities through grants on applied research for complex and fast the Czech Republic digitalization.

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ENTREPRENEURSHIP AS THE MAIN FORM OF INCOME IN THE CZECH REPUBLIC - PILOT RESEARCH

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Keywords:

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JEL classification: L21, L26, O10

Abstract:

The paper describes the results of a pilot survey and focuses on selected characteristics of the entrepreneurs (YES) who decided to take their business as their main source of income as opposed to the entrepreneurs whose business is considered to be additional earnings to their main source of income (NO). The pilot research "Small and Medium-sized Businesses in the Czech Republic" was conducted through a questionnaire survey of 843 selected entrepreneurs. The results indicate a different representation of (YES) entrepreneurs, depending on the age of the entrepreneurs and the business sector. The relation between representation of (YES) entrepreneurs by duration of business, place of business (municipality size), or company size was not significant.

Introduction

The business entities are one of the most important aspects in modern history. They are a source of basic economic values, determine the pace of economic and technological development and are also the object of this development. Due to employing a large part of the population they play a significant role in social systems of society, affect the character of the regions, the development of society, politics, culture and many other branches (Geršlová, 2012).

According to a study of Flash Eurobarometer No 354 'Entrepreneurship', the share of people who prefer self-employment to being employed has been declining in 23 of the 27 EU Member States. While in 2009, being self-employed was preferred by 45% of Europeans in 2012, it decreased to 37% (European Commission, 2013). On the other hand, in the US and China, the percentage is much higher: 51%, or 56%. The preferences for self-employment activity in the period of 2004 - 2012 have also increased in the Czech Republic (from 30% to 34%), Latvia (from 42% to 49%), Lithuania (from 52% to 58%) and Slovakia (from 30 to 33%) (European Commission, 2012). These findings result from TNS Opinion & Social network study in the

27 Member States of the European Union and in other 13 countries (European commission, 2012).

This paper is based on the questionnaire survey among entrepreneurs in the Czech Republic. It characterizes the segment of entrepreneurs who report business as their main source of income (YES) and monitors the context, which may be associated with the above mentioned business activity. This analysis may help to understand and explain the research conclusion of Flash Eurobarometer No354 (European commission, 2012), which assessed the Czech population's increasing preference for self-employment in the years 2004 – 2012.

1. Methods and Data

Data were obtained from the questionnaire survey "Small and Medium-sized Businesses in the Czech Republic", conducted in the period of May 2013 - January 2015. Investigations were carried out through third grade students of 'Small Business' course at University of Hradec Kralove, Faculty of Informatics and Management. The students were instructed by the authors of the questionnaire on the content of particular questions and then they assisted the businessmen to fill in question sheets. Subsequent checking guaranteed high returns, reliability and highest possible completeness of responses. 884 respondents were interviewed, however 41 questionnaires were eliminated due to incomplete basic data (unwillingness to respond). 834 (95.4%) questionnaires were used for the purposes of the analysis. The questionnaire was partly verified and supplemented with additional information from Albertina CZ Gold Edition database of Bisnode Česká republika, a. s, company which takes data from official sources, the Czech Statistical Office in particular. The place of business, the business sector and the duration of respondent's business were controlled or supplemented data. The period of business activity in months was determined by the date of starting business and the date of completing the questionnaire. The place of business is considered to be the entrepreneur's registered address or mailing / shipping address. For the purpose of the questionnaire, the registered address and appropriate size of the municipality were selected. The sort of business sector was also supplemented information from the above mentioned database. In the Albertina a business branch is categorized into 18 sectors. For the presented analysis some categories were united into the following nine sectors of business:

CZ_NACE	Sector	United Categories
A - E	Industry	Agriculture, forestry and fishing, Mining and quarrying, Manufacturing, Electricity, gas, steam and air conditioning supply, Water supply; sewerage, waste management and remediation activities
L, S	Market services.	Real estate activities and Other service activities
J, K	Finance and insurance	Information and communication, Financial and insurance activities
N, R	Other services	Administrative and support service activities, Education, Human health and social work activities, Arts, entertainment and recreation

The remaining categories: F (Construction), G (Trade), I (Accommodation), and H (Transport and storage) were left separate.

The analysis was preceded by logical data checking and coding of questions with open answers. The data was analysed using statistical software IBM SPSS Statistics v. 24. Descriptive statistics, Chi-square (or exact) test, and test of proportions were used. Significance level was adjusted by the Bonferroni corrections when multiple tests were done. Results were significant at 0.05 level.

2. Results and Discussion

The most commonly represented regions (out of 14 regions in the Czech Republic) were Hradec Kralove (48.4%) and Pardubice (15.8%) ones. TAB.1 describes more detailed characteristics of the file. Entrepreneurship as the main form of income was reported by 66% of respondents. It also shows that 81% of respondents would not exchange the status of the entrepreneur for employment, 83% of participants do not intend to terminate their business activity and 84% of respondents are satisfied with their independence and freedom in doing business and see it as their future. Nevertheless 78% of respondents consider the environment for entrepreneurship in the Czech Republic as poor and not supporting small and medium-sized enterprises. For the analysis of relations between the characteristics of the file, the categories of a self-employed person and an entrepreneur - legal entity - limited liability company were stratified. The following background was examined:

H1: Relation between duration of business activity and entrepreneurship as the main form of income

H2: Relation between the age of entrepreneurs and their entrepreneurship as the main form of income

H3: Relation between the size of the municipality and entrepreneurship as the main form of income

H4: Relation between the size of businesses and entrepreneurship as the main form of income

H4: Relation between the subject of business and entrepreneurship as the main form of income

TAB. 1: Sample characteristics

Item	%	n	Item	%	n
Sex			Organization size		
Women	27,6	231	0 employees	24,8	209
Men	72,4	607	1-9 employees	56,6	477
Total valid	100,0	838	10-19 employees	8,3	70
Age			20-49 employees	6,2	52
≤ 24 years	7,4	62	More than 50 employees	4,2	35
25-40 years	31,6	266	Total	100,0	843
41-65 years	58,2	491	Duration of business activity		
Above 65 years	2,8	24	Up to 5 years	25,7	203
Total valid	100,0	843	6-10 years	15,6	123
Size of municipality			11-15 years	13,0	103
up to 9999 residents	45,7	363	16-20 years	20,3	160
10000 - 49999 residents	19,6	156	More than 20 years	25,4	201
More than 50000 residents	34,7	276	Total valid	100,0	790
Total valid	100,0	795	Type of predominant economic activity		
Region			Industry	20,0	169
Praha	8,4	69	Construction	10,4	88
Středočeský	10,4	86	Trade	23,5	198
Jihočeský/Karlovarský/P	3,2	26	Market services	10,2	86
Liberecký/Ústecký	7,4	61	Accommodation	9,0	76
Královehradecký	48,4	399	Professional, scientific		
Pardubický	15,8	130	and technical activities	9,5	80
Vysočina	2,1	17	Transportation and storage	4,0	34
Jihomoravský	1,2	10	IC, fin. and insurance act	5,6	47
Moravskoslezský	1,3	11	Other services	7,7	65
Zlínský	1,3	11	Total valid		843
Olomoucký	0,5	4			
Total valid	100,0	824			

Source: own processing

2.1. The Duration of Business Activity

The length of period of business activity is significant in the assessment of this activity. While the entrepreneurial activity is essential for economic dynamism, established business ownership and enterprising subjects provide stability in the private sector (Lukes, Jakl, 2012). With increasing length of duration of business, entrepreneur builds his / her business existence and becomes more experienced, strengthens and enhances his / her business habits. With increasing length of period of the entrepreneurship businesses become not only stabilized but this factor positively affects the country's economy, since SMEs represent 99.83% of the economically active business entities in the Czech Republic (Ministry of Industry and Trade, 2016).

The analysis of the survey shows that the proportion of entrepreneurs engaged in business up to 5 years is 25% and 75% of business respondents operate more than 5

years. The hypothesis of independence between the years in business and entrepreneurship as the main form of income was rejected in the group of self-employed (TAB. 2).

TAB. 2: Relation between duration of business activity and entrepreneurship as the main form of income

Duration of business activity		NO		YES		Total		
		n	%	n	%	n	%	
Self-employed Persons p = 0.015	Up to 5 years	56	47.1%	63	52.9%	119	100.0%	more NO than expected
	6-10 years	15	26.3%	42	73.7%	57	100.0%	
	11-15 years	22	35.5%	40	64.5%	62	100.0%	
	16-20 years	29	27.1%	78	72.9%	107	100.0%	more YES than expected
	More than 20 years	52	36.1%	92	63.9%	144	100.0%	
	Total	174	35.6%	315	64.4%	489	100.0%	
Limited Liability Companies p = 0.855	Up to 5 years	18	24.7%	55	75.3%	73	100.0%	
	6-10 years	17	30.4%	39	69.6%	56	100.0%	
	11-15 years	12	34.3%	23	65.7%	35	100.0%	
	16-20 years	13	31.0%	29	69.0%	42	100.0%	
	More than 20 years	12	27.3%	32	72.7%	44	100.0%	
	Total	72	28.8%	178	71.2%	250	100.0%	

Source: own processing

There is a significantly higher proportion of entrepreneurs who do business as the main form of income in the category of self-employed entrepreneurs up to 5 years (NO) than in other categories. At the beginning entrepreneurs obviously prefer less risk, resulting from combining employment and self-employment at the same time, and they do not consider entrepreneurship as the main form of income. On the contrary, in the group of 16-20 year-old entrepreneurship, the proportion of entrepreneurs for whom the business is the main form of income is significantly higher. Self-employed persons in this category undergo business risk in the long term, they do not combine their self-employment with employment and the choice of entrepreneurship as the main form of income is a possible consequence of their entrepreneurial experience gained from longer period in business. The relation between the time in business and entrepreneurship as the main form of income has not been proved at entrepreneurs - legal entities.

2.2. The Age of Entrepreneur

Results (TAB. 3) show a significant correlation between the age of entrepreneur and his/her choice of entrepreneurship as the main form of income, which can be observed both at the self-employed persons and entrepreneurs (limited companies). The analysis proves that the self-employed entrepreneurs under the age of 24 reported entrepreneurship as their main source of income significantly less frequently. In the age group of entrepreneurs older than 65 years there was significantly lower representation of YES category both at self-employed and limited companies. Younger self-employed entrepreneurs either do not want or even cannot take the risk of a single business income. While being in business they study, or their experience is insufficient and

therefore they choose the form of business as a self-employed with its advantage of fast interrupting or even terminating of business. If the business is a legal entity (LLC), the above statement does not apply. It is possible to assume that even an entrepreneur under the age of 24 while establishing LLC considers the long-term existence of his/her business and for this purpose decides to do business as a legal entity. Considerably more YES is also shown by entrepreneurs aged 41-65 who are self-employed (business is more frequently their main form of income). These entrepreneurs due to their experience gained by the length of their active economic life and entrepreneurship (as evident from TAB. 2) have proved economically successful as self-employed at the labour market.

TAB. 3: Relation between the age of entrepreneurs and their entrepreneurship as the main form of income

	Age	NO		YES		Total		
		n	%	n	%	n	%	
Self-employed	≤ 24	27	52.9%	24	47.1%	51	100.0%	significantly more NO
	25 – 40	48	32.0%	102	68.0%	150	100.0%	
	41 – 65	92	30.5%	210	69.5%	302	100.0%	significantly more YES
	Above 65	15	88.2%	2	11.8%	17	100.0%	significantly more NO
	Total	182	35.0%	338	65.0%	520	100.0%	
p < 0.0005								
Limited Liability Companies	≤ 24	4	44.4%	5	55.6%	9	100.0%	
	25 – 40	28	26.7%	77	73.3%	105	100.0%	
	41 – 65	40	26.5%	111	73.5%	151	100.0%	
	Above 65	5	83.3%	1	16.7%	6	100.0%	significantly more NO
	Total	77	28.4%	194	71.6%	271	100.0%	
p = 0.015								

Source: own processing

2.3. The Size of Municipality

The Test of Independence (TAB. 4) shows that the size of the municipality where the business is registered is not related to entrepreneurship as the main form of income. There was no evidence that self-employed entrepreneurs or legal entities more frequently combined employment and self-employment in larger municipalities (more than 50,000 residents) because of better opportunities at the labour market. Neither can it be proved that due to the worse opportunities at the labour market in small communities, entrepreneurship is more frequently the main form of income for entrepreneurs (although self-employment in municipalities of up to 9,999 inhabitants have the lowest proportion of NO).

TAB. 4: Relation between the size of the municipality and the business as the main form of income

	Size of municipality Number of residents	NO		YES		Total	
		n	%	n	%	n	%
Self-employed Persons	Up to 9 999	79	30.6%	179	69.4%	258	100%
	10 000-49 999	40	41.7%	56	58.3%	96	100%
	more than 50 000	52	37.7%	86	62.3%	138	100%
	Total	171	34.8%	321	65.2%	492	100%
p = 0.106							
Limited Liability Companies	Up to 9 999	29	32.6%	60	67.4%	89	100%
	10 000-49 999	11	22.0%	39	78.0%	50	100%
	more than 50 000	30	26.3%	84	73.7%	114	100%
	Total	70	27.7%	183	72.3%	253	100%
p = 0.380							

Source: own processing

2.4. The Size of Business

Results (TAB. 5) show that the size of the company, characterized by a number of employees is not related to entrepreneurship as the main form of income. The association that entrepreneurs with fewer employees combine more frequently employment with their self-employment or vice versa is not possible to be commented by means of this research as well.

TAB. 5: Relationship between the size of businesses and entrepreneurship as the main form of income

	Organization size Number of employees	NO		YES		Total	
		n	%	n	%	n	%
Self-employed Persons	0	67	36.8%	115	63.2%	182	100%
	1 – 9	102	33.6%	202	66.4%	304	100%
	10 – 19	9	39.1%	14	60.9%	23	100%
	20 – 49	3	33.3%	6	66.7%	9	100%
	more than 50	1	50.0%	1	50.0%	2	100%
	Total	182	35.0%	338	65.0%	520	100%
p = 0.945							
Limited Liability Companies	0	4	36.4%	7	63.6%	11	100%
	1 – 9	43	27.9%	111	72.1%	154	100%
	10 – 19	12	28.6%	30	71.4%	42	100%
	20 – 49	10	26.3%	28	73.7%	38	100%
	more than 50	8	30.8%	18	69.2%	26	100%
	Total	77	28.4%	194	71.6%	271	100%
p = 0.978							

Source: own processing

2.5. The Subject of Business

A significant difference (TAB. 6) can be identified in the category of entrepreneurs whose earnings from entrepreneurship is the main form of income (SEP) and they are active in the field of market services, professional, scientific and technical activities and other services. A larger proportion of self-employed persons is in market services, which include real estate activities and other service activities. Significantly highest SEP share is in market services (88.9%) in comparison with LLC (11.1%). On the contrary legal entity entrepreneurs have a higher proportion in the field of professional, scientific and technical activities (e. g. accounting, bookkeeping and auditing activities, tax consultancy, translation and interpretation activities) and other personal services (e. g. hairdressing and other beauty treatment, physical well-being activities).

TAB. 6: The main form of income, subject of business and a comparison of SEP and LLC

Main income from business activity					
CZ_NACE		Self-employed		Limited Liability Companies	
		n	%	n	%
A - E	Industry	77	22.8%	33	17.0%
F	Construction	36	10.7%	25	12.9%
G	Trade	69	20.4%	50	25.8%
L+S	Market services	48	14.2%	6	3.1%
I	Accommodation	31	9.2%	19	9.8%
M	Professional activities	23	6.8%	25	12.9%
H	Transportation and storage	17	5.0%	9	4.6%
J+K	ICT, finance and insurance	21	6.2%	9	4.6%
N+R	Other services	16	4.7%	18	9.3%
p < 0.005		338	100.0%	194	100.0%

Source: own processing

Conclusion

The article presents selected results of the pilot survey "Small and Medium-sized Businesses in the Czech Republic" among entrepreneurs in the Czech Republic in the period of May 2013 - January 2015. The subject of research were the relations between duration of business, age of entrepreneur, size of municipality, size of entrepreneur company, subject of business and entrepreneurship as the main form of income. Significant differences among entrepreneurs, for whom the business is the main form of income and entrepreneurs who carry out entrepreneurship as an additional income, were reflected only in relation to the age of entrepreneurs and to the subject of business. With regard to the age there are more of younger (≤ 24) or older entrepreneurs (> 65) who consider entrepreneurship as a form of extra income in the category of SEP. Situation in the age group of 41-65 is opposite. Entrepreneurship is the main form of income for

more entrepreneurs in this category. In terms of the subject of business the following associations were identified and confirmed. Unlike legal entities self-employed persons are more active in business in market services where they have been receiving their main form of income. The main form of income for entrepreneurs - legal entities is entrepreneurship in professional, scientific and technical activities and other services where they do more business than self-employed persons. Other associations have not been confirmed at the selected level of significance.

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THE IMPACT OF INSTITUTIONAL INVESTOR HETEROGENEITY ON ENVIRONMENTAL INFORMATION DISCLOSURE

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Abstract:

This paper analyzes the impact of institutional investor heterogeneity on the level of corporate environmental information disclosure. The results show that institutional investors can play a role in governance and improve the level of corporate environmental information disclosure. It's found that stable institutional investors, compared with institutional investors, will help to improve the level of corporate environmental information disclosure; that pressure-resisting institutional investors can improve the level of environmental information disclosure, while pressure-sensitive institutional investors have little effect on it. This study is of great theoretical and practical significance to expand the governance role of institutional investors and to promote the environmental protection of the listed companies.

Introduction

With the deterioration of ecological environment, the protection of the environment has become an important public interest demand. Enterprise production is an important factor leading to environmental pollution. Therefore, improving the environmental protection capacity of enterprises is an important way to optimize the ecological environment. Enterprises need to disclose environmental information to the community to show their efforts on environmental protection. The Government also promotes enterprises to improve environmental protection capacity through environmental information disclosure. In practice, environmental information disclosure is becoming an effective environmental management tool widely adopted by many countries. In order to strengthen corporate environmental information disclosure supervision and promote enterprises to carry out environmental protection work actively, the Chinese government has promulgated a series of laws and regulations on environmental information disclosure. However, as an important group of Chinese enterprises, the overall situation of environmental information disclosure of the listed companies is still not optimistic (Liu & Anbumozhi, 2009). On one hand, the distribution of environmental information disclosure of the listed companies is hierarchical, with many

qualitative disclosure items and few quantitative disclosure items. In particular, the information disclosure of environmental performance indicators is less. On the other hand, industries with heavy pollution is important sources of environmental pollution. The level of environmental information disclosure in these industries with heavy pollution has improved to a certain extent though, there is still a big gap with the expected requirements. It has become an urgent problem to solve for the governments, enterprises and stakeholders in order to improve the level of environmental information disclosure and promote enterprises to protect environment and fulfil their social responsibilities.

With the rapid development of the capital market, institutional investors have become important ones in the market and have played significant role in stabilizing the stock market and perfecting the governance of the listed companies. The existing literature shows that institutional investors have important functions of governance, such as reducing agency costs, restraining earnings management (Chung et al., 2002), improving corporate information disclosure, improving executive incentive compensation (Shin & Seo, 2010), promoting R & D expenditure (Bushee, 1998), affecting corporate dividend policy (Eckbo & Verma, 1994) and improving corporate performance (Khlif et al., 2015). With the further development of institutional investors, its governance role has been extended to the field of social responsibility, which promotes the listed companies become an important force to take social responsibility. The disclosure of environmental information is the key content of social responsibility, however, what is the relationship between institutional investors and environmental information disclosure? Is this relationship differentiated by the heterogeneity of institutional investors? Therefore, this paper analyzes the impact of institutional investors and their heterogeneity on the level of environmental information disclosure from the perspective of environmental information disclosure.

1. The Impact of Institutional Investors on Environmental Information Disclosure

Compared with the general investors, institutional investors have advantages of scale economy, knowledge expertise and information superiority, which play an irreplaceable role in corporate governance. With the public attention to corporate environmental responsibility, and the government to improve regulating the level of corporate environmental information disclosure, institutional investors also pay more attention to environmental information disclosure of the listed companies. To ensure the maximization of their economic interests and the rationality of investment returns, institutional investors have a strong incentive to participate in corporate governance and to improve the level of information disclosure of investment firms (Healy & Palepu, 2001). The disclosure of environmental information reflects the social responsibility of the listed companies in environmental protection, which is an important content of information disclosure and is inevitably affected by the role of institutional investors.

On one hand, institutional investors participate in corporate governance actively and improve the level of disclosure of environmental information of the listed companies, which can reduce the company's operational risk and improve corporate value, and maximize their own economic interests ultimately. As the main investors in the capital market, the main purpose of institutional investors is to reduce the investment risk, improve the rate of return on investment and maximize the economic benefits. (1) The higher level of environmental information disclosure can effectively promote the listed companies to comply with relevant environmental laws and regulations and reduce the operational risk of the listed companies. This can reduce the investment risk of the institutional investors and improve the economic interests of investors. (2) The higher level of environmental information disclosure can mitigate incomplete information and information asymmetry, reduce agency costs, improve the liquidity of the company's stock and reduce the company's capital cost (Richardson et al., 1999). This can not only increase the company value, but also reduce the transaction costs of institutional investors. (3) The higher level of environmental information disclosure reflects the company's good environmental performance and commitment to social responsibility, which establishes a good corporate reputation and image in the public and the government. This can help the company to meet the environmental control requirements of some countries and regions, gain more investment opportunities and broader market prospects, increase customer demand; it can also reduce the cost of government regulation, Environmental litigation and pollution control costs, increase expected cash flows and thus can enhance corporate value (Plumlee et al., 2015).

On the other hand, institutional investors not only pursue the maximization of economic interests, but also concern about the return on investment is reasonable. (1) The majority of institutional investors are entrusted investors, the majority of capital of which comes from the public investors. Institutional investors use their expertise to invest entrusted funds in commercial projects in the capital markets and to obtain the corresponding return on investment. Part of the return is attributable to the clients (the public investors), and the other part are shared by the institutional investors in form of commission. Institutional investors not only pursuits the economic interests, but also take the public investors' aspirations into account. With the further deterioration of environmental problems, the public investors are paying more attentions to the environmental protection, and they require the enterprises to not only pursue profit maximization, but also bear the corresponding social responsibility of environmental protection, and it emphasizes the rationalization of income. Therefore, it can meet the public investors better to promote improving the level of environmental information disclosure of the listed companies. (2) The maximization of economic benefits does not conflict with the rationality of return on investment, but presents a reciprocal relationship. In order to maximize the economic benefits, institutional investors not only concern about the number of economic returns, but also pay attention to the quality of it. Only with rationalization of economic benefits and meeting the basic requirements of

social development, it can keep long-term sustainability. Only by improving the level of environmental information disclosure and fulfilling environmental responsibility actively, the listed companies can continue to obtain a long-term reasonable profits. Otherwise it will face a strong pressure under government regulation and social public opinion, which is difficult to go on business. Institutional investors supervise the disclosure of environmental information of the listed companies and include them in the company's development strategy (Richardson et al., 1999), to realize sustainable development of enterprises and obtain long-term economic benefits.

As above analysis, to make their own economic interests maximized and rationalized, institutional investors will participate in corporate governance actively and improve the level of corporate environmental information disclosure.

2. The Impact of Institutional Investors Heterogeneity on Environmental Information Disclosure

The existing literature has not formed the consistency conclusion on whether the institutional investors have the corporate governance function. Some literature believes the institutional investors can play a role of supervision actively and effectively to decrease the opportunistic behaviour of management, and then the level of information disclosure can be improved. (Wahal & McConnell, 2000). Another view is that the institutional investors are frequently involved in a number of transactions, and they are only concerned with current profits and unable to participate in corporate governance actively and effectively, and their behaviour encourages short-term behaviour of related firms (Bushee, 2004). The reason may be because of the internal heterogeneity of institutional investors. Different institutional investors may have the investment philosophy diametrically, so that they have different enthusiasm on participating in corporate governance and supervising the company management.

2.1. Transactional and stable institutional investors

According to the different investment behaviour, institutional investors can be divided into stable institutional investors and transactional institutional investors. (1) Stable institutional investors' investment behaviour is relatively stable, with characteristics of a high proportion of shares, long duration, low turnover, mainly obtain profits through long-term economic benefits. So they're more concerned about the long-term strategic development of enterprises, and are more initiative to participate in corporate governance. Improving the level of environmental information disclosure meets the long-term strategic planning based on law of social development. The companies with higher disclosure levels will have better capital market performance in long-term. Institutional investors can get a stable and sustained income. In addition, stable institutional investors exit costs are high because the higher the proportion of holding their own capital limits the liquidity. For these reasons, stable institutional investors are

more willing to actively monitor the disclosure of environmental information of the listed companies to achieve the company's sustainable development, access to long-term investment income. (2) On the contrary, the investment behaviour of institutional investors is short-term, showing characteristics of a low proportion of holdings, short term and high turnover etc., mainly obtain profits through the sale of interest margins. Frequently transaction-based institutional investors increase their supervision of the cost of the listed companies. In the end, they often choose "passive voting" to evade investment risk and lack motivation to take part in corporate governance. Facing the information not fully absorbed by the market, transactional institutional investors will use their information superiority to obtain the excess return (Yan & Zhang, 2009), and have weak willingness to promote the level of information disclosure of the listed companies. Because of this "speculative benefit model", the transaction-oriented institutional investors do not have the powder to supervise and promote the level of environmental information disclosure of the listed companies.

Based on the above analysis, stable institutional investors are more able to promote the level of environmental information disclosure of the listed companies to the transaction-type institutional investors.

2.2. Pressure-resistant and pressure-sensitive institutional investors

Institutional investors can be divided into "pressure-resistant" and "pressure-sensitive" (Brickley et al., 1988), depending on whether there is a commercial relationship between the institutional investor and the holding company. (1) Pressure-resistant institutional investors include securities investment funds, social security funds and QFII. There is only an investment relationship between the institutional investors and the companies, and they are relatively independent. This makes it harder for them to obtain private information about the company and pay more attention to obtaining true and complete public disclosure information. This promotes them participating in corporate governance actively and improves the level of corporate disclosure. Moreover, pressure-resistant institutional investors are able to resist the pressure from the management of the company, and thus promote the company's environmental information disclosure based on the purpose of economic benefits maximization and rationalization. (2) Pressure-sensitive institutional investors include brokers, financial companies, insurance companies, enterprise annuities, trust companies and other institutional investors. There is a commercial relationship between pressure-sensitive institutional investors and shareholding companies, and the independence is relatively weak. On one hand, with relatively close business relationships, pressure-sensitive institutional investors can obtain more information advantages, and to obtain excess returns. Their motivation to promoting the listed companies to improve the level of information disclosure is not obvious. On the other hand, relatively close business relationships undermine the independence of pressure-sensitive institutional investors,

so these institutional investors are often unable to participate in corporate governance effectively, and they will not express an independent opinion to the company's environmental information disclosure. Most of the foreign research found that institutional investors who have investment relationship with the listed companies have motivation to supervise management behaviour actively. Institutional investors who have commercial relations with the listed companies usually take the attitude of moderate or consistent with corporate decision-making (Chen et al., 2007).

Based on the above analysis, compared with pressure-sensitive institutional investors, pressure-resistant institutional investors are more able to promote the level of environmental information disclosure of the listed companies.

Conclusion

This paper analyses the impact of institutional investors on the level of environmental information disclosure, and further discusses the impact of institutional investors heterogeneity on the level of corporate environmental information disclosure. The results show that: (1) Institutional investors have the motivation to participate in corporate governance, and promote corporate environmental information disclosure; (2) Stable institutional investors are more likely to disclose environmental information of the listed companies than transactional institutional investors; (3) Compared with the pressure-sensitive institutional investors, pressure-resistant institutional investors have a stronger incentive to participate in corporate governance and contribute to the promotion of corporate environmental disclosure.

These studies provide important enlightenment to promote the healthy development of institutional investors and improve the company's environmental information disclosure. Firstly, continuing to promote the development of institutional investors in main position of the market and improving the role of institutional investors on governance is an important way to improve the level of environmental information disclosure of the listed companies and to alleviate environmental pollution. Secondly, we should pay full attention to the effects of the heterogeneity of institutional investors on its governance role. It is necessary to encourage the development of long-term stable institutional investors, but also to ensure the independent status of pressure-resistant institutional investors, in order to give full play to the role of institutional investors to promote the stable development of capital markets.

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MORTGAGES FOR INDIVIDUALS, BUSINESSES AND MUNICIPALITIES IN THE CZECH REPUBLIC

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development – individuals – interest rate – mortgages – municipalities – corporations

JEL classification: H00, O35, R10

Abstract:

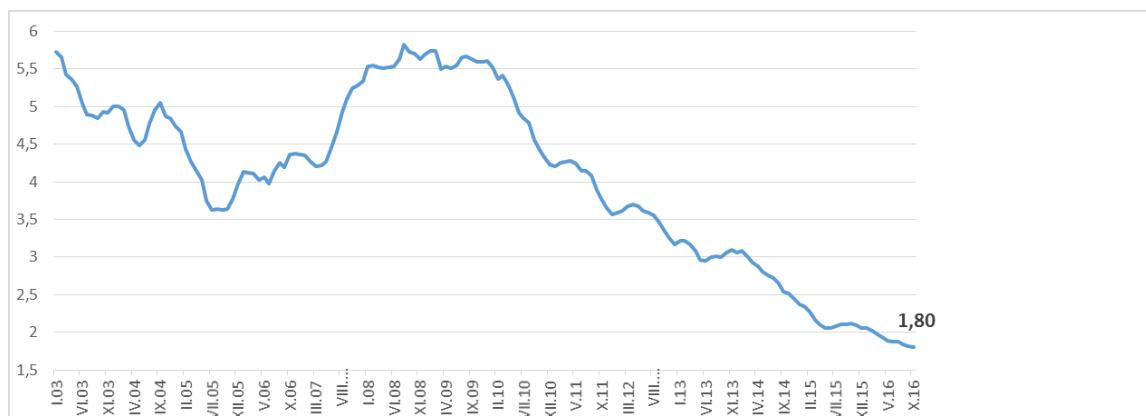
Mortgage loans have undergone in the last decade significant changes. The financial and economic crisis has not only affected mortgage loans, but there was also a significant decline in interest rates and in the last year legislative changes. The goal of the article is to describe the situation on the financial market in the field of mortgage loans, which were provided in 2015 for citizens, businesses and municipalities. Data will be compared with data from 2014. The organization of the paper is as follows: firstly a theoretical background is provided, then research methodology is described followed with a review of the literature, the key part brings results of development of mortgages according to the individuals, businesses and municipalities in 2015 in the comparison with the year 2014.

Introduction

At the present time, there is stiff competition amongst banks on the financial market based on marketing and information basis. The goal is not only to get new clients but especially to retain the current ones. After the new legislative from 2016 will be changes for clients much easier. Traditional banks should beware of new „low-cost“ banks on the Czech market and should maintain their sizeable amount of clients.

Institutions often offer a menu of contracts for consumers in order to create a separating equilibrium that reveals the type of borrower and provide better price. (Agarwal et al. 2017).

The mortgage market experienced significant changes in the last decade. The graph below (fig. 1) presents the evolution of mortgage interest rates from the beginning of mortgage loans as a new financial product in the Czech Republic. Into comparison was taken the average value of interest rate. It is not divided into years of fixation. From the graph is evident decreasing trend of interest rates from 2009. In September 2016 was recorded a new historic minimum amounted to 1.8 % (Hypoindex, 2016).

FIG. 1: Interest rates in % for mortgages from 2003 to 2016

Source: Hypoindex.cz, 2016, own elaboration

1. Methods, literature overview

1.1. Methods and goal

According to the Act No. 190/2004 Coll., as subsequently amended (including the Act No. 137/2014 Coll.), and Article 28, “a mortgage loan is a loan whose redemption, including appurtenances, is secured by a right of pledge over real estate, where the claim arising from the loan does not exceed twice the amount of the mortgage value of the mortgaged real estate. A loan is considered to be a mortgage loan from the day when the right of pledge takes legal effect. For the purposes of coverage of mortgage bonds, the receivable arising from a mortgage loan or a part thereof may be first used on the day when the issuer of mortgage bonds learns about the legal effect of the establishment of the right of pledge over the real estate.”

Mortgage loans are a widely studied subject and there is an extensive literature dealing with mortgages on the Czech market, which enables us to gain insight into the selected areas of mortgages from multiple sources which deepen or complement the issue. The thirteen development of mortgage loans in the Czech Republic is included in order to depict the situation on the Czech market. (Hedvicakova, Svobodova, 2016)

The goal of the article is to analyse the situation on the financial market focused on the mortgages in the connection with the regions in the Czech Republic in 2014 and 2015. The main part of the article aims at the development of the mortgages according to the subject in the regions of the Czech Republic, development of the interest rate and actual situation in the mortgage market. This paper is based on the analysis of the literature and articles on housing.

1.2. Literature overview

The banking system has become an important component in the economic sector of each country. Like other industries, the banking industry has its own unique characteristics and specifics that adapt by internal and external influences economic sector. (Černohorská, 2016) The collapse of the housing market in 2007 initiated an economic downturn with a profound impact on the world economy. The securitization market, shadow banking, and inadequate regulation are widely blamed for the deterioration of lending standards and, ultimately, the crisis.¹ While regulatory inconsistencies are known (Agarwal, Lucca, Seru, and Trebbi, 2014), little direct empirical evidence exists on how regulation affects the behavior of shadow banking credit intermediaries (Acharya, Schnabl, Suarez, 2013 and Keys, Mukherjee, Seru, Vig, 2009). (Demyanyka, Loutskina, 2016)

2. Results

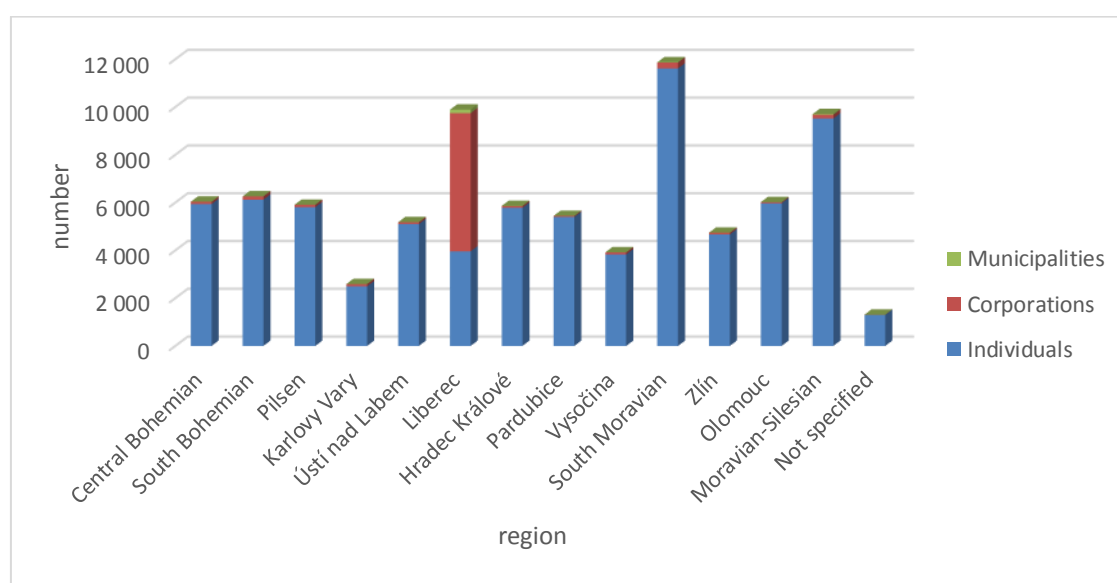
Number of new mortgages, value of new mortgages and average value of one contract in 2015 in the Czech Republic will be solved in the next part of the article. Data in year 2015 will be compared with the year 2014. In the graphs there is not included Prague, because of the good visibility of other regions where mortgages are used less. The situation of Prague will be discussed in the text.

2.1. Number of new mortgages in 2015

Fig. 2 presents the situation of numbers of new mortgages in 2015. The most mortgage loans get again as in 2014, citizens are followed by business corporations and the least was granted mortgage loans to municipalities. In the event that we focus on citizens and regions most citizens of the mortgage loans acquired in 2015 (see fig. 2) in Prague. The demand of citizens of Prague (24,464 concluded contracts) dominated in 2015 on the mortgage market, which is associated with increased housing construction in the city, favorable conditions for receiving a mortgage loan and higher incomes of its citizens. In the remaining regions of the Czech Republic, where housing construction did not proceed to the extent and salaries are on another level, the number of contracts does not exceed the number of 6,000 (with the exception of South Moravia and Moravian-Silesian regions). Other regions where citizens got mortgage loans were the South Moravian Region with 11,615 pieces, South Bohemian with 6,121 pieces, Moravian-Silesian with 9,522 pieces, Olomouc with 5,971 pieces and Central with 5,939 pieces followed by Pilsen and Hradec Kralové region. The least of mortgages were gained in Karlovy Vary region, in the Vysočina and the Liberec region. Regarding the business corporations, the largest number of new mortgages was recorded again in the capital, Prague, South Moravia, Silesian-Moravia, South Bohemia and Central Bohemia. While in 2014 did not obtain municipalities mortgage loans 2 regions, in 2015 it was already in 4 regions. Municipalities thus raise funds in other ways. Most of this type of financing was used by municipalities in the Moravian-Silesian with 28 pieces. South

Moravia was granted by 8, 6 contracts were in Prague, 4 in Hradec Králové region, 3 in Central and Olomouc region. 2 were provided in the Vysočina and in the South Bohemia region. One contract has been provided in the region of Ústí nad Labem and in Liberec. Mortgages were not provided in the Pilsen, Karlovy Vary, Pardubice and Zlín regions. Prague recorded a victory with 30 contracts in 2014. It was followed by the South Moravian region with 12 contracts and Central region with 7 mortgage loans and the Moravian-Silesian region with 6 contracts. Overall in 2015, most contracts were concluded in the capital city of Prague with 25,085 pieces of mortgages granted, South Moravia, Silesian-Moravian and South Bohemia region.

FIG. 2: Concluded mortgage contracts according to the applicant and the region in the year 2015



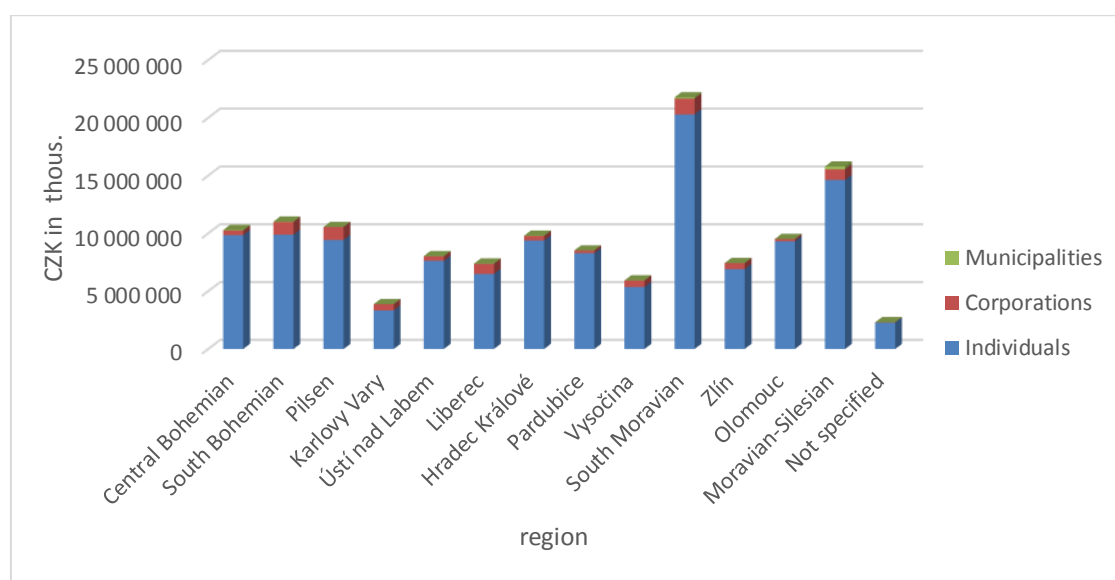
Source: MMR.cz, 2016, own elaboration

2.2. Value of new mortgages in 2015

The above mentioned confirms below Figure 3, which shows that most funds went into the mortgage loans drawn by the citizens of Prague and the South Moravian and Moravian-Silesian region. If we focus on the amount of raised funds, most people have borrowed in Prague (over 61 billion). Over 20 billion have borrowed citizens in South Moravia. In the Moravian-Silesian region was the amount of 14.6 bil. CZK. Based on the amount of borrowed funds is also followed South Bohemia, Central Bohemia, Pilsen and Hradec Králové region. Conversely, the least citizens borrowed in Karlovy Vary and Zlín regions and in the Vysočina region. In the Karlovy Vary region amounted mortgage loans 3,339,206 thousand CZK. As far as business corporations, the same results that have been recorded in the number of granted mortgages were also recorded in the amount of borrowed money. Over 41 billion was provided in the capital city of Prague. 1,370,323 thousand CZK was provided in South Bohemia. Similar results

reached Pilsen and South Bohemia region with 1,116,331 thousand and CZK 1,100,279 thousand CZK. In the all others were lent under 1 billion. Moravian-Silesian region stands with 925,724 thousand CZK and Liberecký region with 869,289 thousand. CZK approached the most to billion. While in Karlovy Vary region citizens were given smaller mortgage loans with a low amount compared to other regions in the area of business corporations it have been otherwise. Karlovy Vary is ranked eighth. By focusing on municipalities drew the fewest resources from this financing method. While citizens have borrowed more than 184 billion, businesses almost 50 billion, to municipalities was financed by 563,216 thousand. CZK. Most sources, 236 753 thousand CZK was provided in the Moravian-Silesian region. The South Bohemian region has funded nearly 102 million. The third position was placed in Prague with 85,422 thousand. CZK. Other regions have had a greater distance.

FIG. 3: The value of mortgage loans by the applicant and the region in 2015



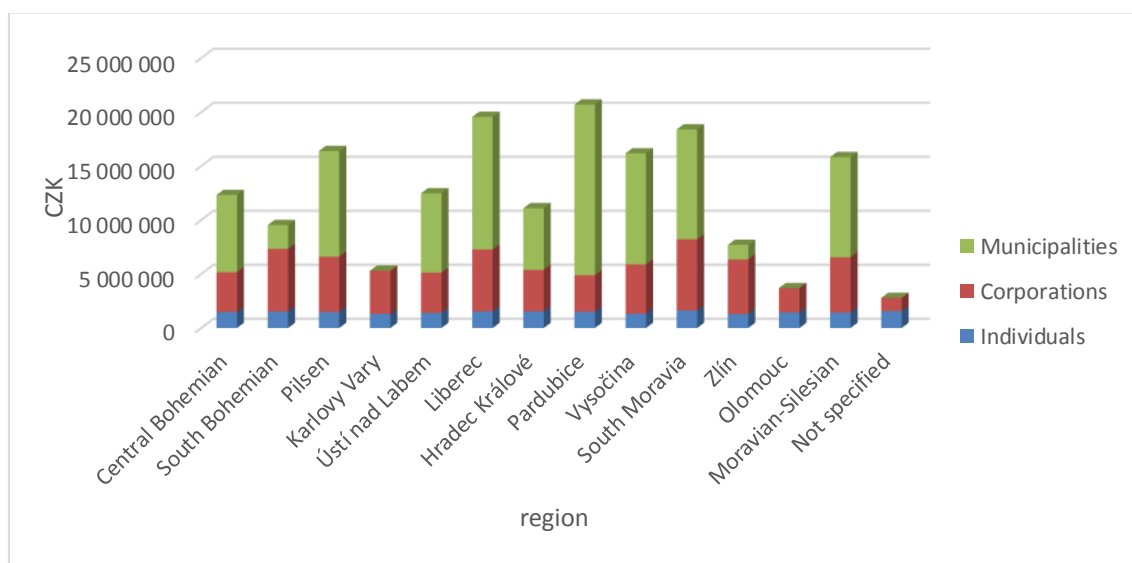
Source: MMR.cz, 2016, own elaboration

2.3. Value of new contract of mortgages in 2015

Figure 4 shows that the largest amounts of money to one contract lending businesses, where the amount per contract was averaging nearly 10 mil. CZK. Municipality borrowed an average of 7 mil. CZK and the citizens of 1,634,717 CZK. As regards the regions and individual categories, the largest amount per contract in Prague were over 67 million. Important role in this field played multinational corporations, large companies and the associated large investments. By focusing on people, the highest amount in average borrowed citizens in the capital city of Prague, 2.5 mil. CZK. At the next place was the South Moravian region with Brno and the amount of CZK 1,747,232 per contract. All other regions are already below the amount of 1.7 million CZK. At least one contract was provided in the Karlovy Vary region, nearly 1,338 thousand CZK

and in the Vysočina region CZK 1.4 million. Municipalities have at most on one contract lend in the Liberec region, less than 18 mil. CZK. It was followed by Ústí nad Labem region with 16,755 thousand CZK, Central Bohemia 15.5 mil. CZK, Prague with almost 14.3 mil. CZK and the South Bohemia with 14,181 thousand. CZK. Municipality in the Vysočina region and in the Hradec Králové region borrowed at least on one contract with 2,549,000 CZK per contract and 3,858,000 CZK.

FIG. 4: The value of the mortgage loan on one contract according to the applicant and the region in 2015



Source: MMR.cz, 2016, own elaboration

Conclusion and discussion

Significant differences between two compared years were recorded in the amount of one mortgage contract. While individuals were minor amendments, for businesses and for municipalities have been significant fluctuations. For the citizens of mortgage loans grew by an average of 8%. For businesses increased value of money borrowed by almost 25% and in municipalities has decreased by nearly one percent. For citizens were the biggest changes per contract reached in the Zlín region, where the average value increased by 14% and in the Central region of 12%. In other regions was the increase less than 10%. 9% of the increase was in Prague, Pilsen and Olomouc region. The smallest change was recorded 2% in Pardubice region and 3% in Karlovy Vary region. Businesses recorded much larger changes in the two years. About 218% increased average loan amount in the Pilsen region. About 140 to 150% mortgages have grown in Karlovy Vary, Pardubice, in Vysočina region. This threshold is approached also the Usti region, Zlín, Hradec Kralove and South Bohemia region. South Moravian Region is the only one region where the average value per contract over the previous year decreased by 17%. The largest fluctuations were recorded in the municipalities. E.g. in the South

Bohemia region, the average amount of 648%. Mainly helped the fact that in the first compared year was given one contract, two in the second, and overall a significantly larger amount. Due to the lower number of loans acquired by municipalities in each region will be compared to the average amount per contract.

In future research data will be recalculated for each region by population and other macroeconomic indicators. The question for discussion is also how will change the order of each type in the volume and size of lend money.

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ANALYSIS OF THE CHANGES IN TRANSACTION PRICES OF AGRICULTURAL LAND IN POLAND

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Keywords:

transaction prices – agricultural land – market

JEL classification: Q11, Q15, Q38

Abstract:

This paper discusses the issue of changes in average transaction prices of agricultural land in Poland. Another objective of the studies is to present the differences between the generally obtained prices and prices obtained in the trade of land from the public sector with or without a tender procedure. The studies cover the period starting from the accession of Poland into the European Union structures. The Polish real property market has been very active in the analysed period, which has been confirmed by an increase in the average prices of agricultural land. One of the important issues discussed in the present paper are the legal regulations that limit the purchase of agricultural land by foreign citizens that have been in force since the moment of the accession of Poland into the EU as well as the role of the Agricultural Property Agency of the Treasury.

Introduction

Agricultural policy is one of the forms of state intervention in the market mechanisms, which has been observed, to various extents, throughout the world. According to Sobiecki R. (2015), quot. Czyżewski A. (2003), influence such important parameters of the economy as: The price, profit, revenue, may lead to a change in the basic macroeconomic indicators, such as the pace of development of agriculture and its relations with other sectors of the economy. The agricultural policy of the European Union affects the behaviour or business entities in agriculture in a direct or indirect way. Direct methods include, among others, setting the prices of agricultural and food produce, limiting or increasing supply or demand. On the other hand, indirect methods are, for example, certain forms of supporting the development of entrepreneurship, stimulating the development of social and economic infrastructure in rural areas,

supporting biotechnological development and innovativeness in the agricultural and food manufacturing sectors.

The landscape of Eastern Europe has undergone dramatic changes in many respects (Bičík and Štěpánek, 1994; Lipský, 1995; Lorincz and Balazs, 2002; Opršal et al., 2013). State intervention usually involves qualification control and control over the formation of the area structure of agricultural farms (Czechowski et al., 2002). Nowadays, the agricultural issue still has a multi-dimensional nature. Only the arrangement of problems, their importance and scope are changing. “Hunger for land” has been replaced with demand for land, which is a market-based category, not a socio-psychological notion. Moreover, the environment of agriculture is changing, as it has been absorbed in the whirl of globalisation processes. In the European Union, agriculture is governed by the mechanisms of the Common Agricultural Policy (Sobecki 2015).

The situation on the agricultural real property market is of great importance for the development of Polish agriculture. The introduction of the principles of market economy and the privatisation of State Treasury-owned agricultural land created a basis for natural land concentration processes, formation of prices and the emergence of agricultural real property market.

The economic significance of agricultural land as an important revenue generating factor has increased. As a result of the process of continuous adaptation of the efficiency of Polish agricultural farms to the demands of market economy and of the fact that their level of efficiency is approaching that of EU agriculture, the agricultural real property market has become very active (Deluga 2013).

In Poland, the task consisting in protecting land from purchase has been vested in the Agricultural Property Agency (former Agricultural Property Agency of Treasury), which realises it by means of developing the land property of former state-owned farms and real property of the National Land Fund as well as by means of exercising the right of first refusal to agricultural real property (until recently, it had applied to agricultural real property of a surface area exceeding 5 ha and recently this surface area has been lowered to 1.0 ha) and by using them to create family farms and to improve the agrarian structure of farms.

The aim of the present study is to present the changes in average transaction prices of agricultural land in Poland after the accession into European Union structures and to present the differences between the generally obtained prices and prices obtained in the trade of land from the public sector with or without a tender procedure.

1. Methods

The subject of the analysis was the changes in transaction prices of agricultural land in Poland in the period following the accession into European Union structures in 2004. The tests were conducted on average transaction prices of agricultural land in the years 2004 – 2015 and average transaction prices obtained in the trade in publicly owned real property belonging to the Treasury and to local territorial self-government units. The author used source material obtained from the database of the Central Statistical Office in Poland (GUS), from the Agricultural Property Agency of Treasury and databases from the European Statistical Office (Eurostat).

An important element of the analysis was the transaction price per 1 hectare, which constituted the basic unit of comparison for the purposes of the analysis. In market economy, the price of land at a given time and in a given place depends on the relation between land supply and demand. The analysis of land prices should always refer to a specific market in the given area and at a specific moment, because each local market is characterised by unique, different economic and natural properties (Marks – Bielska 2012).

The research material has been gathered by information departments of the national statistical institutions. The collected information was subject to analysis with use of the comparative method, by compiling information about transaction prices, surface area and value of sold agricultural land plots. Real property sales transactions were analysed in various aspects, in order to determine certain relations, such as identity, similarity or difference between properties and facts. The conducted research results in the determination of further trends on the agricultural real property market in Poland.

2. Results

The trade in agricultural land in Poland is influenced by numerous factors, including, among others:

- political transformation and the heritage of the previous political system,
- integration with the European Union and the common agricultural policy,
- the possibility to change the zoning status of agricultural land, usually purchased for lower prices for non-agricultural purposes, e.g. to build a house,
- speculative purposes,
- possibility to receive direct subsidies,
- lower taxes and social security contributions for individuals conducting agricultural activity.

In Poland, agricultural land is sold on free market as well as with or without tender procedures. The main forms of real property trade with respect to agricultural properties are: Sale of ownership title (free market sale or sale with or without tender procedures) and lease. Sale of ownership title requires concluding the agreement in form of a notarial deed and entry in the land and mortgage register. The conducted analysis has

shown that in the analysed period free market sale was the dominant form of trade in Poland. In 2015, 88.4% transactions were concluded on the free market. Sales with or without tender procedures is accounted for a small portion of the transactions in the subsequent years, although it remained on a constant level. The average transaction prices of agricultural land in Poland, for free market transactions, calculated basing on the surface area of sold properties and the value of the sold land plots in euro currency, at the exchange rate of the National Bank of Poland as of the 18.11.2016 are listed in the tables below (Table 1). The equivalent of 1 euro in Polish currency is PLN 4.43.

TAB. 1: Average transaction prices per 1 ha of agricultural land for free market transactions concluded in Poland and for tender procedure transactions in the years 2004 – 2015, in EUR (the exchange rate of euro to zloty according to NBP as of the 18.11.2016)

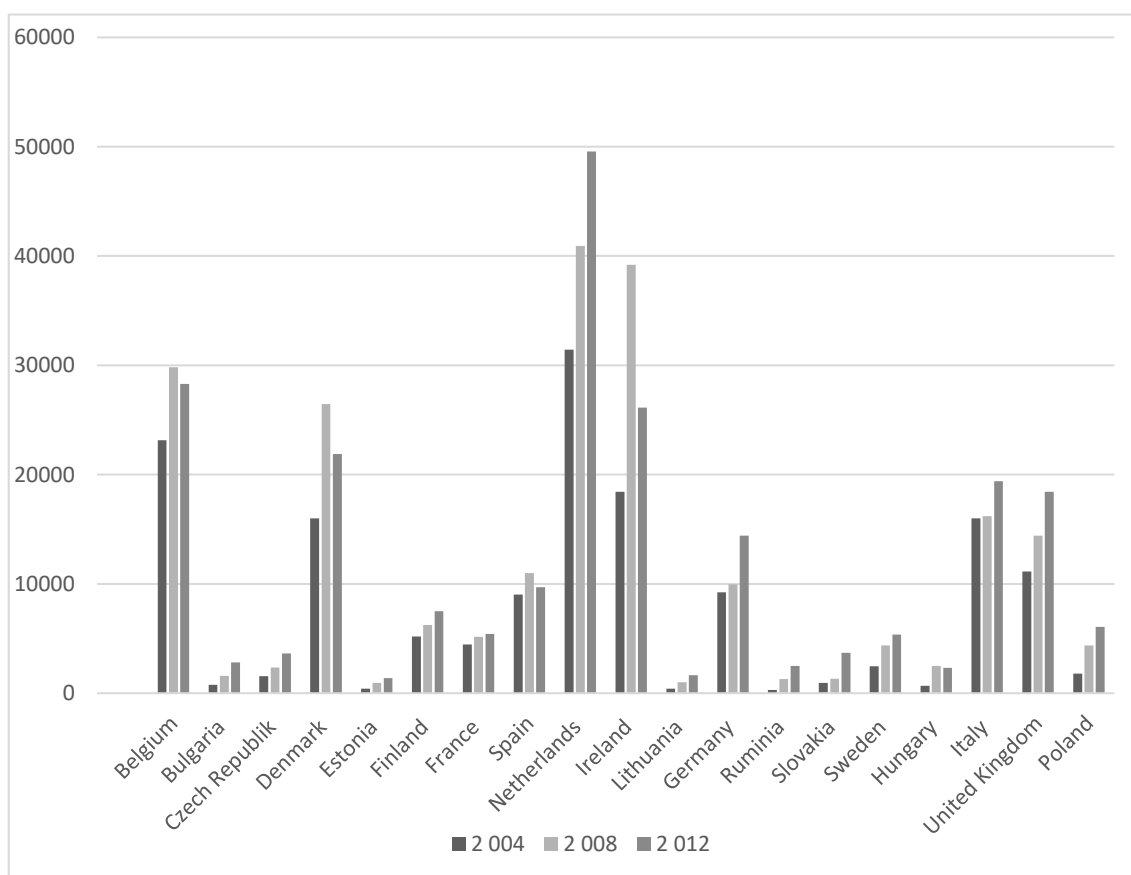
No.	Year	Average transaction prices per 1 ha of agricultural land for free market in EUR	Average transaction prices per 1 ha of agricultural land for tender procedure transactions in EUR
1.	2004	1 497.50	-
2.	2005	1 860.90	-
3.	2006	2 097.10	2 120.60
4.	2007	2 739.10	5 299.80
5.	2008	3 473.60	6 386.90
6.	2009	3 846.90	5 173.50
7.	2010	4 071.60	5 770.20
8.	2011	4 515.60	5 700.50
9.	2012	5 742.90	8 979.20
10.	2013	5 945.60	7 055.30
11.	2014	7 295.00	7 937.20
12.	2015	8 713.31	10 808.10

Source: Own study based on data from the Central Statistical Office, calculated at the exchange rate of EUR by NBP as of the 18.11.2016.

According to Marks-Bielska R. and Lizińska W. (2015), the main development trends of the agricultural land market in Europe are shaped by the situation in the following countries: the Netherlands, Ireland, Great Britain and Germany (Rynek 2014). The analysis conducted by the authors, based on data illustrating the changes in agricultural land prices in the years 2004-2013, in the group of EU-15 member states, shows that the level of agricultural land prices in 2013 in comparison to the year 2004 ranged from 107.1% in Spain to 171.3% in Great Britain. On the other hand, Laskowska E. (2014) pointed out that for many years, the highest average prices of agricultural land have been noted in the Netherlands (from over 30 thousand EUR/ha in 2005 to nearly 50 thousand EUR/ha in 2012). This results from the relatively low supply of agricultural

land and the connected high intensity of agricultural production. In 2012, the prices of agricultural land reached more than 20 thousand EUR/ha in Belgium, Ireland, Denmark and in former West Germany. Average transaction prices per 1 ha of agricultural land in EUR has been shown in the figure 1 below (Figure 1).

FIG. 1: Average transaction prices per 1 ha of agricultural land in EUR in years 2004, 2008 and 2012

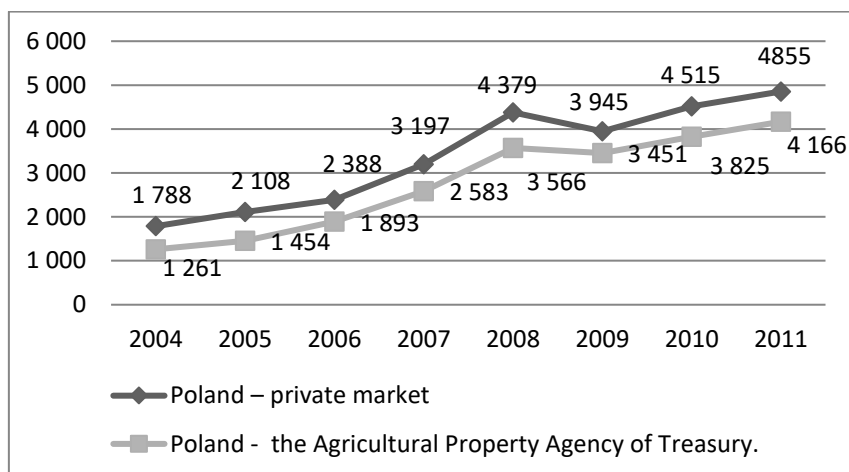


Source: Own study based on EUROSTAT.

Table 1 contains the transaction prices of agricultural land for all transactions concluded in Poland. However, the sales of agricultural real property from the Agricultural Property Stock by the Treasury should be analysed separately. As a result of the political and economic transformation in Poland, former State Agricultural Enterprises (SAE) were liquidated and their land was included in the Agricultural Property Stock of the Treasury. In 1991 in Poland there were 2233 active State Agricultural Enterprises that lost their financial liquidity and creditworthiness as a result of the deregulation of prices of agricultural produce. Thus, the ownership transformations of the SAEs were a way to improve the production and economic standing of Polish agriculture. Properties of the Agricultural Property Agency could be sold with or without tender procedure, upon meeting certain conditions (currently, the sales of agricultural land from the Stock has been withheld). Figure 2 shows the average prices of agricultural land (1ha/EUR)

obtained in Poland on private property market and in transactions conducted by the Agricultural Property Agency of Treasury.

FIG. 2: Average prices of agricultural land (1ha/EUR) obtained in Poland on private property market and in transactions concluded by the Agricultural Property Agency of Treasury



Source: Own study based on EUROSTAT.

Observations show an increasing trend in average transaction prices of agricultural land in reference to market prices and prices obtained in tender procedures for agricultural properties from the Agricultural Property Stock of the Treasury.

3. Discussion

The analysis of the above data demonstrates a noticeable increase in the average transaction prices per 1 ha after the accession to the European Union. This growing trend has been noted continuously since 2004, although it had been observed earlier as well, both on the private property market and on the market of land owned by local territorial self-government and the Treasury. The integration with the European Union led to increased activity on the real property market in Poland. The average price of agricultural land in 2015 was nearly six times as high as in 2004. Average prices obtained in tenders organised by municipalities, voivodeships, poviats and bodies managing Treasury-owned agricultural land also show an increasing tendency. The growth of prices was influenced by numerous factors, including, among others, the application of direct subsidies and the overall development of the country. Countries where agricultural land prices are similar to those in Poland include France and Sweden, although the rate of price growth in Poland is much higher. Currently, after the end of the 12 years' moratorium on the purchase of land in Poland by foreign citizens, the protection of agricultural land has been strengthened by withholding the sales of land for a further period of 5 years. The main form of management of land from the

Agricultural Property Stock of the Treasury is expected to be the lease, which is a temporary form of land management.

Slovakia is also afraid of foreigners buying out their land. According to Drabik and Rajčániová (2015), Slovak farmers have feared the increase in demand for agricultural land after opening the land market in May 2014. Although, there are no official statistics how much agricultural land was purchased by foreigners before May 2014, some estimate it could be as much as 100 000 hectares (out of 1.9 million).

4. Conclusion

The conducted analysis of the average transaction prices of agricultural land in Poland allowed the authors to draw the following conclusions:

Transaction prices of agricultural land in Poland have been characterised by an increasing trend since 2004. They will most likely continue to increase, although the rate of growth will not be as spectacular. One may conclude that the main factors that influenced the increase in prices of agricultural land include the price differences between Poland and European Union Member States, which are beneficial for Polish farmers, and the general increasing trend in agricultural land prices in Europe and throughout the world.

Withholding the sales of land belonging to the Agricultural Property Stock of the Treasury for 5 years and reducing the group of potential purchasers also on private property market will result in a decreasing number of sales transactions and will make it impossible to speculate on agricultural land. The factors that lead to changes on the agricultural property market are not only market mechanisms, but also political decisions. The situation on the agricultural property market is affected both by local law (local zoning regulations), national law (changes in the regulations on real property trade) and the European law (the principle of free movement of capital and the freedom of investment of EU citizens).

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ASSESSMENT OF THE DCF METHOD IN COMPANY VALUATION

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Keywords:

discounted cash flow method – DCF – company valuation – equity

JEL classification: M21

Abstract:

This paper deals with the yield valuation method of a company based on discounted cash flows (DCF). The aim of this paper is to evaluate its suitability in practice and expose its weak and strong points. For this purpose, financial plans for over 5 years were collected from 40 companies which meet the criteria of a small accounting entity according to the categorisation of accounting units. On the basis of the collected data, the value of equity was calculated using the DCF method. These values were subsequently compared with the original value of equity. Statistical tests verified if the differences between the book value of equity and the value of equity calculated by the DCF method are statistically significant. Further tests were applied to determine whether the DCF method gives lower or higher value of equity than its book value.

Introduction

In practice, the value of companies is most frequently calculated before the planned acquisitions. A continuous assessment of a company is meaningful independently of an intended sale of the company, for it provides the owners with the information about the appreciation of their invested capital. The moment a future stagnation or even decline in equity is calculated, it is necessary to promptly consider other alternatives, such as restructuring or the sale of the company. One of the methods of calculating the expected business value is Discounted Cash Flow (DCF) method. This method is based on long-term financial plans from which discounted cash flows are calculated.

The aim of this article is to assess the suitability of the DCF valuation method on the basis of the conducted research.

The value of company is the most likely price on which the seller and the buyer would agree, in theory, in a real time. (Hrdý & Strouhal, 2010)

1. Business valuation methods

Based on research (Grünwald, 2004; Hrdý & Krechovská, 2013; Hrdý & Strouhal, 2010; Kislingerová, 2001; Krabec, 2009; Mařík, 2011), 3 basic groups of methods were distinguished.

The first group is the market valuation of the company value, which determines whether the company creates the so-called 'shareholder value'. One of the indicators is Market Value Added (MVA), which is calculated as a difference between the market value and invested capital, i.e. the difference between the sum which the shareholders and other investors would gain from the sale of their shares, and the sum which they have invested into the company.

It can be inferred that these groups of methods are suitable only for joint-stock companies with publicly traded shares, with a known current stock price.

The second group is the methods based exclusively on the current book values. An example of such method is the so-called 'substance valuation method'.

The substance valuation method determines the business value based on reproduction cost of all business assets modified by the depreciation adequate to the age of the company. (Kislingerová, 2001)

However, continuous measurement of the company's value by this method is very complicated for it requires the existence of an actual buyer who is willing to overpay the actual value of net assets so that goodwill can be manifested.

As said above, the valuation of a company should be carried out on a continuous basis for it serves as an important early warning mechanism. The Discounted Cash Flow (DCF) method allows the estimation of business value at any point based on a long-term financial plan.

Discounted Cash Flow (DCF) is a method based on the general economic theory saying that the value of the economic asset equals the current value of future revenues. (Hrdý & Strouhal, 2010)

This method is prevalent not only in the Western European countries but also in the Czech Republic. (Synek, 2002)

Even the International Financial Reporting Standards (IFRS), specifically the standard IAS 36 (Šrámková, 2015), admits to valuing a company, its parts, a cash-generating unit or a single asset on the basis of discounted cash flows. The standard concerns one of the two methods of calculating the so-called recoverable amount.

The DCF method has two stages. The first stage includes years for which a financial plan can be drawn up. (Hrdý & Strouhal, 2010)

This stage is also described as solid, proper, fair. (Synek, 2002)

In this stage, Free Cash Flows (FCF) are calculated using the financial plans in the following way: (Hrdý & Strouhal, 2010)

$$FCF = EBIT (1 - t) + \text{depreciations} + \text{modifications in working capital} - \text{investment} \quad (1)$$

where: EBIT are the earnings before and interest and tax, I is the interest expense, t is the tax rate.

$$FCF = KPVH \text{ after tax} + \text{depreciation and other non-expenditure costs} - DM \text{ growth} - \check{C}PK \text{ growth} \quad (2)$$

where: KPVH after tax is the corrected operating income, DM growth is the annual growth of fixed assets, ČPK growth is the annual growth of net working capital. (Hrdý and Strouhal, 2010)

The second stage of the calculation comprises the so-called 'terminal value' (PH) which can be calculated using the Gordon growth model or the Parametric formula.

After the calculations of the first and the second stages, a calculation of the business value is carried out (or the value of equity) in the following manner: (Hrdý & Strouhal, 2010):

$$VK = SH_1 + SH_2 - CK + NM \quad (3)$$

where: SH1 is the current value of the 1st stage, SH2 is the current value of the 2nd stage, CK is interest-bearing loan capital on the measurement date, NM are the non-operating assets on the measurement date. The current values of the 1st and the 2nd stages are calculated as discounted current values of future cash flows using the following model (Hrdý & Strouhal, 2010):

$$SH_1 = \frac{FCF_1}{(1+i)} + \frac{FCF_2}{(1+i)^2} + \frac{FCF_3}{(1+i)^3} + \frac{FCF_4}{(1+i)^4} + \frac{FCF_5}{(1+i)^5} \quad (4)$$

where: SH1 is the current value of the 1st stage, FCF are free cash flows in the individual years of the 1st stage, i is the discount interest rate.

$$SH_2 = \frac{PH}{(1+i)^5} \quad (5)$$

2. Methods

The aim of this paper is to assess the suitability of the above-explained DCF method. For this purpose, a questionnaire was distributed in 38 companies which meet the criteria of a small accounting entity according to the categorisation of accounting units (Czech accounting legislation for entrepreneurs). A small accounting unit is a status of every legal entity which meets 2 out of 3 following criteria: total assets do not exceed CZK 100,000,000; net revenues do not exceed CZK 200,000,000 and the number of employees does not exceed 50.

The value of such companies was calculated using the DCF method. As the method requires a five-year financial plan in the form of the balance sheet and the economic outturn account, the financial plan had to be, in many cases, created first. The process of creation of the financial plan was based on the recent financial statements which comprised the elements such as the expected growth in revenues (net income) and new investments. The data then allowed the simulation of the items on the balance sheet and the economic outturn account.

The hypothesis claiming that the value of equity and the value of company calculated using the DCF method are identical was tested using two statistical (non-parametric) tests; the paired-samples sign test and Wilcoxon's signed-rank test.

3. Research results

3.1. The paired-samples sign test

35 companies (see Tab. 1) were tested at the 95% probability level because, as it was found (see below), the method is not suitable for 3 companies. The sum of positive differences (value according to DCF – the value of equity) was calculated to be 26. The critical value for $n=35$ is $c_1 = 12$, $c_2 = 24$ (Kubanová & Linda, 2007). The value of the test criterion fell outside the range of acceptable values. The hypothesis that the value of equity and the value of the company calculated using the DCF method are identical was not confirmed. The value of the company calculated using the DCF method is higher than the value of equity.

TAB. 1: The sign test

Paired variables	The sign test (Table 1) The highlighted tests are significant at $p < ,05$			
	The number of different	percentage $v < V$	Z	p-value
DCF & Equity	35	22,85714	3,042555	0,002346
Equity & DCF	35	77,14286	3,042555	0,002346

Source: (own processing, SW Statistica)

3.2. Wilcoxon's test

At the 95% probability level (see Tab. 2), the critical values for $n = 35$, $w_{\alpha,n} = 195$ (Kubanová & Linda, 2007). Because $s = \min \{s^+, s^-\} = 39$, the test has also proven that the value of equity and the value of company according to the DCF method are different.

TAB. 2: Wilcoxon's test

Paired variables	The Wilcoxon's test (Table 1) The highlighted tests are significant at $p < ,05$			
DCF & Equity	35	169,0000	2,391355	0,016787
Equity & DCF	35	169,0000	2,391355	0,016787

Source: (own processing, SW Statistica)

The evaluation of this method revealed that the companies depending on subsidies, for example, have high 'other operating profit' which does not play any role in the DCF method, because this method acknowledges revenues only. The method is, therefore, unsuitable for these types of companies and 3 companies with high other operating profit compared to revenues were excluded from the research.

On the other hand, the advantage of this method consists in its ability to simulate the development of value of a company with a high initial debt. It was found that even a company which currently shows profit may in the following years go into decline which will have a negative impact on its value.

The feedback on the expert report was of interest as well. A thriving company with the current value of equity of 19 351 thousand CZK was assessed by experts to be worth 40 million CZK 5 years ago. Its value today is 60 419 thousand CZK by DCF.

Conclusion

The aim of this paper is to assess the suitability of the DCF valuation method on the basis of the conducted research.

It can be inferred from the conducted statistical tests that the value of equity and the value of the company calculated using the DCF method are not statistically the same. The value of company (by DCF) is higher than the value of equity. This is in line with the fact that most of companies create goodwill, whose value is the difference between the DCF value and the value of equity. The method is therefore suitable for determining the goodwill.

At the same time, it was found that companies relying on (for example) subsidies, that is, companies with high other operating profit, are not suitable for this method because the other operating profit plays no role in the method (it only acknowledges revenues).

On the other hand, another advantage of this method consists in its ability to simulate the development of value of a company with a high initial debt. It was found that even a company which currently shows profit may in the following years go into decline which will have a negative impact on its value.

In one case, a company was found that was assessed by an expert 5 years ago and it was, therefore, possible to compare the current value of equity, the DCF value of company and the value according to the expert report.

A continuous assessment of a company is meaningful independently of an intended sale of the company, for it provides the owners with the information about the appreciation of their invested capital.

The moment a future stagnation or even decline in equity is calculated, it is necessary to promptly consider other alternatives, such as restructuring or the sale of the company.

From the above said it can be concluded that the DCF method, whose main advantage is the fact that it includes the time factor, is suitable (taking into account its limitations for the purpose of calculating the value of the company) and it even provides additional information.

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ANALYZE AND PREDICTIONS FOR MARKETING ON SOCIAL MEDIA

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JEL classification: M31, M37, O35

Abstract:

The primary objective of this paper is to analyse actual situation of users and revenue on social media like Facebook and Twitter. In follow up on this analysis create a statistical based prediction how will change those numbers in future. Part of this paper is describe global internet advertising on mobile and desktop devices also with following prediction. The aim of the present paper is to introduce growing advertisement of all kind of social media as Facebook, Instagram, Twitter, YouTube, LinkedIn etc. Describe predictions for the next year and further. Methods used in paper are Pearson correlation, linear regression to define prediction equation and forecasting values. Main output are predicted values of Facebook hitting 2 billion monthly active users between second and third quarter of 2017. Average revenue per user will be by those predictions between \$18, 51 – \$19, 47. Twitter will reach half billion monthly active users between first and second quarter of 2019. More than 25 % of global advertising will be on mobile devices by year 2019. Global desktop and mobile devices advertising budget combined is predicted to be \$207 billion by year 2019.

Introduction

In just one decade, social media have revolutionized the life of many people and thus attracted much attention, not only from industry, but also academia. The advent of social media has substantially changed the manner in which many people, communities, and/or organizations communicate and interact. (Ngai, 2015). 2016 has been a period of consolidation for many of the biggest social media platforms out there. In article “The Future of Social Media (And How to Prepare For It): The State of Social Media 2016 Report” describes importance of social marketing as key in order to survive in competition. “Imagine being able to predict the next big thing on social media, knowing what social media will look like in 2017 and beyond and how will brands use social platforms to connect with their audience. As someone who works with social media every day, this information would be invaluable.” They say. “According to State of Social Media survey 2016, Eighty-three percent of marketers also said they’d like to create more video content in the next 12 months.” This same report showed, that almost

93 % of marketers are using Facebook and 91 % of them using Facebook ads. The three main reasons why social media uses are brand awareness with 85 %, community engagement with 71 % and content distribution 61 %. Next reasons for using social media are sales/lead generation 54 % and customer support 21 %. The predictions for decrease of marketing on social media is most significant on Google+ with 27 %. The real importance of social media now and even more in the future show numbers that 93 % of companies who using social media for marketing will stay or increase their current budget in next 12 months. In 2014 marketers spend 9 % of their overall budget on social media, in 2015 it was 13%. According to some researches in 2019 will be marketers spending more than a 21 % of their overall budget.

1. Methods, literature overview

In order to analyse and predict the future behaviour of marketing on social media some variables that social media using have to be determined. Average revenue per user (ARPU) is one of them. It is a measure used primarily by consumer communications and networking companies, defined as the total revenue divided by the numbers of subscribers. Monthly active users (MAU) is also way to measure success rate of social networking services. Typically, metrics are measured by counting the number of unique users during previous 30 days. Monthly revenue divided by MAU equals to ARPU. Calculation of Pearson coefficient between MAU and ARPU will be used. For prediction of data sample will be used linear regression to find prediction equation. Prediction equation is not 100 % correct but if strong correlation is in model the prediction is closer to reality. Last method used in this work is forecasting variables from development in the past with specific method in software. For this work was used statistical software IBM SPSS Statistics.

Known data for this calculation were used from first quarter of 2013 to second quarter of 2016 for Facebook and to first quarter of 2015 for Twitter (Constine, 2016). The data further will be forecasted with statistical software SPSS and prediction equation. Data sample is sufficient for those calculations.

TAB. 1: Data of Facebook and Twitter ARPU and MAU

		ARPU_Facebook (\$)	MAU_Facebook (MM)	ARPU_Twitter (\$)	MAU_Twitter (MM)
2013	Q1	\$4.60	1110	\$1.97	204
	Q2	\$5.65	1155	\$2.22	218
	Q3	\$6.14	1189	\$2.65	232
	Q4	\$7.76	1228	\$3.65	241
2014	Q1	\$7.24	1276	\$3.55	255
	Q2	\$8.26	1317	\$4.09	271
	Q3	\$8.87	1350	\$4.51	284
	Q4	\$10.47	1393	\$6.00	288
2015	Q1	\$9.36	1441	\$5.14	302
	Q2	\$11.04	1490		
	Q3	\$11.88	1545		
	Q4	\$14.92	1591		
2016	Q1	\$13.28	1654		
	Q2	\$15.28	1712		

Source: (own arrangements of SEC Filings Morgan Stanley data)

2. Results and Discussion

Between ARPU and MAU is in case of Facebook and Twitter strong correlation with Pearson coefficient bigger than 0.9 on significant level 0.01.

TAB. 2: SPSS Pearson Correlation of Facebook ARPU and MAU

		ARPU_FB	MAU_FB
ARPU_FB	Pearson Correlation	1	.974**
	Sig. (2-tailed)		.000
	N	14	14
MAU_FB	Pearson Correlation	.974**	1
	Sig. (2-tailed)	.000	
	N	14	14

** . Correlation is significant at the 0.01 level (2-tailed).

Source: (own arrangements)

In case big positive correlation between two variables is allowed to use linear regression to find out prediction equation. Dependent variable is ARPU and independent MAU. By the prediction equation can be predicted ARPU by the MAU number. Coefficients for Facebook prediction equation are calculated on those values:

$$ARPU = (MAU * 0,017) - 14,217. \quad (1)$$

Twitter has prediction equation in this form:

$$ARPU = (MAU * 0,038) - 5,817 \quad (2)$$

For future prediction are needed forecasted MAU values.

TAB. 3: Forecasted MAU values

Model	Q3: 2016	Q4: 2016	Q1: 2017	Q2: 2017	Q3: 2017	Q4: 2017	Q1: 2018	Q2: 2018	Q3: 2018	Q4: 2018
MAU_Facebook_Forecast	1770	1830	1889	1949	2009	2069	2129	2189	2248	2308
UCL	1786	1854	1925	2000	2076	2154	2234	2316	2399	2483
LCL	1754	1806	1854	1899	1942	1983	2023	2061	2098	2134

Source: (own arrangements)

TAB. 4: Forecasted ARPU values with prediction equation

	2017						2018			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
ARPU_Facebook (\$)	\$15.64	\$16.60	\$17.56	\$18.51	\$19.47	\$20.43	\$21.39	\$22.34	\$23.30	\$24.26
MAU_Facebook (MM)	1770	1830	1889	1949	2009	2069	2129	2189	2248	2308

Source: (own arrangements)

By those calculations Facebook will reach two billions monthly active users between second and third quarter of 2017. Average revenue per user will be by those predictions between \$18, 51 – \$19, 47. Analogically for those calculations Twitter will reach half billion monthly active users between first and second quarter of 2019. It is a fact that Facebook has tripled his revenue according to ARPU in last 4 years. Expect next growth in revenue in upcoming 2 years for about 50 % is reasonable. It is inevitable that online social marketing will more grow, especially for mobile devices. Processed data for global internet advertising can be found on Kleiner Perkins Caufield & Byers (KPCB, 2016).

TAB. 5: Global internet advertising in 2009 - 2014

	2009	2010	2011	2012	2013	2014
Mobile	4.30%	5.40%	7.30%	8.80%	12.83%	14.62%
Desktop	95.70%	94.60%	92.70%	91.20%	87.17%	85.38%
Mobile (\$B)	\$2.54	\$3.78	\$6.21	\$8.80	\$15.01	\$19.44
Desktop (\$B)	\$56.46	\$66.22	\$78.80	\$91.20	\$101.99	\$113.56
Sum (\$B)	\$59	\$70	\$85	\$100	\$117	\$133

Source: (own arrangements of PWC Global entertainment and media outlook data)

Advertising on mobile devices has more than tripled in last six years and sum of money invested globally has more than doubled in last six years. Analogically to previous calculations in this case is predicted by year 2019 more than 25 % of global investment to advertising would be spend on mobile devices with a total budget \$207 billion (sum with desktop devices).

Social media provides many more channels for engaging prospects and customers than do traditional media, which is precipitating major changes in marketing. However, other social media attributes also are disrupting traditional marketing strategies, plans and activities, including relationship building, earned exposure, content, conversation, integrity or performance (Albarran, 2013). People are more likely to communicate through both word-of-mouth and social media when they are engaged with the product, service, or idea. This engagement may come naturally for supporters of causes, political candidates, and trendy new technological products. However, it can also be creatively stimulated for products and services which generate less psychological involvement of customers (Mangold, 2009).

Conclusion

The arrival of social media has changed private lives, business operations, and relational interactions within various communities tremendously, which has led directly to the increase of academic research and studies on social media adoption (Kietzmann, 2011). The marketers spending every year more to advertisement on social media. Especially targeted are more often mobile devices. By this work prediction Facebook will have two billion monthly active users between second and third quarter of 2017 with average revenue per user between \$18.51 and \$19.47. At the end of 2018 is predicted for Facebook 2.3 billion monthly active users with average revenue per user \$24.26. Twitter will hit half a billion users between first and second quarter of 2019. By the year 2019 is predicted more than 25 % of global advertising will be on mobile devices. Desktop and mobile devices advertising budget combined is predicted to be \$207

billion. Marketers believe in advertising on mobile devices and social media and will increase their spending to it. Good budget management with strategic and targeted advertisement on social media is one of the key aspects to stay and grow on market for companies. Paper called “social media marketing” from 2012 also describing the power of social media marketing and analysing data in various ways, describes the power of people on social media and tells that internet-based marketing is similar to non-internet-based marketing. Paper confirms that amount of users is rising every day and that means more customers for the business and much more promotions and marketing on social media. With similar idea comes information in text of article “Where Social Media Is Headed in 2017: The Biggest Trends to Watch For” and summarizes the future on social media that it will more grow in terms not only more advertisement and consumers but also improved applications and product branding that will be focused on marketing through videos and describe their importance. Social media introduce substantial and pervasive changes to communication between organizations, communities, and individuals. This presents an enormous challenge for firms, as many established management methods are ill-suited to deal with customers who no longer want to be talked at, instead, customers want firms to listen, appropriately engage, and respond (Kietzmann, 2011).

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THE DYNAMIC EVOLUTION OF THE DISTRIBUTION OF THE QUALITY OF ECONOMIC GROWTH IN CHINA: 1998-2014

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Keywords:

quality of economic growth – dynamic evolution – spatial distribution – principal component analysis – kernel density estimation

JEL classification: E190

Abstract:

The quality of economic growth refers to the intrinsic nature and regularity of economic growth, which is defined from three perspectives: the whole quality of national economy at conditions level, the connection relationship of economic factors at processes level, and the effectiveness and inclusiveness of economic growth at results level. This paper establishes the quality of economic growth index system including 21 basic indexes based on the connotation of the quality of economic growth, utilizes principal component analysis method to determine index weight and chooses the kernel density estimation which belongs to non-parametric estimation to analyze the spatial pattern and evolution trend of quality of China's economic growth in 30 provinces except Tibet from 1998 to 2014. The results have shown that the quality of economic growth across all regions in China has been in obvious uptrend over time, the maximum and minimum gap among the quality of economic growth across all regions are respectively in 1998 and 2012, and the quality of economic growth in a few areas is ahead of the most areas during the study period. Further, we divide the quality of economic growth across the regions into four grade in accordance with high level to low level, finding that the provinces which have high quality of economic growth are mainly located in the southeast, particularly concentrated in the eastern coastal cities and the Yangtze River economic circle, however, the quality of growth in the vast western and northern areas is relatively low.

Introduction

The global economy has moved into a period of adjustment that is characterized by the world economy growing slowly and rebalancing after the international financial crisis, and then the quality of economic growth has become an important issue that can not be ignored in the development of the world economy. Since the 18th National Congress of the Communist Party of China (CPC), China's economic development has stepped into a new stage which is characterized by the speed of change, structural optimization and

the transformation of the engines of economy. There are some problems, such as the imbalance of the economic structure, low households consumption, and the urban-rural income disparity, which is all reflected in the change of the quality of economic growth. Then, what will happen to the dynamic evolution of the distribution of the quality of economic growth in China? The answer not only could help us to understand the spatial pattern and the evolution of the quality of China's regional economic growth, but also can provide a new perspective for understanding the process of China's economic growth.

1. Literature overview

The quality of economic growth is a compound concept with normative value judgment compared with the quantity of economic growth, and its measurement is based on the accurate grasp of its connotation. In the existing literature, there are mainly three kinds of views about the concept of the quality of economic growth: early studies concluded that the quality of economic growth mainly embodies the merits of the result of economic growth, and it could be interpreted as the elements of input-output ratio or total factor productivity from the perspective of efficiency of economic growth (Kama Jef, 1983; Wang, 2000; Liu, 2002; Kang, 2006). Since a lot of problems have occurred in the world economy growth, related researches began to focus on the results of economic growth in a broader view. They thought that the quality of economic growth covered the economic, political, and different aspects of social development. Especially, educational level, life expectancy, health status, income distribution, environmental resources and the level of the development of regularity are also included in the concept of quality of economic growth (Thomas, 2000; Barro, 2002). With the further study, the quality of economic growth is defined as the intrinsic nature and regularity of the economic growth, and they considered that the quality of economic growth is a new concept of growth, which not only involves the understanding of the quality of economic growth results but also pay attention to the process of the quality of economic growth, thus the content of quality of economic growth contains the structure, the stability and coordination of economic growth, etc.(Chao & Ren, 2011; Sui & Liu, 2014; Li & Feng, 2016). The quality of economic growth depicts economic growth from the perspective of intrinsic, so this paper argues that the quality of economic growth should be inspected not only in the process of economic growth, but also involving the initial conditions and final results and discussed from three perspectives: conditions level, processes level and results level of economic growth.

2. Construction the index of the quality of economic growth

The quality of economic growth refers to the intrinsic nature and regularity of economic growth, which is also a degree that a series of inherent characteristic of economic growth to meet the specific requirements of economic development. Its enhancement is the products of the conditions, processes, and results improving at a same in the context

that the quantity of economic growth expands to a certain level. This concept mainly involves three aspects: Firstly, the quality of economic reflect that a nation's basic conditions and abilities to develop and utilize various resources to create national wealth effectively in a long-term from the perspective of the condition of economic growth. High quality of economic growth is based on the high quality of the national economy, and the basic situation of the overall quality of the national economy is reflected focusing on the accumulation of human capital, the ability of technology innovation and the ability of government coordination, etc.; Secondly, the quality of economic growth is manifested on the connection relationship among the internal factors of economic system and proportion relationship of factors' quantities from the perspective of the process of economic growth. The rational economic structure is the precondition for the high quality of economic growth, and optimizing the industrial structure, consumption and investment structure, financial structure and the balance of payments structure can effectively change the dynamical mechanism of economic growth; Thirdly, the quality of economic growth is characterized by the effectiveness and inclusiveness of results of economic growth. On the one hand, effectiveness refers to the conversion efficiency of input and output between the elements, on the other hand, inclusiveness mainly refers to whether economic growth relies on the use of resources in a sustainable way and make majority people benefit from the growth. Improving the efficiency of economic growth, lowering the cost of environment resources as well as reducing the income gap can increase the net income of economic growth, thereby promoting the quality of economic growth. The quantity of economic growth means the increasing of the quantity of all goods and services in a country or region, which is often measured by the national income, gross domestic product (GDP) or gross national product (GNP). But this index could not make judgments and achieve trade-off about the basic state of economic growth conditions, various changes in the process of economic growth and the costs of the results of economic growth. All of those involve value judgment, belonging to the field of the quality of economic growth. The quality of economic growth is a comprehensive reflection of a series of factors, and realizing its measurement must use multi-level and multi-target comprehensive evaluation index system. According to the theoretical connotation of the quality of economic growth, given the consideration of the availability and reliability of data, we set up the quality of economic growth index system containing 21 basic indexes from conditions, processes and results of growth aspects (see TAB.1).

TAB. 1: Quality index of economic growth

Aspect index	Sub index	Basic index	Unit	Index attribute		
				Positive index	Inverse index	Mode-rate Index
Conditions	Human	Average education years	year	√		

of economic growth	capital	Proportion of higher education population	%	√		
	Innovation	Proportion of R & D expenditure to GDP	%	√		
		Patents Application Accepted	piece	√		
	Coordination	Proportion of social security expenditure to finance expenditure	%	√		
		Proportion of educational expenditure to finance expenditure	%	√		
Structure of economic growth	Industrial structure	Proportion of tertiary industry to secondary industry	—	√		
		The Theil index of structure deviation	—		√	
	Consumption Investment structure	Consumption rate	%			√
		Investment rate	%			√
	Financial structure	Deposits and loans of financial institutions as percentage of GDP	%	√		
	International balance of Payments Structure	Proportion of total value of imports and exports to GDP	%	√		
The result of economic growth	Growth efficiency	Growth rate of TFP	%	√		
		Capital productivity	%	√		
		Labor productivity	%	√		
	Resource consumption	Per capita energy consumption of area	—		√	
	Environmental pollution	Per capita air pollution of area	Multiple		√	
		Per capita Waste water discharged of output	Multiple		√	
		Per capita solid waste discharged of output	Multiple		√	
	Achievement sharing	Urban and rural income ratio of population weighted	—		√	
		Comprehensive Engel coefficient	—		√	

Source: own research

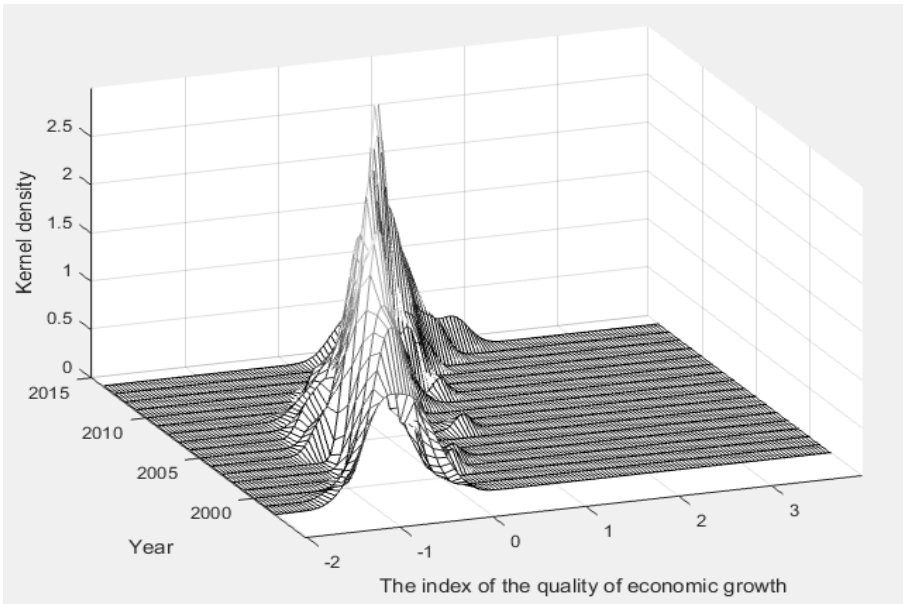
3. The measurement of quality of regional economic growth in China

This paper uses principal component analysis (PCA) method to determine the weight of each synthesis index, and conducts the same method to synthesize total index to quantify the quality of economic growth in China. For the sake of extracting accurately effective information, the study presents an improvement in existing principal component analysis method as follows: a) the covariance matrix as input of principal component analysis can avoid information loss of variation degree among evaluation indexes that was caused by extracting principal component from the correlation coefficient matrix of each index. b), at the same time, it adopts equalization method in dimensionless treatment to ensure that the equalization of the covariance matrix can preserve the dispersion in characteristics of each index to avoid relative dispersion of indexes are underestimated or exaggerated.

Considering the availability of data as well as consistency of statistical caliber, we use the data of sample period (1998-2014). In addition, the study only measures the quality of economic growth covering 30 provinces except Tibet, due to the quality of which is very low. The study is drawn from data on China Statistical Yearbook, Statistical Yearbook for regions, China Compendium of Statistical, Date of Gross Domestic Product of China (1952-1996), Date of Gross Domestic Product of China (1952-2004), China Statistical Yearbook on Science and Technology and China Energy Statistical Yearbook, We obtained the missing data by estimating used equation.

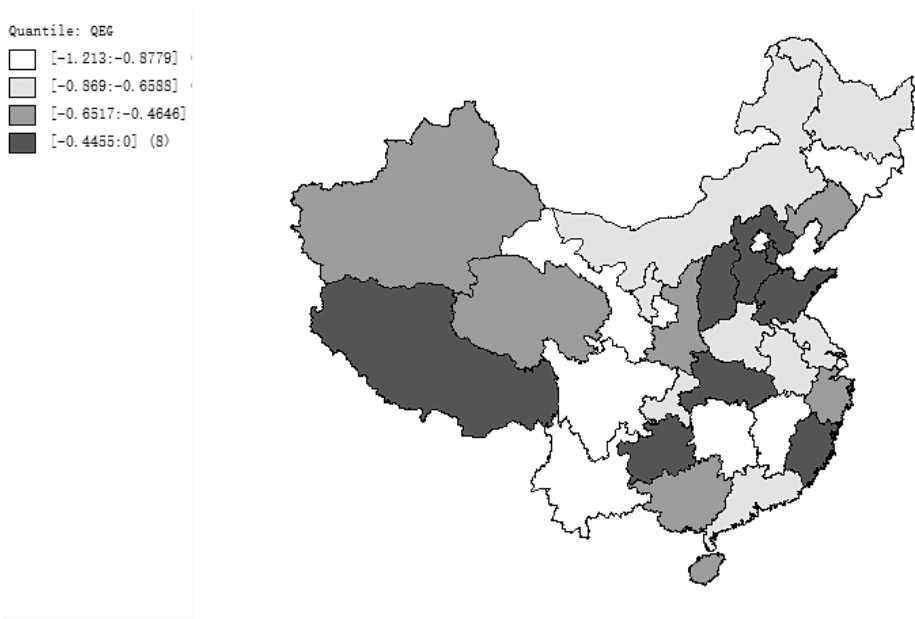
According to the comprehensive evaluation index system in TAB.1, the study mainly applies the methods of PCA to estimate the quality of China's economic growth from three dimensions, including conditions, process, and results of economic growth in 30 provinces (except Tibet) from 1998 to 2014. Then we further used Matlab R2016a to estimate sample point's density values with the quality of economic growth index of 30 provinces (except Tibet) from 1998 to 2014 in China. Because of the data is missing, the index of the quality of economic growth in Tibet is assigned as 0. As shown in FIG.1, the movement trend of the quality of China's economic growth mainly presents the following characteristics: firstly, the distribution of the quality of economic growth across the regions move towards right in the course of the year, which indicates that the quality of all regions economic growth has been improved gradually; Secondly, the highest peak height and narrowest peak width appeared in 2012, which shows that the difference of the quality of economic growth is at the smallest level. And the lowest peak height and widest peak width appeared in 1998, which reflects that the gap of quality of economic growth is at the largest level. Thirdly, peak width dose not present clear regularity, which is proved that the gap of regional economic growth is not obviously increasing or reducing, in the study period. Fourthly, a side peak appears on the right side next to each main peak, which indicates that the quality of economic growth in the a few regions is higher than the most regions during study period.

FIG. 1: The dynamic evolution of the quality of economic growth in 1998-2014

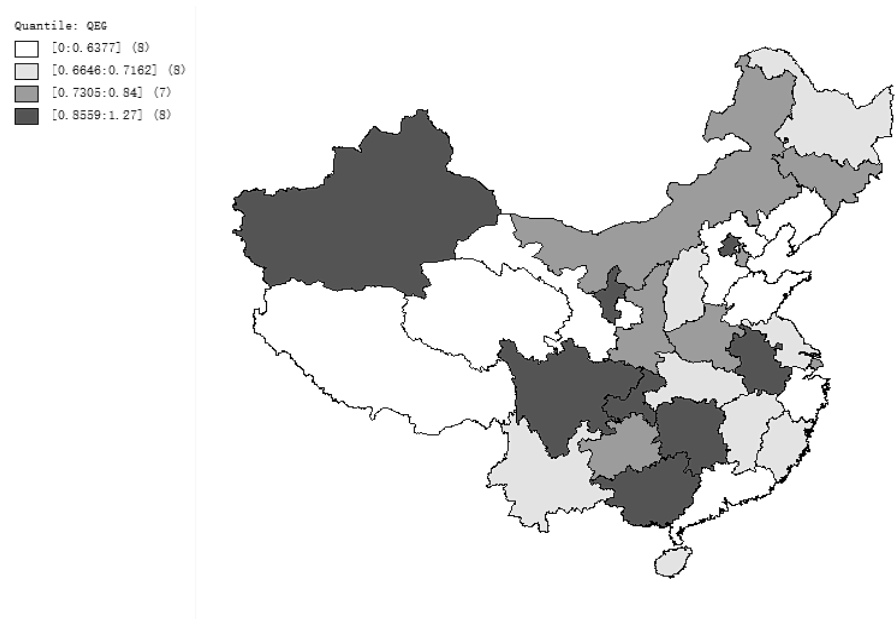


Source: own research

FIG. 2: The regional distribution of the quality of economic growth in 1998



Source: own research

FIG. 3: The regional distribution of the quality of economic growth in 2012

Source: own research

We select the maximal variation in 1998 and minimal variation in 2014 to investigate the regional distribution of the quality of economic growth. Comparing FIG. 2 and FIG. 3, we find some characteristics as follows: First of all, the interval of the distribution of the quality of economic growth in 1998 is $[-1.213, 0]$. Similarly, the interval of distribution in 2012 is $[0, 1.27]$. It reflects that the quality economic growth all regions in 2012 have been improving compared with that in 1998, and the index from the negative value bounds to the positive value. Then, the quality of China's economic growth distribution presents obvious regional characteristics. The provinces have higher quality of economic growth mostly distributed in the southeast, particularly concentrated in the eastern coastal cities and the Yangtze River economic circle, while the quality of economic growth in the vast western and northern regions is relatively low. There is no province has been still in the first grade or the second grade according to the four grades dividing from high to low level, Shaanxi province in the third grade constantly, and these provinces have been in the fourth grade all the time, such as Gansu province, Yunnan province, Jiangxi province. Two reasons for these differences are: Firstly, the differences between geography, climate and natural resources across the regions have an effect on the quality of the economic growth in the regions. Secondly, different systems result in their differentiation of the quality of economic growth. Thirdly, we measure the Moran's index (Moran's I) of the quality of economic growth from 1998 to 2014, the results show that most of the year's Moran's I are not approved by significant testing, which shows that the quality of economic growth doesn't have obvious spatial auto-correlation. As shown in FIG. 2 and FIG. 3, the regional distribution of the quality of economic growth doesn't have significant correlation.

Conclusion

Based on the intension of quality of economic growth, this paper builds the quality of economic growth index system from three dimensions, including conditions, process, and results of economic growth. Principal Component Analysis is used here to determine the weight of the target. Measuring results from our study shows that the economic growth quality of 30 provinces (except Tibet) in China has been improved gradually from 1998 to 2014, but it is very different among the provinces and municipalities.

Acknowledgement:

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HUMAN CAPITAL AS AN IMPORTANT GROWTH FACTOR OF REGIONS IN THE CZECH REPUBLIC

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Keywords:

human capital – economic growth – gross domestic product – higher education – region

JEL classification: O15, R11

Abstract:

Human capital is generally regarded as one of the key factors of regional growth. This paper examines the interdependence between human capital and the regional growth in the Czech Republic by correlation analysis. Human capital is expressed as a result of education, particularly as the percentage of people with higher education. The amount of the regional gross domestic product (GDP) per capita is a scale for economic performance of regions. The calculated correlation coefficient characterizes the intensity of the relationship between the two variables, which in this case appeared considerably significant.

Introduction

The concept of human capital has become a subject of interest in the second half of the 18th century. Smith (1776) started point to the fact that among the factors of production include the skills and knowledge of individuals in economic theories. More specific definition of the term "human capital" is often attributed to the authors of the Chicago School of Economics - Nobel Laureate Becker (1963) and Mincer (1958).

Nowadays it is generally accepted Becker definition: "Human capital is the skills and adequate incentives these skills apply." It also states that individuals decide on participation in the development of human capital as an investment based on a comparison of revenues and expenses. In its conception yields are e.g. higher wages, better jobs, but also non-monetary income such as improved health, culture and education, moving up the social ladder. Cost is the time value (lost opportunity costs) and the value of expenditure on the acquisition of these investments. Formation of human capital takes place mainly through education. Due to the difficult assessment innate ability, family and social environments that have human capital also had a profound impact, based on the assumption that human capital is the result of education.

Human capital is by Lucas (1988) and Romer (1990) - representatives of the new growth theory - the driving force behind long-term economic growth. They argue that human capital, innovation and knowledge contribute significantly to economic growth. With this view, however, disagree Bils and Klenow (2000) and Pritchett (2001), according to which, the role of human capital in economic growth is too exaggerated. The study of Pritchett concludes that education creates no human capital. It cannot increase cognitive skills or productivity, but it can lead to wage increases because an educated man is more valuable for employers. Another conclusion of this study is that human capital is used in many countries, activities that reduce economic growth, e.g. bloated bureaucracy.

1. Methods, literature overview

In this section I will try to answer the key question that I asked. Is there a dependency (or how strong dependency is) between the highest level of education reached (I consider the percentage share of the population with higher education) in each Czech region, and the amount of gross domestic product per capita in these regions for 2014? Or whether the regional GDP is higher in regions with a higher proportion of people with higher education?

On this question, I will try to answer through the establishment of correlation analysis. The necessary data for calculating the correlation analysis are given in Table 1:

TAB. 1: Comparison of regional GDP with percentage share of the population with higher education in 2014

Region	GDP per capita (in thousands of Czech crowns)	Population with higher education (in %)
Prague	829.2	32.6
Central Bohemian	369.3	17.1
South Bohemian	343.8	14.7
Pilsen	384.1	14.5
Karlovy Vary	276.9	9.8
Usti	309.6	12.1
Liberec	315.2	13.9
Hradec Králové	356.0	14.4
Pardubice	327.5	15.1
Highlands	335.0	13.2
South Moravian	397.2	20.7
Olomouc	314.5	14.3
Zlín	359.4	14.8
Moravian-Silesian	337.7	14.0

Source: own calculations based on Czech Statistical Office (2015)

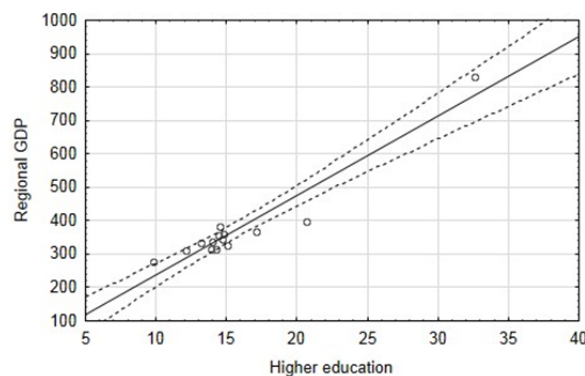
The purpose of correlation analysis is to obtain a correlation coefficient. It is used to capture the intensity of the relationship between the two variables. Word correlation in the general sense is a measure of the degree of association of two variables. If the coefficient is positive it means that one quantity grows, other quantity is also growing (extreme value is 1). For calculating the correlation analysis it is needed somehow quantify (estimated) level of human capital. We need an indicator that best describes human capital, but also is applicable in practical terms, therefore, is well predictable. In doing so, the basic definition of human capital is evident that the measurement will not be easy. Human capital is the qualitative characteristics of unit (human), while we want it to capture quantitative indicator. It therefore offers the possibility of an assessing the level of human capital through surveys highest level of education, which I also used. The problem may be that the same levels of education sometimes differ considerably from each other.

In looking at the individual level of human capital plays a role also its degree of wear. Gained knowledge by Mazouch and Fischer (2011) eventually become obsolete and it is necessary to renew, update and develop them (like skills). Yet the highest level of education reached is one of the most frequently used and relatively simple, although imperfect measurable characteristics of human capital. Educational statistics provides annual data on the number of graduates. The disadvantage of this approach is that it only considers formal education and neglects other forms, especially lifelong learning and adult education. But the data of this type of education are less accessible. For this reason, the calculation used this approach.

2. Result

The value of the correlation coefficient in this analysis: $r = 0.9567$. Of this amount of correlation coefficient can be deduced significant relationship between examined variables. Higher education, according to this model, has a significant impact on the economic performance of the region.

FIG. 1: Higher education and regional GDP

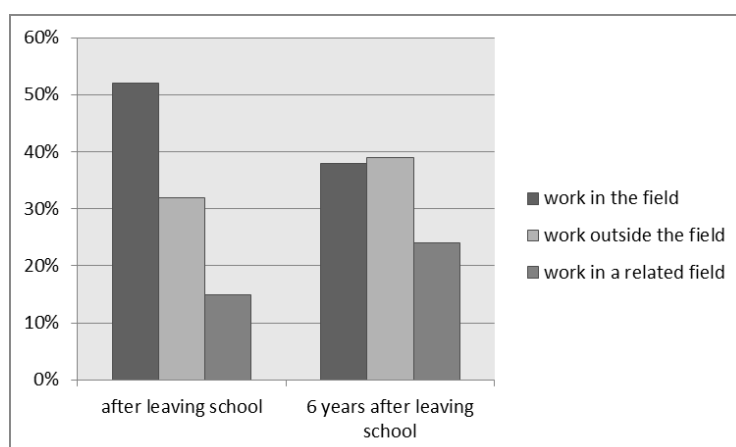


Source: authors' calculations in program STATISTICA 10

If we in the same manner calculated correlation coefficients for other educational groups, we would find that people with secondary education with graduation have a correlation coefficient slightly lower than undergraduates ($r = 0.8529$). There is less dependence compared to undergraduates, but it is still significant. The correlation coefficient of people with secondary education without graduation and primary education or no education came out negative (if the value is negative, one quantity increases and the other quantity decreases). With the growth of the share of these persons, economic performance of the region is declining. The correlation coefficient of people with secondary education without graduation came out: $r = -0.9482$ (while for persons with primary education or no education: $r = -0.7561$).

This analysis has shown that current support secondary education without graduation from politicians due to the decline of interest in this study is erroneously justified. Namely, apprentices influence on economic growth is negative. Another proof confirming this fact is high unemployment rate of graduates of secondary vocational schools. In April 2016, according to statistics (2016) unemployment reached 9.1 % (for graduates of secondary vocational education with a graduation exam 7.5 %). Also, students' interest in these fields falls according to recent surveys. Ondráčková (2016) says that some secondary vocational schools recorded up about 60 % fewer applications in comparison with last year. The reason is the greater availability of graduation courses and in particular also a growing demand for highly skilled workers. According to a study by Scio (2015) another problem is that half the number of apprentices eventually does not work and does not want to work in the fields in which qualifications were obtained (unsatisfactory financial conditions, substandard work).

FIG. 2: Compliance education and employment of graduates of secondary vocational schools



Source: Scio (2015)

All the above problems suggest that attempts to increase the number of apprentices are contra productive and do not contribute to economic growth.

3. Discussion

The relationship between education levels and economic performance is also engaged Kostecký, Patočková and Vobecká (2007). Their research also dealt with regions of the Czech Republic. Using the same method - correlation analysis - they reached a similar conclusion: there is a positive correlation between level of education in the region and its economic performance, but this correlation is weaker ($r = 0.51$) compared to the result of my research ($r = 0.9567$). The reason for this difference is the use of other input data. Kostecký, Patočková and Vobecká examined the relationship between economic performance and the share of people with at least secondary education aged 25-34. They characterized the economic performance through "Aggregate index of economic performance". The simplification when we do not take into account the different determination of economic performance, we could say when we compare their research with my research that independently people with higher education have a greater influence on size of the regional GDP (higher correlation coefficient) than if we include also persons with secondary education.

Scio (2015) says that the main reason for the growing demand of companies for craftsmen is obtaining cheap labour. A higher number of craftsmen enable companies to reduce wages and increase employee loyalty due to the excess of supply over demand in the labour market. This increasing demand creates the impression that there is the insufficient number of apprentices in the labour market. Therefore, politicians support apprenticeship, try to increase the number of apprentices to resolve this situation. However, the above mentioned unemployment rate speaks of unused labour. It would be preferable to strive to improve the quality of graduates of apprenticeships. Thus the chance of their success in the labour market increases more than if there was their simple numerical growth.

However, assessing the Impact of education on economic growth in the region is difficult. There are more economic factors and also non-economic factors. Barro (1996) among these factors ranks: life expectancy, fertility, trade, government spending, the level of rights and inflation. Problematic can be also a fact that the relationship between economic growth and education is very long-term and remain hidden to normal view. Growth of education to economic growth often manifests itself after some delay. Despite the above uncertainties, the positive impact of human capital on economic growth measured by level of education is indisputable. Kubík (2010) confirms the positive contribution of human capital to economic growth. Specifically, an additional year of education contributes to economic growth in the range of 2-6 %. These results are consistent with previous studies, e.g. Cohen and Soto (2007).

Conclusion

The main objective of this paper was to answer the question whether regional GDP is higher in regions of the Czech Republic, where is a higher proportion of people with

higher education. The correlation analysis confirmed this relationship. The correlation coefficient is close to 1 in this research, which indicates almost certain dependence between the studied variables. This result is consistent with previous literature, which deals with the relationship between education levels and economic performance. E.g. by Kostecká, Patočková and Vobecká (2007), education has a significant impact on economic growth.

It also proved that people with higher education have the biggest impact on economic growth of all education groups. People with secondary education with graduation have a slightly lower coefficient of correlation than undergraduates, the correlation coefficient of people with secondary education without graduation and primary education or no education came out negative. This means that with a growing proportion of these people, economic growth declines.

The analysis also confirmed unfounded political efforts to increase the number of apprentices. Namely, apprentices influence on economic growth is negative. One piece of evidence supporting this fact is high unemployment rate of graduates of secondary vocational schools. In this case, it is not reasonable to increase the numbers of apprentices, as required by companies, but rather to improve the quality of graduates of secondary vocational schools and to increase the interest of apprentices to work in the field they studied.

This research considers only formal education. In doing so, it can be assumed that the education of persons in many cases does not end completing formal education, but it will continue in various forms of lifelong learning, which are not included because of the difficulty of data availability. Level of education, however, is obviously very rough characteristic of human qualities and his potential contribution to society. Moreover, important is not only the quantity but also the quality of educational attainment and the ability of graduates in practice. For further research in this area it would be beneficial to expand its scope of these problems.

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STANDARD OF LIVING IN SELECTED COUNTRIES IN CENTRAL EUROPE IN THE PERIOD 2000-2014

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Keywords:

synthetic measure of development – HDI – standard of living

JEL classification: C43, I15

Abstract:

The standard of living of the population is one of the key elements of policies and strategies for social development. It is one of the components of "quality of life", which plays an important role in measuring social progress. One of the basic measures of the standard of living is Human Development Index (HDI). The paper presents an analysis of the standard of living of the population of selected Central European countries, conducted with the use of the synthetic measure proposed by Hellwig. Then, the results are compared with the ranking built using HDI.

Introduction

Changes in political, economic and social systems are usually closely related to transformation in the functioning of both the state and its citizens. Behaviors of individuals shape the phenomena that occur in the society. The social phenomena in turn force an individual to adapt to the changing situation. Research on these factors is a source of valuable information (Włodarczyk-Śpiewak, 2006). The benefit of such analyses is the opportunity to obtain information on opinions or the actual phenomenon. If the analysis is extended and covers subsequent periods or additional individuals, it is possible to draw conclusions concerning the differences that occur between observations. Such information allows learning the strengths and weaknesses of objects, compare them and manage them more efficiently. With regard to territorial units, research results can have an influence on local policy and regional development.

The standard of living is a wide and ambiguous concept. It is described by a number of different features (Morawska, 2014 pp. 80). For many years, its measurement has been usually conducted by means of the Gross Domestic Product per capita. This value is also the basic characteristic of the level of development of countries and regions (Drejerska, 2012). However, equating the standard of living only with the value of GDP per capita can lead to erroneous conclusions. A positive correlation between high GDP

and a good state of health and education is not necessarily the rule and is not sufficient to fully illustrate the phenomenon. Moreover, GDP does not include households' work for their own needs (e.g. child care), food production for their own needs, or – which is particularly important in developing countries – informal networks of exchange and the informal economy. The answer to the lack of objectivity in interpreting GDP per capita was Human Development Index (HDI). It was proposed in 1990 by two economists: Mahbub ul Haq and Amartya Sen. This measure is an attempt to determine the measurable differences in social and economic development of countries. It is a synthetic measure relating to three areas: living conditions, education and health. It is the best-known synthetic indicator for international comparisons of the standard of living (Słaby, 2006). HDI has an advantage over GDP per capita, as it combines economic and social criteria. However, it should be noted that it has some drawbacks also. This indicator is very sensitive to rapid changes in the economic situation. Its construction and the way of converting income to purchasing power parity also raise doubts.

HDI is a normalized measure that takes values from 0 to 1. It enables the linear ordering of objects in the form of rankings. It also gives the opportunity to rank countries from most to least developed ones and to conduct a dynamic analysis of changes by comparing the positions in the rankings over the years.

On the basis of the value of the index, object classification is conducted and countries are divided into four groups. Countries with HDI lower than 0.535 are considered to be underdeveloped. Countries from the interval $[0.535; 0.71]$ fall into Medium Human Development category, and countries from the interval $[0.71; 0.8]$ – into High Human Development category. Countries with a very high level of development have HDI values higher than 0.8. (Jankowska, 2012).

The algorithm for calculating HDI indicator was modified over years (2010 and 2014). Since 2010, Education index, a component of the global HDI, has been calculated on the basis of two variables: the average number of years of education among people aged 25 years and older and the expected number of years of education for school-age children. Another component of HDI is Life expectancy index. It is expressed with one variable – life expectancy at birth. The economic component is GNI (Gross National Income, purchasing power parity) per capita (PPP US \$).

As it can easily noticed, HDI takes into account a wider range of factors than only economics ones. It is widely known and used. However, its structure (i.e. included areas and variables) is not a formula for defining the standard of living and it does not exhaust the subject. It has been suggested by the creators of the measure themselves and is confirmed by the existence of other related indicators: Gender Inequality Index (GII), Inequality-adjusted HDI (IHDI), Multidimensional Poverty Index (MPI) and locally built HDI. GII shows the differences in income, education and health taking into

account sex (Antczak, 2012 pp. 16-17). IHDI is HDI adjusted for inequality. For societies with high stratification it has a value lower than the classic HDI (Rakowski, 2015). MPI identifies excluded individuals considering poverty in 10 dimensions (Antczak, 2012 pp. 17-18). There is a need for further research on a synthetic formula that will enable better presentation of the standard of living, taking into account many aspects.

The main aim of the study is to assess the level of the living conditions in the countries in Central Europe. As a result of their historical situation after the World War II, both the level of development and living conditions in these areas are significantly different from Western European countries. The study was conducted for the period 2000-2015 and included the following countries: Poland, Lithuania, Latvia, Estonia, Hungary, Bulgaria, Romania, Ukraine, the Czech Republic, Slovakia, Slovenia, Croatia, Serbia. Some countries of the former Yugoslavia were excluded from the analysis (i.e. Kosovo, Macedonia, Montenegro). These countries declared their independence at a later date than the initial year of the study period. In consequences, a majority of information included in presented analysis was unavailable for them. As in the case of HDI, the analysis included the following categories of information: living conditions, education, economy and health. In total, the database consisted of 30 variables. After collecting the data, it turned out that a lot of information concerning many countries was missing, therefore, it was impossible to analyze all the years. Finally, data from 2000 and 2014 were used in the study.

At the second stage of the study, the database underwent a verification according to substantive and formal properties of variables and informational value of variables (Zeliaś, 2004). The following variables were included in the study:

- a) population ages 15-64 (% of total),
- b) age dependency ratio (% of working-age population),
- c) urban population growth (annual %),
- d) GDP growth (annual %),
- e) GDP per capita (current US\$),
- f) industry, value added (% of GDP),
- g) agriculture, value added (% of GDP),
- h) fertility indicator,
- i) unemployment rate,
- j) students in tertiary education (ISCED 5-6) – as % of the population aged 20-24 years,
- k) number of doctors per 10000 inhabitants,
- l) number of nurses and midwives per 10000 inhabitants,
- m) number of dentists per 10000 inhabitants,
- n) number of hospital beds per 10000 inhabitants.

The assessment of living conditions was carried out using the taxonomic measure proposed by Hellwig (Hellwig 1968). Then the results were compared with the ranking built on the basis of HDI.

1. Synthetic Measure of Development

The synthetic measure (SM) was first proposed in 1968 by Z. Hellwig. It allows determining the aggregate measure constructed on the basis of the taxonomic measure of the distance of a particular object from the theoretical pattern of development. The pattern of development allows to organize a set of tested objects (e.g. provinces) described with n features that are stimulants or destimulants. A stimulant is a characteristic for which higher value is indicated (e.g. GDP per capita). A destimulant (e.g. unemployment rate) is a characteristic for which lower value is indicated (Ostasiewicz 1999).

On the basis of Hellwig's synthetic measure of development, the level of development of a given object can be analyzed. The more similar the values of the characteristics of a given object are to the pattern, the higher the level of its development. In turn, the more distant the values of the characteristics of a given object are from the pattern, the lower the level of its development. On the basis of taxonomic measure of development, objects (countries) can be organized by the level of the living conditions of their inhabitants. Analyzing such an arrangement, it is possible to determine which objects have the highest or the lowest level of development. The closer the value of the measure is to 1, the higher the level of development of the object. Similarly, when the value of the measure is closer to 0, the level of development of the object is lower.

2. Results of research

TAB. 1: SM ranking for selected European countries

Country	SM 2000	Ranking	SM 2014	Ranking	Change 2000-2014
Bulgaria	0.659	11	0.022	11	0
Croatia	0.672	10	0.079	10	0
Czech Republic	0.760	4	0.477	1	3
Estonia	0.779	1	0.470	2	-1
Hungary	0.747	5	0.220	6	-1
Latvia	0.727	8	0.159	8	0
Lithuania	0.737	7	0.362	4	3
Poland	0.779	2	0.252	5	-3
Romania	0.672	9	0.197	9	0
Serbia	0.000	12	0.000	12	0
Slovakia	0.738	6	0.192	7	-1
Slovenia	0.764	3	0.456	3	0

Source: Own calculations

First, the ranking of countries was arranged with the use of the synthetic measure. The results of the analysis are presented in Table 1. Analyzing the results for the years 2000 and 2014, it can be noticed that Estonia, the Czech Republic, and Slovenia present the highest standard of living in terms of the criteria that were used. The lowest value of the measure was obtained by Serbia, Bulgaria, Croatia and Romania. Comparing the living conditions in both analyzed periods, the same group leaders are noticed: Slovenia, Estonia, and the Czech Republic. The country that made the most considerable progress in the analyzed period is the Czech Republic and Lithuania whereas the countries which make the higher regress is Poland. We have to noticed also that Serbia is the only country with the lowest values of all variables.

TAB. 2: HDI ranking for selected European countries

Country	HDI 2000	Ranking	HDI 2014	Ranking	Change 2000-2014
Bulgaria	0.713	9	0.782	11	2
Croatia	0.749	8	0.818	9	-1
Czech Republic	0.821	2	0.870	2	0
Estonia	0.780	4	0.861	3	1
Hungary	0.769	5	0.828	7	-2
Latvia	0.727	10	0.819	8	1
Lithuania	0.754	7	0.839	6	1
Poland	0.786	3	0.843	5	-2
Romania	0.706	12	0.793	10	1
Serbia	0.710	11	0.771	12	1
Slovakia	0.763	6	0.844	4	2
Slovenia	0.824	1	0.880	1	0

Source: <http://hdr.undp.org/en/composite/trends>

Analyzing the HDI ranking in 2000 and 2014 it can be noticed that the order is pretty similar to that obtained with the use of SM measure. Both the leaders of the ranking and more fragile states remain unchanged. Minor differences can be observed in the group of countries that occupy middle positions in the ranking. The main difference between Table 1 and 2 is the position of Croatia. In first type of ranking (using SM measure) this country is one of the weakest, whereas in second one Croatia is in the middle of list.

Adopting the assumptions of the previous HDI classification, in 2000 only Slovenia and the Czech Republic were highly developed countries. Other countries were in the group of medium-developed ones. Taking the current classification into consideration, it can be noticed that the most developed countries in 2014 (i.e. very highly developed) are those that in the ranking obtained positions 1 to 8, i.e. Slovenia, the Czech Republic, Estonia, Poland, Lithuania, Hungary, Latvia, Croatia. However, the remaining countries are highly developed. Analyzing changes in the standard of living, it can be noticed that

the biggest increase (about 2 positions) occurred for Bulgaria and Slovakia, while the largest decrease was observed for Poland and Hungary.

Remarks and conclusions

The possibility of economic and social development has had a significant impact on the economic and social changes in the countries of Central Europe, as well as an increase in the standard of living and social cohesion. There are large disparities in the standard of living among the analyzed countries. The countries included in the research vary in terms of the aspects that were taken into account in the study: living conditions, education, economy and health. Therefore, there are differences in the rankings based on HDI levels and Hellwig's measure. The most significant difference which can be observed is the case of the Czech Republic. Basing on the HDI ranking this country is still on the 2nd position whereas basing on the SM ranking it moved up from the 4th to 1st position. On the other hand, the position of Slovakia, started from the 6th position in both rankings, go to the 7th position (basing on Hellwig's measure) or to the 4th position (basing on the HDI ranking). However, the results show that both methods of evaluation of the standard of living of the inhabitants of Central Europe give coherent results.

Although the obtained rankings are not the same, some regularities can be noticed. The highest standard of living is observed in countries that joined the EU at the earlier stages (Slovenia, the Czech Republic, Estonia), while the lowest standard of living can be observed in countries that joined the EU recently (Croatia, Romania and Bulgaria) or are not EU members states (Serbia). At the same time, the values of HDI for 2014 confirm that all countries included in the research are highly or very highly developed.

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RECENT OPTIMIZATION PACKAGES AND THEIR COMPARISON

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Keywords:

optimization – solver – linear programming – mixed integer programming – MIPLIB

JEL classification: C61

Abstract:

Linear programming (LP) and mixed integer linear programming (MILP) problems belong among very important class of problems that find many applications in managerial practice. The aim of the paper is to discuss computational performance of current optimization packages for solving large scale LP and MILP optimization problems. The most powerful solvers for this kind of problems are GUROBI 7.0, IBM ILOG CPLEX 12.6.1, and XPRESS Optimizer 27.01. All of them are free available for academic purposes in their full versions. The solvers are tested on the set of selected problems from MIPLIB 2010 library that contains 361 test instances of different hardness (easy, hard, and not solved).

Introduction

Linear and mixed integer linear optimization problems (LP and MILP) belong to one of the most often modelling tools and their solving is unthinkable without high-quality software. Optimization problems with continuous variables and with several tens or few hundreds of variables and constraints only can be successfully solved using less-quality optimization tools as MS Excel Solver or various open source systems. Problems with integer variables need not be solved even in case of a very small size of the decisions problems. Real-world optimization problems have usually many thousands of variables and/or constraints. These problems must be solved using professional high-quality solvers. Among the top LP and MILP solvers on the marker IBM ILOG CPLEX, GUROBI and FICO XPRESS Optimizer belong. More information about them can be found in (IBM, 2016), (GUROBI, 2016), and (FICO, 2016).

The aim of the paper is to compare computational performance of three top LP and MILP solvers in their latest versions, i.e. IBM ILOG CPLEX 12.6.1 (released in December 2014), GUROBI 7.0 (September 2016), and FICO XPRESS Optimizer 29.01.10 (August 2016). The first two mentioned systems are available for academic purposes free in their full professional versions. For the test purposes MIPLIB 2010 library that contains 361 MILP test instances was used.

The next section of the paper contains a more detailed information about solvers included in the study, informs about MIPLIB 2010 library and about data set for benchmarking. Section 2 presents comparison results and the final section discusses them and concludes the study.

1. Linear and mixed integer programming solvers

Discrete optimization problems are of a great attention of researchers and practitioners. Almost any of real problems cannot be modeled without integer (binary) variables. It is possible to mention many examples of models with discrete variables (traveling salesman problem, covering problem, vehicle routing problems, cutting problems, etc.) but the aim of the paper is not to discuss possible applications of discrete models but their computational aspects. Optimal solution of discrete models can be often only hardly computed. Even though a great progress in solution of such class of problems has been recognized in the last years the large-scale (not only) problems are only hardly solvable. It is of a great importance to test and benchmark capabilities of LP and MILP professional solvers because it helps users to choose the best option for their purposes. There are available various data sets (libraries of test problems) for benchmarking of different problem classes (not only LP and MILP problems).

TAB. 1: Benchmark data set

Instance	Rows	Columns	Integer	Binary	Cont.
30n20b8	0	18380	7344	11036	0
aflow40b	1442	2728	0	1364	1364
air04	823	8904	0	8904	0
bab5	4964	21600	0	21600	0
beasleyC3	1750	2500	0	1250	1250
cov1075	637	120	0	120	0
csched010	351	1758	0	1457	301
danooint	664	521	0	56	465
eil33-2	32	4516	0	4516	0
gmu-35-40	424	1205	0	1200	5
map20	328818	164547	0	146	164401
mcsched	2107	1747	14	1731	2
mzzv11	9499	10240	251	9989	0
n3seq24	6044	119856	0	119856	0
n4-3	1236	3596	174	0	3422
neos13	20852	1827	0	1815	12
neos18	11402	3312	0	3312	0
net12	14021	14115	0	1603	12512
newdano	576	505	0	56	449
noswot	182	128	25	75	28
ns1758913	624166	17956	0	17822	134
pg5_34	225	2600	0	100	2500
qiu	1192	840	0	48	792

ran16x16	288	512	0	256	256
reblock67	2523	670	0	670	0
rmine6	7078	1096	0	1096	0
roll3000	2295	1166	492	246	428
sp98ir	1531	1680	809	871	0
tanglegram2	8980	4714	0	4714	0
vpphard	47280	51471	0	51471	0

Source: own processing

One of the most important and most cited library is MIPLIB (Mixed Integer Programming LIBrary). The current version of this library is MIPLIB 2010 and it fifth version of this library since its creation in 1996. It contains 361 test problems of different nature, size, and computational complexity. The test instances of the library are divided into three main groups:

- a) Easy - instances that are solved using professional commercial solvers quite easily (within one hour). This group contains currently 215 instances.
- b) Hard - the set of instances that are already solved using specialized software tools and their optimum solution is known (64 instances);
- c) Open (not solved) – the instances where the optimal solution is not known and are not solved up to now (82 instances).

Assignment to the mentioned three groups is not fixed. As the progress in codes is very significant factor during the time some of the hard or open problems are moved into higher categories and it is difficult to estimate the numbers of the problems in particular categories after several years. More information about MIPLIB 2010 library can be found in (Koch et al., 2011). The previous version of this library MIPLIB 2003 is described in detail in (Achtenberg et al., 2006).

Selected test problems of MIPLIB 2010 are included into the benchmark test set. This set contains 87 problems, all of them are in the “easy” group. In our study we work with the subset of the benchmark set that has 30 problems. The main reason for this reduction is given by presentation limits given by the given space for the paper. Our data set is presented in Table 1. The first column of this table contains identification of the instance as it is denoted in the MIPLIB library. The next five columns informs about the number of constraints (Rows), total number of variables (Columns), and the number of integer, binary and continuous variables of the instance. The reduced data set has been tested using three most powerful MILP solvers: IBM ILOG CPLEX 12.6.1, GUROBI 7.0 and FICO XPRESS Optimizer 29.01. Below is given a brief description of these three solvers:

IBM ILOG CPLEX was originally developed in the 80s of the last century by CPLEX Optimization that was founded by R.E. Bixby. This firm was sold to ILOG, Inc. in 1997 and in 2007 to IBM. During the last 25 years CPLEX become one of the most powerful

LP and MILP solvers at all. The newest version of this software 12.6.1 was released in December 2014. This solver (together with modeling environment IBM ILOG CPLEX Optimization Studio) is available to academic researchers and students for free in its full professional version.

GUROBI is quite new solver. It is product of Gurobi, Inc. that was founded in 2008 by Z. Gu, E. Rothberg and R.E. Bixby. This system contains top LP and MIP solvers that reach often better results than CPLEX. Similarly as CPLEX, GUROBI is free in its full professional version for academic purposes. An advantage is that GUROBI can be easily used within professional modelling languages which allows its application in academic environment for solving student test cases and in commercial environment for complex optimization tasks.

XPRESS Optimizer is originally a product of British firm Dash Optimization, Inc. It was sold to FICO, Inc. in 2008. XPRESS Optimizer is now a part of a large optimization and modeling system FICO XPRESS Optimization Suite. The current version of XPRESS Optimizer is 29.01.02. FICO XPRESS Optimization Suite is not generally available for academic purposes but one can ask for free licenses under FICO Academic Partner Program. XPRESS Optimizer contains three main powerful solvers: simplex, barrier and integer. The system selects the most appropriate solver itself based on an analysis of the data set.

2. Results

Benchmarks for optimization software are subject to professional interest of many researchers. The selected results for MIPLIB 2010 library are available e.g. in (Mittelman, 2015) or (Jablonsky, 2015). Table 2 presents information about solving the test problems using the three above mentioned MILP solvers. The upper time limit for all solvers was set to 3600 seconds (1 hour). All solvers use a modification of branch and bound algorithm. The relative gap for stopping the solver was 0.0001 (i.e. 0.01 %). This means that the calculation stops when the current best integer solution found by the solver differs from the lower bound less than 0.01 %. All experiments were performed with Lenovo Yoga ultrabook with Intel Core i7 and 8GB RAM. The first column of Table 2 contains optimum objective function values of the problems. The next three columns present either numerical values that express time of calculating the optimum solutions using given solvers, or symbols “N” or “O/G” followed by numerical values. “N” means that the optimum solution of the problem was not found using the solver within the given time (3600 seconds). “O/G x.x” indicates that the solver found the optimum solution but the calculation does not stop because of the positive gap. In this case the numerical value indicates the value of the gap in %. The best results for particular instances are in italic.

TAB. 2: Results (time in [sec] to get optimum solutions)

Instance	Objective	CPLEX	GUROBI	XPRESS
30n20b8	302	7.23	3.30	112.00
aflow40b	1168	169.23	305.13	489.90
air04	56137	17.74	10.38	11.00
bab5	-106411.84	1086.11	116.50	O/G 0.6
beasleyC3	754	11.34	12.02	14.60
cov1075	20	7.32	3.67	104.80
csched010	408	992.52	1269.74	3452.10
danoint	65.6667	1344.28	2436.73	4188.20
eil33-2	934.008	47.41	11.54	72.00
gmu-35-40	-2406733.369	562.88	360.26	N
map20	-922	102.69	136.78	203.30
mcsched	211913	366.08	52.10	30.90
mzzv11	-21718	13.09	10.70	9.30
n3seq24	52200	99.83	62.30	121.20
n4-3	8993	24.59	357.93	1641.90
neos13	-95.4748	89.94	13.13	13.50
neos18	16	8.66	3.22	51.20
net12	214	138.32	79.19	77.10
newdano	65.6667	N	449.26	O/G 4.5
noswot	-41	114.05	31.05	317.70
ns1758913	-1454.67	202.55	15.77	41.90
pg5_34	-14339.4	282.72	53.11	515.70
qiu	-132.873	7.21	14.29	61.30
ran16x16	3823	134.11	21.17	537.40
reblock67	-34630648.44	571.68	371.50	N
rmine6	-457.186	2013.66	360.64	N
roll3000	12890	37.01	17.73	16.90
sp98ir	219676790.4	43.51	29.04	446.80
tanglegram2	443	1.29	0.79	0.43
vpphard	5	1283.27	230.16	175.10

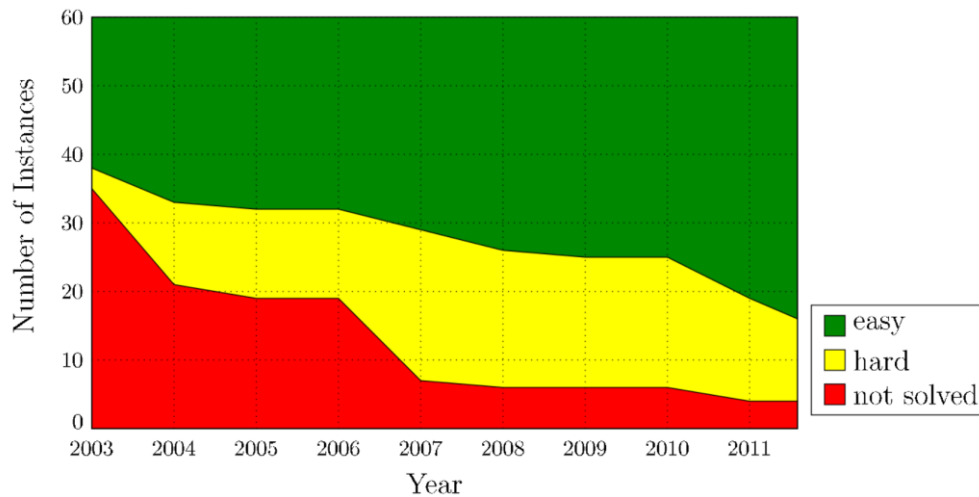
Source: own processing

The problem is how to explain the results of benchmarks. Decision makers are interested in recommendation which solver is the best for their purposes but the numbers can be explained in many ways. The companies (IBM, GUROBI, and FICO) present their own benchmarks that usually lead to a conclusion that their own solver is the fastest and overcomes the remaining ones. It is difficult to judge their arguments but according to our results seems to be the best recent solver GUROBI that reaches best results in 60 % instances. A more sophisticated analysis and an attempt to rank the solvers can be found in (Jablonský, 2015).

3. Discussion and conclusions

Progress in optimization software is very significant in the last years. MILP problems that were unsolvable still few years ago can be solved now quite easily. This progress is very well illustrated on Figure 1 taken from (Achtenberg et al., 2006). This figure presents the number of instances of MIPLIB 2003 library in three categories – easy, hard and not solved – within 8 years from 2003. It is evident that more than 50% of instances were unsolvable in 2003. After 8 years only 4 instances of 60 together were not solved. A similar progress can be expected with the new version(s) of MIPLIB library in the future.

FIG. 1: Progress in MILP solvers



Source: own processing

Discrete optimization is a very complex task and the improvement and future development of MILP solvers is of a high importance due to increasing applications of discrete models. The main aim of the paper was to test and compare current top MILP solvers on the test problems taken as a subset of the benchmark set of MIPLIB 2010 library. Even our benchmarks do not include the complete benchmark set, the conclusion is almost clear. According to the proposed methodology GUROBI was identified as the best MILP solver. Its advantage is that can be incorporated into user's own applications or as a powerful solver in modeling systems. The other two tested solvers are very powerful and if possible they can be used as an alternative to GUROBI because it is not possible to estimate which of the solvers will be the best for a given MILP problem. An advantage of GUROBI and IBM ILOG CPLEX solvers is a possibility to get them free under academic programs of both firms.

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ALTERNATIVE DISPUTE RESOLUTION

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ADR – alternative dispute resolution – consumer – consumer protection

JEL classification: K32

Abstract:

The aim of the paper is to present the major attributes after comparing the pilot version of ADR (Alternative Dispute Resolution) and the version for 2016. It refers to differences in organisational and personal provision, organisation of the ADR system, approaches to dispute resolution and media presentation of the ADR. The differences are based on guided in-depth conversations and analysis of secondary informations. The major difference is an extra form of resolution in the new project of ADR – conciliation and the new ADR is free of charge. The main part of the paper is the evaluation of entrepreneur costs with involvement in the ADR system. Calculation for one entrepreneur a year is 84,96 CZK.

Introduction

Alternative Dispute Resolution (ADR) is the system allowing an alternative approach to dispute resolution, i.e. out-of-court. Ojo (2013) describes this term: “Alternative dispute resolution simply put denotes all forms of dispute resolution other than litigation or adjudication through the courts”. “ADR schemes usually use a third party, such as an arbitrator, mediator or an ombudsman, to help a consumer and a trader to reach a solution of their dispute”. (Juskyš, Ulbaitė, 2012) ADR is an effective tool for consumers, businesspeople and last but not least states. This system can reduce the load on disputes, which ordinarily are not difficult in legal terms and the juridical decision is costly in terms of time and finances. For consumers and businesspeople, speed, simplicity and low costs are important. (The Czech Trade Inspection Authority, © 2016a).

The Czech consumer can, as part of the ADR, approach the appropriate authority in case of a dispute, which arose from a purchase contract or contract for the provision of services. A typical example is a case concerning a complaint refusal over goods from the shop (The Czech Trade Inspection Authority, © 2016a). There are several variants for implementing the ADR system in the European Union. For consumers in Great Britain, France, Germany, Belgium etc. there is not one authority, which resolves all

consumer disputes. In contrast, in Northern and Scandinavian countries a central authority for all of consumer disputes was created. Italy, Portugal and Poland, for example, have a similar authority for all consumer disputes. However, the difference is that a single central authority for the whole country does not exist. Instead regional authorities were created with restricted local competences. Financing of these authorities is provided by the state in the majority of countries. The financing of ADR is seldom from businesspeople.

The ADR system uses more technique or common types, which covers Lee et al. (2016) – Arbitration (El-Adaway et al., 2009), Adjudication (Uher and Brand, 2005), Negotiation (Lu and Liu, 2014, Yiu and Lee, 2011, Murtoaro and Kujala, 2007), Mediation (Qu and Cheung, 2013), Dispute Resolution Advisor System (Ndekugri et al., 2014), Mini Trial (Stipanowich and Henderson, 1993). It presents that this approach is not new. Kumar (2016) confirms that the ADR system is not new. In India was in existence even under the Vedic period and was a part of our culture. “The people living in village used to resolve their disputes through the village pramukhs or village panchayats.”

A consumer generally makes no financial contribution toward the finalisation of ADR for his dispute. In case there are costs, they are very low. ADR models in particular member states are based on the results of ADR are binding or unbinding decisions or it is possible to resolve a dispute with or without attendance of commercial entity. From the aforementioned points, it follows that 4 variants of ADR models can exist. (Ministry of Industry and Trade, 2008).

1. Methodology

The aim of this paper is a comparison of the pilot version of the ADR system and the new ADR project, which has been implemented since February 2016. A further aim is the calculation of costs related to obligation to provide information of the commercial entity in relation to the new ADR project. The first aim of the paper will be to use secondary information from websites mostly from the Ministry of Industry and Trade of the Czech Republic and the Czech Trade Inspection Authority. A further source was provided by guided in-depth conversations with persons connected with the ADR system. The second aim of paper will be to use the Standard Cost Model Method, which is stated in the Methodology of the Measurement of the Administrative Load of Businesspeople (The Methodology). This Methodology was published by The Ministry of Industry and Trade in June 2013.

2. Results

TAB. 1: Comparison of the pilot ADR system and the new ADR project

	The pilot ADR project	The new ADR system
Organizational providing	Platform and contact place – regional bureau of Czech chamber of commerce and some consumer organisations (dispute without difference of subject)	Financial arbiter (financial services) Czech telecommunication office (electronic communication and Energy regulatory office (electro power industry, gas industry and The Czech Trade Inspection Authority (all other disputes) Other subject accredited from The Ministry of Industry and Trade
Personal providing	Operative of contact place Mediators Arbiter	Natural person academically educated in jurisprudence and has dispensable knowledge and skills in
Organisation	1. stimulus of consumer – by post, personally, by phone or 2. activity of operative in contact 3. contact with adverse party 4. decision of adverse party about connecting to ADR system 5. mediation or judge proceedings Voluntariness of entrepreneur to connect to ADR system	1. stimulus of consumer – by post, personally, by phone or electronic 2. contact with adverse party 3. obligation of entrepreneur to response and his cooperation 4. conciliation (The Czech Trade Inspection) Obligation of entrepreneur in period of 15 work days from receiving the advice to give to the ADR department opinion to facts stated in proposal and obligation of entrepreneur to cooperate closely
Approaches of consumer dispute resolve	Qualified advice Mediation proceedings Judge proceedings	Judge proceedings Mediation Conciliation
Media presentation of ADR system	Information materials Press conference Websites of The Ministry of Industry and Trade and cooperated subjects Journal of regional bureau of Czech Chamber of Commerce	Websites of The Ministry of Industry and Trade
Evaluation of ADR system	April 2008 – December 2009 (21 months) Stimulus: 2 370 Closed: 2 090 - qualified advice: 694 - uncooperation: 1 263 - mediation: 132 - judge proceedings: 1	February – May 2016 (4 months) Stimulus: 1 100 Elaborated: 700 Declined (formal reasons): 90 Declined (on vainly expiration): 100 Closed: 100

Source: Bartušková, 2011; The Czech Trade Inspection Authority, © 2016b The Czech Trade Inspection Authority; The Czech Trade Inspection Authority, © 2016c The Czech Trade Inspection Authority; Klein, 2008; Metodika měření a přeměňování administrativní zátěže podnikatelů vydaná MPO; Ministry of Industry and Trade, 2008b; Ministry of Industry and Trade, 2009c; Ministry of Industry and Trade, 2009d; Ministry of Industry and Trade, 2010a; Ministry of Industry and Trade, 2010c; Rejnek, 2011; Večl, 2016; Turza, 2016; zákon č. 634/1992 Sb., o ochraně spotřebitele v aktuálním znění, own data processing

Table 1 shows the comparison between the pilot ADR system and the new ADR project. The main difference is in organisational providing of new ADR system. This system provides Financial arbiter (financial services), Czech telecommunication office (electronic communication and postal services), Energy regulatory office (electro power industry, gas industry and heating industry), The Czech Trade Inspection Authority (all other disputes), Other subject accredited from The Ministry of Industry and Trade.

The results of the secondary research present entrepreneurial costs connected to the ADR system. The amendment to of the Consumer Protection Act requires businesspeople to participate in out-of-court dispute resolution, if a consumer initiates it. Furthermore, ADR project requires a new obligation to provide information, which represents cost increases for businesspeople.

An businessperson is under an obligation to provide information about the ADR system and the ADR subject on his websites, so long as he maintains websites, and in general trade conditions, so long as they are included in a sales contract or contract for the provision of services.

Knoblochová (2016) states that costs connected with obligations to provide information are very difficult to calculate. However, this sum does not mean significant financial costs for individual businesspeople.

Furthermore, the author presents one more economical impact for these commercial entities – compulsory attendance during the ADR. An important aspect is the complexity of the consumer dispute, personal/online attendance, distance from the subject of resolving the dispute and personal attendance etc. On the other hand, it is assumed that entrepreneurs will make use of IT for communication for dispute resolution. Costs will be minimal in this situation.

In the course of this paper, the Standard Cost Model will be applied for cost calculation of the obligation to provide information and for compulsory attendance of the commercial entity in ADR.

$$COST_{ADMINISTRATIVE\ ACTIVITY} = PRICE \times TIME \times QUANTITY (SCALE \times FREQUENCY)$$

Price = tariffs, wage costs, overhead costs – internally provided, hourly charge for external providing

Time = time for providing of administrative activities

Quantity = number of entrepreneur subjects offended by regulatory and frequency, which is the activity provided every year with

Calculation includes price and time by 1 entrepreneur subject and frequency of providing the obligation to provide information in connection with ADR is twice a year, on the grounds of the new amendment to the Consumer Protection Act.

Table 2 below presents the single average time for the calculation of the administrative load. In connection with this table administrative activities were defined and the number of hours matched, which needs one employee a year for their fulfilment. These hours are divided by number of work hours a year, i.e. 253 hours.

TAB. 2: Average time for calculation of administrative load

Order	Administrative activity	Average time for 1 employee (hours a year)	Average time for calculation of administrative load (hours/work day/employee)
1.	Familiarity with the obligation to provide information	2	0,008
2.	Acquisition of information	10 (5 consumer dispute, 2 hours for each one)	0,04
3.	Correction of mistakes found out in the inspection process	10 (5 consumer dispute, 2 hours for each one)	0,04
4.	Description	10 (5 consumer dispute, 2 hours for each one)	0,04
5.	Internal meetings	3 (1 difficult consumer dispute)	0,012
6.	Office control	1 (The Czech Chamber of Commerce – once a year)	0,004
7.	Corection of mistakes founded out in control process	1	0,004
8.	Training – updating of legal requirements/monitoring of updating legal regulation	3	0,012
9.	Copying, distribution, filling etc.	5 (5 consumer disputes, 1 hour for each one)	0,02
In total		45	0,18

Source: Ministry of Industry and Trade, 2013, own data processing

The average gross hourly wage was calculated using the median wage from the year 2015 according to the structural wage statistics for employment “3313 Professional Employees in Accounting, Economy, HR Management“, which was 26,316 CZK per 1 employee (Czech Statistical Office, 2016).

$$HOURLYWAGE = 26316 / (8 \text{ hours} \times 21 \text{ hours}) = 26316 / 168 \text{ hours} = 156,64 \text{ CZK} / \text{hour}$$

This hourly wage is increased by overhead costs, which include office operating costs, costs from sick leave etc. The overhead cost is determined by The Methodology – 15 % from the hourly wage. The sum of social and health insurance from the employer (35 % from hourly wage) was added.

$$FINAL\ HOURLYWAGE = 156,64 + 23,50 + 54,82 = 234,96 \text{ CZK}$$

Based on the aforementioned entries, the administrative load per one entrepreneur (employee) is calculated in hours a year and in CZK a year.

Calculation for one entrepreneur in hours a year:

$$X = 0,18 \times (1 \times 2) = 0,36 \text{ hours} / \text{year}$$

Calculation for one entrepreneur in CZK a year:

$$X = 0,18 \times (1 \times 2) \times 234,96 = 84,96 \text{ CZK} / \text{year}$$

The calculated sum is not excessively high, but it is necessary to keep in mind, that every commercial entity has many obligations to provide information and connected activities, which other laws impose on them.

3. Conclusion

The paper has focussed attention on the ADR system in the Czech Republic. This system brings advantages to consumers. They can resolve their disputes in an alternative way, ask an institution in the ADR system to solve their cases with a commercial entity. It is a faster means than a court case.

This system was founded on the integration of European Union legislation regarding ADR. The ADR system passed through changes in the Czech Republic – i.e. personal, organisational or procedural. The new ADR project has been in force since February 2016. It was made the Comparison of the pilot ADR system and the new ADR project. The pilot ADR system emphasised the activity of the Ministry of Industry and Trade and the regional offices of the Czech Chamber of Commerce and consumer organisations like contact places.

The current form of ADR determined that contact places are supervising authorities, which will resolve consumer cases according to their competence. The Ministry of Industry and Trade is subject for collecting information about ADR implementation and decides which subject will be the authorised entity for ADR.

Forms of dispute resolution in the pilot phase and current form of ADR do not differ with regards to mediation and arbitration. In the pilot ADR system there was one extra form of resolution – qualified advice. In the new project of ADR is conciliation. The costs for implementing ADR are different. In the pilot version the mediation and qualified advice were free of charge. Arbitration entailed a fee. The new project offers all activities free of charge. Media presentation is different. The attention to presentation in the pilot ADR system was more developed.

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EVALUATION OF ICT USER SATISFACTION IN PUBLIC ADMINISTRATION: CASE OF USE LIKERT SCALE AND NET PROMOTER SCORE IN LIBEREC CITY HALL

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Keywords:

Likert scale – Net Promoter Score – NPS – user satisfaction evaluation – ICT

JEL classification: H4, H5, M15

Abstract:

Presented paper deals with satisfaction survey of statutory city of Liberec (SCL) Information and Communication Technology (ICT) users at Liberec City Hall (LCH) designed and implemented by authors. Satisfaction survey was designed to be repeatable and gave good answers about the perception of the current state of ICT by users of services provided by the SCL to LCH. Goal of the proposed survey was to serve as source of ideas which needs to be addressed and to show a change in the perception of the level and quality of ICT services and thus evaluate their progress over time. Survey was designed in form of questionnaire due to time a financial efficiency. Likert scale and Net Promoter Score (NPS) was used within the questionnaire. Surprisingly the results of these two methods were significantly different that new research question was raised and possible reasons are discussed in the paper.

Introduction

Over the past decade, governments have embarked on major Information and Communication Technology (ICT) investments in an attempt to take advantage of the benefits of the internet. There is focus on providing better services to citizens and become more effective. With the increasing reliance on ICTx, one of the challenges facing public sector is how to evaluate the success or effectiveness of their ICT investments (Kaisara, Pather, 2011). Use of ICT in public sector is seen as an innovation which mean modernization of public administration involves public service provision more efficiently, faster and at lower costs, as well as rethinking the processes and procedures associated to governance based on the use of ICT and knowledge management (Matei & Savulescu, 2014). Intention of many municipalities is to make their government more opened. Open government is emerging as a core issue for increasing, on the one hand, participation of citizens and, on the other hand, accountability, transparency, and the capability of delivering digital services by public administrations (Viscusi, Spahiu, Maurino & Batini, 2014). Marketing focus on ICT in

public administration as a tool for marketing activities and marketing communication between citizens and municipalities is becoming the center of interest (Pocovnicu, 2014). Goal of this paper is to present the satisfaction survey designed by authors among ICT users (employees) of statutory city of Liberec (hereinafter SCL) at Liberec City Hall (hereinafter LCH). E-Government, or electronic government, is the effective application of ICT to delivery of government information, services and invention to citizens and business with accuracy and provide inside help to process of government works. E-Government is processing to accomplish safe and reliable information involves various processes as capturing, preserving, manipulating and delivering information. Gahlot, Gour and Sandal (2010) call E-Government as SMART Governant with focus around citizens (Simple, Moral, Accountable, Responsive, Transparent). Research on the effects of complex e-Government implementation is rather scarce in the Czech Republic. According to Špaček (2015) the topic has not been given any systematic attention by the academia or by central authorities responsible for e-government coordination. However, the field has been developing at least for a decade.

1. Methodology of questionnaire

There are many ways to evaluate quality of ICT in public sector. It could be used users rating (Kaisara & Pather, 2011) or provider rating. Some researchers use more complex methodology to evaluate output quality, input costs, ICT investments, skills and organizational changes in public administrations. One way could be an index-based approach to the measurement of public administration performance relying on the adoption of public e-services (Seri & Zanfei, 2013).

On the basis of the order from SCL the survey should provide answers to two main question areas. The first area of questions should provide an answer to how users perceive the quality of city ICT. Survey was designed to be repeated each two years in order to simply show a change in the perception of the level and quality of ICT services and thus evaluate their progress over time. Second area of questions should serve as a source of ideas, which need to be addressed when planning further development of ICT services center and the creation of long-term strategic and conceptual plans.

Due to time and financial efficiency the electronic questionnaire was elected as the most appropriate instrument for implementing the survey. Mixed research questions involving both quantitative and qualitative issues are used in questionnaire. Quantitative questions are suitable for subsequent statistical evaluation, and therefore determine how respondents perceive provided ICT services. Qualitative responses are used for deeper analysis and detection of specific opinions and demands on ICT as a whole or on specific applications. Semi-structured questionnaire was used combining closed, scaled and opened questions. Closed questions provide respondent with a choice between two or more possible answers. Although they have consistently alternative items in achieving greater uniformity of measurements and thus the possibility of statistical

conclusions, they also have their drawbacks. Above all, it's superficiality. Without further probes (eg. Exact meaning) they cannot get beneath the surface of the answers. They can also aggravate respondent who may not find any of the alternatives as appropriate. And the answer can be enforced. The person concerned may choose an alternative, just to cover his ignorance, or may choose an alternative that does not accurately represent the true facts and opinions.

In the case of this particular questionnaire closed questions are selected for respondent identification for example, gender or experience with ICT. Restrictions to closed questions are therefore eliminated in the questionnaire design. Open questions provide a broader frame of reference. There are just few restrictions on answers and answers can point to important relationships and connections. Questions of this type are flexible. Respondents sometimes give unexpected answers that may indicate the existence of previously unforeseen problems and relationships. In the case of this particular questionnaire open questions are chosen just for adding the user opinions and obtaining suggestions such as what needs to be improved or where the better service is required. These questions must be evaluated qualitatively and will serve as the inspirational basis for preparation of development plans.

The scale questions are typical for the assessment scale. Discretion scale (rating scale) can be defined as a type of questionnaire used to record individual properties considered persons or consideration of the subject while enabling quantitative capture of phenomenon. There are several types of scales:

- a) check lists
- b) forced choice
- c) categorical rating scales
- d) interval rating scale
- e) numerical evaluation scale
- f) graphical scales

The scale questions have fixed possible responses. In the case of the proposed survey the scale questions are used to assess individual applications and possible user satisfaction. In this case the five-point interval Likert scale of agreement or disagreement designed by Rensise Likert (1903- 1981) is used (Likert, 1933; Likert, 1958; Maeda, 2015). Likert scale is used for evaluating of role of ICT in enhancing productivity in government administration (Teryima & Sunde, 2015) or as a basis of Importance-Performance Analysis in Evaluation of e-Government (Meng, Hideki & George, 2011).

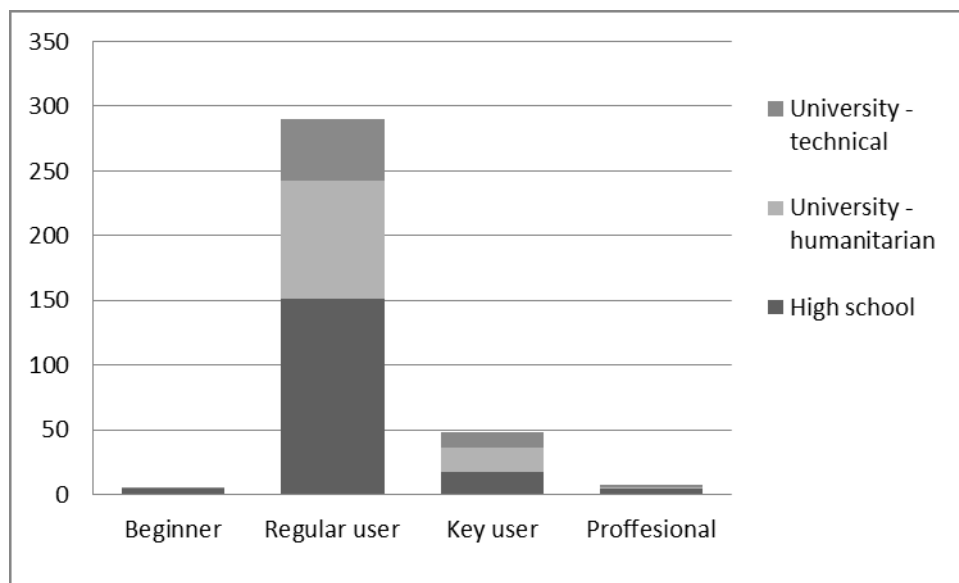
The second scale which is used in this questionnaire is the Net Promoter Score. Net Promoter Score (NPS) is a measure of customer loyalty or employees published in 2003 by Harvard Business Review article "One Number You Need to Grow" (Reichheld, 2003). NPS metrics was developed by companies Satmetrix Bain & Company and by

Fred Reichheld. NPS in our case takes values between 0 and 10 a higher value indicates a higher loyalty of test subjects and willingness to promote products or services. This scale divides respondents to three groups. Detractors take values between 0 – 6, passives take 7 and 8, promoters take 9 and 10. Faltejisková, Dvořáková and Hotovcová (2016) discuss differences in the NPS scales for US and European customers.

2. Target group

Questionnaire was distributed through SCL intranet to LCH employees and participation was mandatory. From the total number of 360 employees just 8 questionnaires were removed due to the fact that they were not completely filled. The final sample was 352 questionnaires. Target group consist of 79% males, 21% females. 3% of employees are under 25 years and 26% over 51. 51% employees had high school education, 18% with technical university education and 31% with humanitarian university education. The majority of 82% users considers themselves as regular users of IT and therefore should master basic work. The positive is that 14% is considers themselves as key users and can therefore give advice to colleagues. 2% are total beginners and 2% are professionals. Figure 1 shows that there is no strong correlation among education and ICT user skills.

FIG. 1: Correlation among education and ICT user skills



Source: own

3. Applications quality evaluation

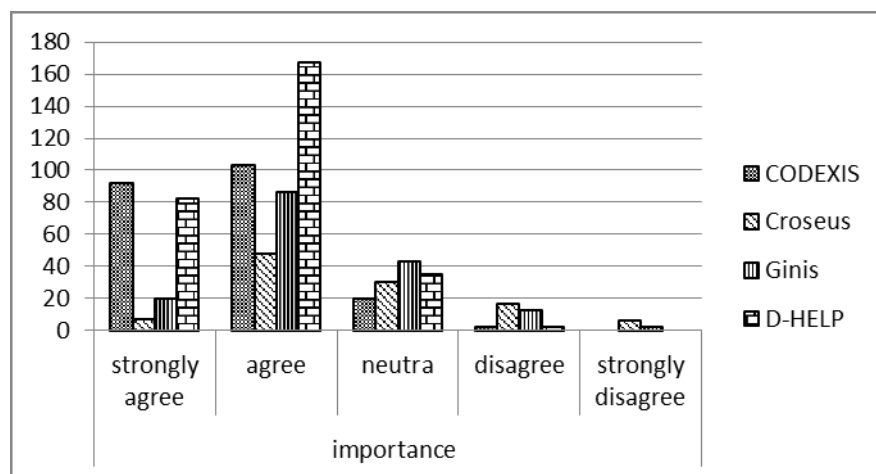
Selected applications were examined further by using four specific questions. The respondent had to answer the following questions:

- a) Express the degree of agreement with the following statement: "The application is deemed important in terms of ensuring the execution of the respective agenda. (5 level Linkert scale: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree)
- b) Express the degree of agreement with the following statement: "I am satisfied with the application (how the application works or how it performs the required functionality from my perspective)." (5 level Likert scale: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree)
- c) How likely is it that you would recommend the app to your friends or acquaintances from another office? (NPS scale: Improbable 0 1 2 3 4 5 6 7 8 9 10 Quite likely)
- d) Please tell us what you recommend to improve or what you are missing or matters in the application? (results of open questions will not be presented in this paper)

4. Examples of differences between Linkert scale evaluation and NPS

This part presents results of survey on four most used Apps in LCH. We compare level of evaluation of importance and satisfaction with Apps on Likert scale and NPS for each App. Figure 2 shows level of importance of each App. D-Help is the most important App and is used by most employs of LCH. It is used with solving problems and it could be used as a support tool. CODEXIS is App for system of law information. It is very used tool and it is evaluated as an important App. Less important Apps are Croseus and Ginis. Croseus is App for electronic management control system and Ginis is used for economic and information system.

FIG. 2: Evaluation of importance of Apps on Likert scale

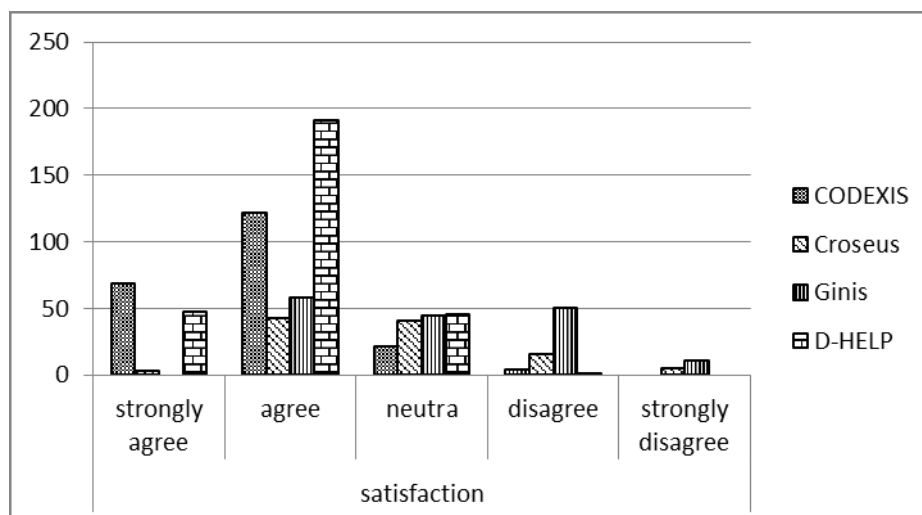


Source: own

Results of evaluation of satisfaction are almost the same as evaluation of importance. Worse value of satisfaction is reached by Ginis. Users added that App is slow, very complicated, contains many non-logical steps and it needs many manual operations. In

some cases is data duplicated with another Apps, which is not effective. Complexity and support for this App is needed for effectively work.

FIG. 3: Evaluation of satisfaction of Apps on Likert scale



Source: own

Percentage of promoters is biggest by CODEXIS and D-HELP which is similar as evaluation of importance and satisfaction on Likert scale. There is obvious connection between evaluation of satisfaction and importance on Likert scale and NPS. There is one difference between evaluations is in D-HELP Apps, which has 40 % of detractors and 30 % of promoters. Evaluation of satisfaction reached better result in general, but it was weaker in strongly positive answers. There is important how many people with positive answers are in passive zone and how many positive answers are in promoter zone. This research verifies ability of NPS to evaluate satisfaction of used Apps in public administration. Better view of processing of NPS is in long term, where it could be compare evolution of promotion of Apps by their users.

TAB. 1: Net Promoter Score for Apps

ICT Application	CODEXIS	Croseus	Ginis	D-HELP
Detractors	28%	76%	84%	40%
Passives	27%	17%	13%	30%
Promoters	45%	7%	2%	30%

Source: own

Conclusion

Presented paper introduce satisfaction survey of statutory city of Liberec ICT users at Liberec City Hall designed and implemented by authors and new research question raised during the processing of the results. During processing of questionnaires interesting fact come up, concretely that evaluation from Linkert scale matches with evaluation from NPS. Difference between Likert scale and NPS was significant only in fewer used Apps. That it forces us to raise it as research question for further processing of the questionnaire. During year 2017 the second round of evaluation will be performed and we would like to observe the possible differences. We are going to introduce the idea of NPS more deeply to the respondents to exclude the possible misunderstanding of method. And then we would like to compare results. So far our hypothesis is that NPS is more accurate tool for measurement of users satisfaction with ICT than the Linkert scale. We would like to proceed with this topic in further years.

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EDUCATIONAL FARMS AS AN EXAMPLE OF THE POLISH AGRITOURISM FARMS SPECIALIZATION

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agritourism – specialization – educational farm

JEL classification: Q12, J43, Z32

Abstract

Tourists in rural areas may participate in various forms of tourism, the most popular of which is agritourism. Agritourism farms are not only raising the accommodation standard but also searching for attractions which could be offered either by the farm itself or its surroundings. An example of such activity are educational farms, whose offer includes the educational component. The article is a theoretical-empirical paper and its aim is to analyse the descriptions of educational farms, presented on the Polish Educational Farms Network website.

Introduction

Agricultural farms and other economic entities in rural areas must comply with the mechanisms of the market economy. This means that in the countryside, apart from agriculture, other types of economic activity should be developed, related to farming or the needs arising in rural environment (Sikora & Wartecka-Ważyńska, 2009; Jęczmyk, 2015).

In rural areas, different forms of tourism can be developed, which may or may not have anything to do with a farm (Jęczmyk & Uglis, 2014). Recreation in the countryside is most often associated with agritourism, which involves resting at a farmer's home, on a functional farm, where it is possible not only to spend the night, eat meals, take part in field and farm work, observe animal breeding and plant production (which are the main attractions), but also to do recreational activities on the premises of and outside the farm (Jęczmyk, 2015). In recent years, agritourism has become one of the most popular forms of recreation. It is a key and priority component of a multifunctional development of rural areas (Jalinik, 2016), and a complex and multifaceted activity (Majewski & Lane, 2001). Agritourism is a term introduced by supply representatives, representing the interests of agricultural farms providing tourist services. Tourists understand agritourism as tourism activity chosen by people who want to learn something about agricultural production or have a rest in rural environment (Marcinkiewicz, 2013).

1. Research aim and methods

The article is a theoretical-empirical paper, and its aim is to analyse the descriptions of educational farms presented on the Polish Educational Farms Network website (<http://www.zagroda-edukacyjna.pl/index>). The object of study were the offers of educational farms, posted on this website.

TAB. 1: The number of educational farms on the website, by provinces

Provinces	Number on the website	%	Number chosen for study	%
Lower Silesian	27	12.4	25	12
Masovian	22	10.1	22	10.6
Małopolskie	22	10.1	21	10.1
Świętokrzyskie	17	7.8	17	8.2
Pomeranian	17	7.8	16	7.7
Silesian	16	7.3	16	7.7
Podkarpackie (Sub-Carpathian)	13	6	13	6.1
Opolskie	12	5.5	12	5.8
Wielkopolskie	11	5.1	10	4.8
Warmińsko-Mazurskie	11	5.1	9	4.3
Łódzkie	10	4.5	10	4.8
Lubelskie	10	4.6	9	4.3
Kujawsko-Pomorskie	9	4.1	8	3.9
Podlaskie	9	4.1	8	3.9
Lubuskie	7	3.2	7	3.4
West-Pomeranian	5	2.3	5	2.4
Poland	218	100	208	100

Source: authors' elaboration based on <http://www.zagroda-edukacyjna.pl/index.php> 26.09.2016

During the study (26th September 2016), the authors conducted a detailed analysis of 218 offers and chose 208 farms, whose educational offers were described in detail, for further analysis (Table 1). They constituted 95.4% of all offers.

2. Specialization in agritourism

Agritourist activity in Poland is run by over 8000 farms, which offer over 84,500 accommodation places. Nearly 40% of the functional agritourism farms in Poland can be found in the Małopolskie, Sub-Carpathian and Warmińsko-Mazurskie Provinces (Ministerstwo Rolnictwa i Rozwoju Wsi, 2015).

The development of agritourism in Poland has become an inseparable element of the rural area development. It may become a specific, distinguishable form of tourism in Poland, on the condition that the original cultural and natural character of the Polish countryside is preserved (Ministerstwo Sportu i Turystyki, 2008). Agritourism potential

for the development of rural areas has been financially supported for years, within the framework of aid programs co-financed by the European Union (Satoła, 2009). Agritourism responds to the customers' needs, and satisfying tourists' needs makes it possible to obtain an additional source of income, but also have the upper hand in the competition with other tourism entities, which do not offer services other than accommodation (Jęczmyk, Maćkowiak & Uglis, 2014). Clients' growing expectations, as well as their increased awareness are the reasons why many agritourism farms start to specialize (Kurtyka-Marcak, 2015). This allows them to achieve a satisfactory quality level, as well as enables them to make use of the potential of the farm and the family members (Karbowski, 2014). With the large supply of agritourist lodgings, they must offer something special, different, and look for their own clientele. The element which plays an increasingly important role in constructing the tourism product in the country is specialization based on authentic rurality. It involves not only raising the standard of accommodation, but first of all looking for attractions which might be offered by the farm itself or its surroundings (Grzegórska, 2014).

Currently, a new function of the countryside and the country farm is beginning to take shape – the educational function (Kmita-Dziasek, 2011). An example of including education in agritourism are educational farms, which are also a very good example of innovative entrepreneurship in the rural areas of Poland (Bogusz & Kania, 2016). The concept of the educational farm, together with its terminological market identification, is the outcome of a Polish project run by the Agricultural Advisory Centre, Krakow Division, and approved by the Ministry of Agriculture and Country Development in November 2011. Its implementation resulted in creating the Polish Network of Educational Farms. The main reason for creating these farms was the search for new motivations for farmers to continue farming activity and the belief that a farm possesses a unique potential to run attractive educational activities, which may familiarize the global society with farmer's work and the origins of food (Kmita-Dziasek, 2014).

The term “educational farm” signifies rural farms with farm animals or plants, which are presented to groups of children and youth arriving as part of school curricula, or made available as a tourist attraction to families with children and to adults traveling alone. They also realize educational programs within the scope of at least two of the following areas: plant production, animal breeding, crop processing, awareness, ecological and consumer education, rural material culture heritage, traditional occupations, handicraft and folk art (Kmita-Dziasek, 2015).

The essence of educational farms' activity is familiarizing the society with the natural farm environment, popularizing knowledge about the origins of food, the hard work involved in producing it and the significance of agriculture, so that a growing group of consumers could be built on the market. Therefore, a large part of the educational offer is devoted to the issues of ecological and consumer awareness, concerning, for instance, traditional food, food processing, local and regional cuisine, as well as local cooking

customs. Specific educational objectives are achieved based on the infrastructure and farming resources found on the farm and in its natural-cultural surroundings (Bogusz & Kmita-Dziasek, 2015). A modern approach to education makes a farm an attractive place to run classes integrating theory with practice in many school subjects (Kmita-Dziasek, 2011).

3. Educational farms' offer

The Polish Network of Educational Farms website presents 218 educational farms (27.09.2016). Most of them can be found in the Lower Silesian (12.4%), Masovian (10.1%) and Malopolskie (10.1%) Provinces, while they turn out to be the least popular in the West-Pomeranian Province (2.3%). After a detailed analysis of the offers presented on the website, the authors chose 208 educational farms for study according to an adopted pattern.

Educational farms realize specific educational objectives as regards agricultural (plant and animal) production, crop processing, ecological and consumer awareness, rural material culture heritage, traditional occupations, handicraft and folk art (Table 2).

TAB. 2: Educational objectives realized on the educational farms included in the study (%)

Plant production	Animal breeding	Crop processing	Ecological and consumer awareness	Rural material culture heritage, traditional occupations, handicraft and folk art
74.5	66.3	62.5	74.5	82.2

Source: authors' elaboration based on <http://www.zagroda-edukacyjna.pl/index.php> 26.09.2016

The objectives listed above are related to 12 different topics of classes offered by the farms (Table 3). The majority of classes concern nature in general (classes run by 90.9% of farms). Other popular classes concern agriculture and farm activities (75.9%) or involve recreation (75.5%).

TAB. 3: Topics of classes run on the educational farms included in the study (%)

Agriculture and farm activities	Food processing	Traditional food	Home-made cuisine	Artistic handicraft	Disappearing occupations	Customs and rituals	Regional education	Ecology	Nature	Sports activities	Recreational activities
75.9	59.6	75	60	60	51.9	55.3	70.6	66.3	90.9	49.5	75.5

Source: authors' elaboration based on <http://www.zagroda-edukacyjna.pl/index.php> 26.09.2016

However, the scope of the offers varies (Table 4). The visitors may choose to stay on the farm for one or several days, eat the food offered by the host or cook themselves. What is interesting, 18.7% of farms offered ticketed visits. 3.8% of farms offered just one option of stay, while all the options were offered only by 0.9% of farms.

TAB. 4: The scopes of educational farms' offers (%)

One-day program without the overnight stay	A program for a several-day stay, including accommodation	A ticketed visit	Full board	Self-catering
93.3	49.5	18.7	74.5	62

Source: authors' elaboration based on <http://www.zagroda-edukacyjna.pl/index.php> 26.09.2016

The educational offer of 97.6% of farms was directed at children at school age and adults (90.9%), as well as school youth (90.4%). It is worth pointing to the possibility of receiving special groups by 53.4% of farms. Most frequently, these are groups of handicapped people or organized groups.

TAB. 5: The recipients of the educational offer (%)

Pre-school children	School children (primary school)	School youth (secondary school, university)	Adults	Children and youth not supervised by adults	Special groups
87	97.6	90.4	90.9	30.8	53.4

Source: authors' elaboration based on <http://www.zagroda-edukacyjna.pl/index.php> 26.09.2016

The vast majority of visitors (99%) were taken care of by the hosts (only in two cases it was the host's daughter and the farm workers). It is worth noting that in some cases, the farm owner employed a teacher and other people to run educational classes (Table 6).

TAB. 6: The person conducting classes on educational farms (%)

Host	Teacher employed by the host	Teacher – group supervisor	other
99	24.5	36.5	49

Source: authors' elaboration based on <http://www.zagroda-edukacyjna.pl/index.php> 26.09.2016

Apart from the host of the educational farm, the classes were run by their family members (34.3%) and different kinds of specialists (23.6%), such as bee keepers, mountain guides or potters. In 12.7% of farms, classes were also run by folk artists.

Conclusion

The research shows that the educational farms included in the study used their whole potential – the agricultural production facilities, human resources and the farm's surroundings. We should particularly stress the fact that as regards running educational classes, the hosts take advantage of the qualifications of other people, e.g. family members, hired teachers or other specialists in a given area.

Providing educational services on a farm brings the farmer many benefits: additional income, an opportunity to promote farm products and encourage clients to buy them, as well as to make every day routine life more varied, a longer season, personal development and new prospects.

Narrow specialization is a good direction in agritourist activity development. It is becoming more and more desirable, as it gives the farms a competitive position on the market, reducing the cost of running the activity and providing a unique, complete product at the same time.

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ENVIRONMENTAL POLICY IN CAR TAXATION

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Abstract:

This article monitors situation of environmental aspect related to taxation of buying a passenger car. First we distinguish an environmental car from less eco-friendly vehicles with focusing on importance of electricity in modern vehicles. Nowadays, implementation of electricity dominates in technological trends, which are used by car makers for reducing of emissions. Cars with lower are required because of environmental taxes, which are mainly oriented on passenger cars. These taxes are usually based on level of emissions of car and can motivate people to buying an environmentally friendly car. Besides these special taxes some countries use subsidies to convince people to buy for example batter electric vehicle. These instruments (especially taxes and subsidies) related to buying a new car used by chosen EU countries monitors the main part of article.

Introduction

Nowadays we are witnesses of new policy directions that focus on environmental problems. Especially in the European Union there is tendency to reduce emissions of all entities on its territory. Even this issue of air pollution poses one of the main pillars of the activities of EU institutions. This attitude also affects policy of EU member states because they have an obligation to respects this policy and integrate into their own legislation. At this point it is important to note that many governments of EU states create their own special laws focused on environmental problems. Overall governments want to convince (or in some cases coerce) people to act environmentally friendly. One of the conventional methods, how to effectively influence behaviour of people, is change of taxation.

Focused on life of normal people it is evident that passenger cars are most common air polluters owned by households. If politicians really tend to reduce emissions, they change the taxation of cars. This change is characterized by progression of taxation depending on level of emissions of particular vehicle. There are a lot of compounds which are produced by cars, but the most of countries deal with CO₂ emissions. This

approach means that tax laws rate cars by the amount of emissions of carbon dioxide per kilometre. This solution is really one-sided because carbon dioxide is not the only pollutant and for example the EU directive includes regulation of all key pollutants which are produced by passenger cars. EU directive is primary important for car makers and car dealers but secondary it influences what people buy because they cannot demand cars which no dealer offers. On the other hand, tax legislation influences mainly buyers because it increases (or decreases) the amount of money which is required to buy a vehicle. Finally, people are by this legislation motivated to buy environmental friendly car or not to buy a vehicle that produce a lot of emissions.

1. Environment-friendly cars and taxation

It was mentioned that EU directive changed market because car makers are forced to produce more environmental friendly cars. Car makers have to decrease emissions of their production line so they tend to research and develop new powertrains which can help them reach the goals of legislation. First way is, of course, to make conventional engines more efficient. This attitude brings for example start/stop system or diesel particulate filter. Other attitudes are conditioned by radical change of powertrains. These changes usually include some implementation of electricity into the powertrain.

This use of electricity can be combined with classic petrol or diesel engine; in these cases, they are called hybrids. There are three types of hybrids which differ from one another in the importance of electricity in the drivetrain. First of all, there is a mild hybrid which uses electric motor in some specific cases when driver needs more power. Electric motor is in this type of hybrid really weak, so it means that vehicle is not able to drive with using only the power form of this small electric motor. Another solution is called as full hybrid; this type of car has small only electric range (only few kilometres) and for charging batteries use only recuperation. On the other hand, plug-in hybrids are charging from power network and their electric range can be few tents of kilometres. These cars also have petrol engine for greater range. Finally, battery electric vehicles are cars, in which is electricity implemented in the broadest possible way and electric power is the only available because there is no petrol or diesel engine.

There are also few issues with implementation new environmental laws because of the controversial content. First of all, some people can disagree with environmental laws, especially when they change taxation. Environmental taxes can reduce budget of people, so they affect standard of living in particular country. It is very important, for successful application of environmental taxes, to convince the public of the rightness of the decision. Niklas Harring and Sverker C. Jagers (2013) have analyzed this problem of values of people. They emphasize that “unless there is a public acceptance of these policy instruments, they will seldom be successfully implemented, or be implemented at all.” (Harring & Jagers, 2013) Negative approach from public can ruin the effort of government to change public behaviour to make environmental decisions.

Other complications can arise when setting up rules environmental taxation because there is a variety of approaches and it is difficult to forecast the impacts of implementation different taxation systems. The following paragraphs outline situation in several EU countries because environmental legislation can have different background with various effects.

One of the most common attitudes to taxed non-environmental friendly cars is taxation based on the amount of CO₂ emissions. This approach is associated with registration tax, which amount is calculated depending on the level of carbon dioxide emissions. Another way can be characterized by “bonus-malus” (good-bad) system, for which is typical that this registration tax is not levied on cars with low level of emissions (or buyers even get subsidy) and, on the other hand, cars with higher level of emissions are taxed with higher tax rate. Other option for governments is motivated by subsidies for environmentally friendly car buyers.

2. Ireland

There is a relatively long tradition in environmental vehicle taxes based on emissions in Ireland. This taxation aims to reduce CO₂ emissions by changing consumers demand. Concretely, “the carbon emissions-differentiated vehicle tax system introduced by the Irish government in July 2008 was predicted to result in a 3.6–3.8% reduction in CO₂ emissions intensity.” (Giblin & McNabola, 2009) First studies of its impact were applied in 2011, when this type of research was made by Hugh Hennessy and Richard S.J. Tol (2011). They have identified, that whole environmental tax reform “*has led to a substantial shift to diesel cars, particularly for larger engines. We estimate that the overall market share of diesels will increase from 25% to 58% as a direct result of the tax reform.*” (Hennessy & Tol, 2011) It can be figures from this effect that people in Ireland have changed their behaviour, so environmental taxes have had an impact on Irish people.

Legislation in Ireland includes many environmental aspects in addition to transport to influencing car buyers, this article focuses on registration taxes. Car taxation is one of the activities of The Office of the Revenue Commissioners (known in Ireland as Revenue), whose “core business is the assessment and collection of taxes and duties.” (The Office of the Revenue Commissioners, 2016) First of all, there is a Vehicle Registration Tax, all Irish owners of a motor vehicle must register this vehicle when they want to use it on Irish roads. (The Office of the Revenue Commissioners, 2016) “Vehicle Registration Tax is chargeable on the registration of motor vehicles (including motor-cycles) in the State.” (The Office of the Revenue Commissioners, 2016)

Table 1 illustrates current tax rates (or amount of tax) of Vehicle Registration Tax in Ireland. It is clear from the table that cars with low level of emissions are taxed with lower rate. It is important, for right interpretation of this environmental Irish policy, to

note that first VRT Band cover relatively large CO₂ emissions range. This adjustment creates a situation, in which cars with no CO₂ emissions are taxed in the same way as cars with relatively low emissions, for example certain hybrid cars.

TAB. 1: Vehicle Registration Tax in Ireland

VRT Band	CO ₂ Emissions (g/km)	VRT Rate	Minimum VRT
A1	0-80	14%	€ 280
A2	81-100	15%	€ 300
A3	101-110	16%	€ 320
B1	111-120	17%	€ 340
B2	121-130	18%	€ 360
B3	131-140	19%	€ 380
C	141-155	23%	€ 460
D	156-170	27%	€ 540
E	171-190	30%	€ 600
F	191-225	34%	€ 680
G	More than 225g/km	36%	€ 720

Source: (The Office of the Revenue Commissioners, 2016)

There is another article of this legislation, which distinguish low emissions cars from cars with zero emissions. There is a “Repayment/Remission of VRT on Hybrid Electric Vehicles”, which is determined in the amount of €2,500 for new plug-in hybrid electric vehicle. (The Office of the Revenue Commissioners, 2016) Tax relief for new electric vehicles is 100% higher than for plug-in hybrid electric vehicles, so €5,000. (The Office of the Revenue Commissioners, 2016) There is, of course, certain difference between price of new technologies (with electric motor) and conventional cars, so this tax relief can be stimulation for consumers to buy an environmental-friendly car.

However, tax relief within Vehicle Registration Tax is not the only advantage, which can buyers of cars benefit. It has been found an organization, which provides other grants for environmental projects, called Sustainable Energy Authority of Ireland (SAEI). SAEI has a range of funding and one of them has been created for passenger cars. This grant is called Electric Vehicle Grant and supports buying an electric vehicle or plug-in hybrid vehicle. Buyers can get up to €5,000 depending on list price of approved car. (The Sustainable Energy Authority of Ireland, 2016) These two instruments can really help to convince people to buy a low emission car because these subsidies cover the price difference between classic motor vehicles and electric (or hybrid) vehicles.

Irish legislation, which is appointed to make environmental cars more attractive for their citizens, can be considered as one of the most complex. These special laws aggregate

two basic approaches: firstly, amount of tax progressively unfold from carbon dioxide emissions and, secondly, there are donations for low buying emissions cars.

3. Finland

Another country which want to stimulate people to buying cars with low level of emissions is Finland. There are couple of tax legislation, which affect amount of tax that must be paid in according to buy and drive a car in Finland. Reform in car taxation based on CO₂ emissions were discussed in Finland, so there are even views from experts on environmental taxation, for example from Nina A. Nygrén, Jari Lyytimäki and Petri Tapio. (2012) Their article monitors media debate related to environmental taxation policy, so it demonstrates the importance of public view. On the other hand, they figure out, that “despite a relatively wide-ranging discussion, the media debate made only a marginal contribution to public understanding of the prerequisites for environmentally sustainable transport.” (Nygrén, Lyytimäki & Tapio, 2012)

Most important part of above mentioned environmental tax reform is a registration tax of similar type as in the Republic of Ireland. This tax is payed after (or related to) first registration, which is needed to be able to drive a car in Finland, of a vehicle. “The amount of the car tax depends on the common retail price for the vehicle inclusive of tax on the Finnish market and on its carbon dioxide emissions per mass and its driving power.” (Finnish Transport Safety Agency, 2016) There is clear environmental aspect of taxation, because there is placed a great emphasis on emissions. Even if the car is old and there is no information about CO₂ emissions, this particular car will be taxed based on the mass and driving power of the vehicle and vehicle mass and CO₂ emissions of older cars typically increase together.

The biggest importance for environmental policy is the connection between amount of tax and level of CO₂ emissions. This positive dependency can affect behaviour of people, because relatively small emission difference between two cars make significant change of tax rate, so the price. Finnish attitude of emissions application is unique between European cars because there are usually set several groups and for each of them particular interval of level of CO₂ emissions. Finnish law differs from classic approach and for each level of CO₂ emissions is determined individual tax rate. (Finlex, 2016) There are rarely same tax rates for different level of emissions and tax rate usually increases by one to three tenths percent for each gram CO₂ per kilometre. It can be notice, that this is progressive type of taxation and it really is but it brings a new perspective on progressive taxation with mentioned subtle differentiation of each slight increase in emissions.

Above mentioned specific type of progression requires special attitude in setting tax rates. Natural way would be establishing obligatory formula to calculation of tax, but the approach of Finnish legislation (concretely Car Tax Act) is different. There is

comprehensive table, in which there are lines for each level of emissions from 0g per km to 360 and more g per km, so the table consists of almost four hundreds of lines. (Finlex, 2016) On the surface it seems that similar table can people confuse but for buyers, when they buy for example a family car, it is really simple, because they only find a particular value of emissions and then a tax rate. There are noticed some specific data in table below, for better understanding of vehicle registration tax in Finland.

TAB. 2: Registration tax in Finland

Emissions CO ₂	Tax rate 2016	Tax rate 2017	Tax rate 2018	Tax rate 2019
0	4.4	3.8	3.3	2.7
50	8.2	7.1	5.9	4.7
100	15.3	14.1	12.9	11.7
150	25.8	25.8	25.8	25.8
360<	50	50	50	50

Source: (Finlex, 2016)

It has been chosen few key values of CO₂ emissions and to them related tax rates for several years. Notable is fact, that the gap between zero emissions (and lower emission cars) expands every year. It means, that the taxation is more and more progressive. Car with no emissions, typically battery electric vehicles, are taxed at the rate at 3.8% in 2017 and this rate will decrease to 2.7% in 2019. The tax rate for cars with emissions of 100g CO₂ per km will reduce by 3.6 percentage points, which is more than lower emissions car. This level of emissions is really important not even for interpretation of tax policy but for buyers of cars, too, because around 100g CO₂ per km varies the most efficient cars with conventional drive.

4. Austria

Other countries use also similar registration tax, which is related to environmental aspect and one of them is Austria. Specific environmental taxation has been in Austria for several recent years. Typical attribute for Austrian system was label: “bonus/malus”, in which were integrated advantages for low emission cars and additional taxation for non-environment friendly cars. (Bundesministerium für Finanzen, 2016) V. Gass, J. Schmidt and E. Schmid (2014) have analyzed Austrian environmental taxation policy in transport with conclusion that “an up-front price support system (e.g. direct financial support, exemption from registration tax, bonus/malus system) seems to be favorable rather than taxation.” In reaction to this article it is remarkable that there is no more “bonus/malus system” in Austria.

NoVA-Normverbrauchsabgabe (can be translated as fuel consumption tax) must be paid in situation, when is car firstly registered in Austria, so it has also character of

registration tax. (Bundesministerium für Finanzen, 2016) The tax rate for each vehicle is calculate by the following formula (Bundeskanzleramt Rechtsinformationssystem, 2016):

$$\text{Individual tax rate} = \frac{(\text{Individual CO}_2 \text{ emissions} - 90)}{5} \quad (1)$$

The tax rate of NoVA can be up to 32% (according to formula it refers to 250 g per km), higher tax rates cannot be applied. On the other hand, there are two other applications, which affect effective tax rate (Bundeskanzleramt Rechtsinformationssystem, 2016):

- a) tax deduction for every car in amount of 300 euros
- b) cars with level of CO₂ emissions above 250 g per km are taxed more about 20 euros for every gram exceeding 250.

When the level of emissions of vehicle is lower than 90 g CO₂ per km, the tax rate is set to 0%. (Bundeskanzleramt Rechtsinformationssystem, 2016) This approach to environmental taxation means that there is no registration tax levied on cars with low or no fuel consumption (e.g. hybrids or battery electric vehicles). On the other hand, the maximum tax rate at 32% does not means that buyers of cars with higher emissions than 250 per km benefit because there is another treatment for non-efficient cars, mentioned above.

First of all, the absolute amount of tax deduction makes cars with relatively low level of emissions and low price at the same time tax free. This policy is oriented to middle class buyer, which want a new car. On the other hand, taxation stays environmental progressive and the deduction is so low that it cannot protect all buyers from paying NoVA.

It is clear, which basic pillars have been set in according to taxation policy. Cars can be divided into three groups based on CO₂ emissions: efficient cars, normal cars and non-efficient cars. Efficient cars have level of CO₂ emissions below 90 g per km and their buyers do not have to pay any registration tax. Mentioned tax relief can reach buyers of cars with low consumption, e.g. battery electric vehicles, hybrids and modern small cars with classic drivetrains. There is no tax relief or increase of NoVA for normal cars with CO₂ emission between 90-250 g per km but there is a significant progression based on emissions. The spirit of the legislation considers cars with emission above 250 g CO₂ per km and is taxed with extra absolute amount. Effective tax rate then, of course, depends on the price of particular vehicle.

Conclusion

There are more countries, which use similar registration tax or fees based on environmental aspects of cars in the EU. These three mentioned demonstrates three different attitudes to registration tax, which have common one basic character, can be

called: *environmental tax progression*. On the other hand, they are needed special subsidies for battery electric vehicle for better stimulation of people because of big price difference between electric cars and conventional cars.

Car registration taxes based on emissions are specific part of tax system and they are changing every single year. This evolution is caused by dynamic development in technologies used by manufactures. Special importance in implementing of environmental tax policy requires also public view, which influences its overall impact on country.

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FINANCIAL DEVELOPMENT, INCOME STRUCTURE AND URBAN RESIDENTS' CONSUMPTION STRUCTURE IN CHINA

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Abstract:

This paper using 2003-2012 provincial panel data, based on ELES and panel data model, studying the impact of financial development level on the consumption structure of urban residents in China. Studying find: first the consumption structure of the western region lags behind the eastern region; second, the influence of financial development level on the different types of family income and different types of consumption of urban residents' family is different, the promoting effect of financial scale on the consumption elasticity of wage income is almost identical in each consumer category; Third, the phenomenon of "financial repression" exists in the consumption of operating income on household equipment and services. The research results have good policy implications for China to use financial development to improve the consumption structure and expand domestic demand.

Introduction

In recent years, the economic growth of China is undergoing the key period of shifting consumption driven towards to investment driven, but the decline in consumption, regional consumption gap is more and more serious. As James Morgan proposed in the 1990 s, private consumption is the key to a country's economic growth, whereas consumer credit is a personal consumption growth of power source. Therefore, improving the level of financial development, stimulating the consumption growth is an important force in China's current economic growth.

1. Methods, literature overview

Since the Goldsmith (1969), Mckinnon (1973) and Shaw (1973) put forward the theory of financial repression, the relationship between financial development and regional consumption has attracted extensive attention of scholars. Flavin (1985) believes that the liquidity constraint makes consumers excessively sensitive to current income, consumers in the current income or insufficient cash flow and not from the credit

market was satisfied with the amount, they can only be based on current income or cash flow determines the consumption. Jappell and Pagano (1994) of the study pointed out that the financial development has led to intensified competition in the financial market, reducing the financial intermediation costs, so that consumers can more easily access to consumer credit, thus weakening liquidity constraints on consumer spending inhibition. Romer (1996) believes that consumer liquidity is expected to make the current consumption decline, rising saving rate, and the role of financial development to stimulate consumption not only reflected in the weakening of liquidity constraints on consumption utility, may also be reflected in the interest rate makes consumers more sensitive. Levchenko (2004) found that the financial development will spread the international risk, the consumer spending has played a smooth role, thus promoting the consumption growth. It is not difficult to see that the "financial repression" the phenomenon has hindered the growth of personal consumption, but also financial development by increasing consumption payment convenience, ease liquidity constraints and increase the income of residents expected way of stimulating the growth of personal consumption.

On the basis of learning from the western theories, the domestic scholars have made a research on the relationship between China's financial development and consumption and its structure. The effect of financial development and rural residents' consumption level research, Kai and Leining (2006) studies suggest that the phenomenon of financial repression exists in Chinese rural areas, the rural financial development level either long-term or short-term impact on the residents' consumption level were not significant. Bangyong and Bing (2012) found on the dynamic relationship between rural financial development and Chinese consumption in the 1979-2012 period, the rural financial efficiency and financial scale there is a long-term relationship between consumption of rural residents. Shunli and Yixuan (2014 years) using the 1995-2009 time series also found that rural financial development level and the level of consumption has a long-term stable relationship and the high level of rural finance development. For the consumption level of urban residents Guocai and Wenliang (2012) based on time series data of 1982-2009 showed that the level of financial development on the different types of consumption of urban residents stimulate the role of differences. Zhonghua and Yuan (2013) found that in recent years, the average propensity to consume of urban residents in China has declined, while financial development has a good effect on stimulating residents' consumption. Qingzheng and Huaquan (2014) to focus on urban and rural residents in the western minority areas, the conclusion of the study shows that the financial development of urban and rural consumption while exhibiting long-term relationship but there are significantly differences between regions, in Gansu, Yunnan and other areas of financial phenomenon suppression is more common.

The literature has a more comprehensive study of the relationship between financial development and the growth of household consumption, but there are still the following

problems: first, the relationship between domestic and foreign scholars mainly focus on the level of financial development and the consumption level of residents, there is little literature attention to relationship between financial development and consumption structure, improve and upgrade the consumption structure is an important part of improving the level of consumption; second, a large number of literature on the analysis of the relationship between the two at the same time, ignoring the influence of financial development level on consumption path, the level of financial development to stimulate or inhibit the consumption desire of residents, has a significant impact on the residents' marginal propensity to consume all kinds of income; third, mostly the research ignores the heterogeneity of the region, Chinese vast regions, there is a big difference in the level of economic development and social environment. Different, the level of financial development on the impact of the path of consumption must also be different.

In view of the above, this paper uses the provincial panel data of 2009-2012 to study the influence of financial development on the consumption structure of urban residents and the mechanism of financial development on the financial scale and financial efficiency. The main contributions of this paper are the following three points: first, the extended linear expenditure system (ELES) based on the model, study the influence of financial development level on consumption structure of urban residents in the family; second, a comprehensive analysis of the impact of consumption elasticity of different income level of financial development on Urban households; third, the influence on the level of financial development path the consumption structure in different regions were compared.

2. Selection of variables

According to the research needs and data availability principle, this study adopts 2003-2012 China panel data of 29 provinces, the selected data can be divided into three categories: urban residents' per capita expenditure, per capita income of urban households and financial development index. The first two types of data from the calendar year "China Statistical Yearbook", the last class of data from the calendar year "China Statistical Yearbook". Details are as follows:

- a) Per capita household expenditure of urban households. According to the "per capita consumption expenditure of urban households Chinese Statistical Yearbook" data will be divided into eight categories: the total consumption of food consumption, clothing consumption, residential consumption, home appliances and consumer services, transportation and communications consumption, consumer health care, education and entertainment products and services consumption and consumption of other goods and services. In 2003, the consumer price index for urban residents to adjust the data over the years.
- b) Per capita income of urban households. The per capita income of urban households is divided into four categories of urban residents per capita wage income of urban residents, family business income, property income urban

households and urban residents per capita transfer income. In 2003 as the base year, the retail price adjustments to the data.

- c) Financial development indicators. In the measure of financial development, there are two kinds of commonly used methods of foreign scholars: one is Mckinnon (1973) by the money stock (M2) and the gross domestic product (GDP) is that the degree of currency of a country; the two is Goldsmish (1969) put forward the total financial assets and GDP ratio said the financial ratio of a country, called Ge type index. The two methods are in general to measure a country's level of financial development, considering the lack of Chinese provinces of M2 and financial assets statistics, at the same time China the bank dominated financial system, the financial institutions at the end of the balance of deposits and loans to GDP ratio indicates a regional financial development scale at the end of the year, with financial institutions, loans and financial institutions deposits at the end is that financial efficiency in a certain area.

TAB. 1: Descriptive statistics

variable name ^o	symbol ^o	mean ^o	variance ^o	minimum ^o	maximum ^o
Wage income ^o	<u>lwage</u> ^o	9306.91 ^o	4574.84 ^o	3212.80 ^o	30173.04 ^o
Property income ^o	<u>fina</u> ^o	295.65 ^o	289.05 ^o	25.12 ^o	1641.24 ^o
Operating income ^o	<u>busi</u> ^o	1035.77 ^o	731.24 ^o	88.37 ^o	4351.78 ^o
transfer-payment incomes ^o	<u>tran</u> ^o	3518.95 ^o	1879.28 ^o	952.17 ^o	10993.54 ^o
Cloths ^o	<u>clot</u> ^o	1027.82 ^o	465.91 ^o	302.94 ^o	2937.68 ^o
Food ^o	<u>food</u> ^o	3504.32 ^o	1813.09 ^o	1384.27 ^o	15420.38 ^o
reside ^o	<u>hous</u> ^o	945.18 ^o	448.99 ^o	333.42 ^o	3342.85 ^o
Family equipment and services ^o	<u>equi</u> ^o	581.13 ^o	294.49 ^o	194.81 ^o	1772.11 ^o
Transportation and Communications ^o	<u>info</u> ^o	1209.57 ^o	765.00 ^o	376.81 ^o	4214.06 ^o
Health care ^o	<u>hosp</u> ^o	671.18 ^o	296.01 ^o	230.48 ^o	1775.34 ^o
Cultural and educational entertainment products and services ^o	<u>educ</u> ^o	1177.54 ^o	611.60 ^o	465.17 ^o	3853.35 ^o
Other equipment and services ^o	<u>othe</u> ^o	353.58 ^o	211.75 ^o	84.79 ^o	1475.35 ^o
Finance scale ^o	<u>scal</u> ^o	2.56 ^o	0.97 ^o	1.29 ^o	7.24 ^o
financial efficiency ^o	<u>effi</u> ^o	0.73 ^o	0.12 ^o	0.07 ^o	1.18 ^o

Source: (National bureau of statistics in China, 2004-2013)

Table 1 reports the basic statistical characteristics of all the variables in this paper. Among them, the wage income, property income, operating income and transfer income of urban residents per capita income of four, clothing, food, housing, household equipment and services, transport and communications, health care, education and entertainment products and services, other equipment and services that urban residents per capita consumption expenditure eight. It can be seen that the income of urban

households in China is mainly wage income and property income, and consumer spending is mainly concentrated in food, transportation and communications.

3. Urban residents' consumption structure and its influencing factors analysis

3.1. Based on ELES model analysis of the urban residents' consumption structure

Table 1 and table 2 reports Chinese East Midwest urban households consumption of all kinds of basic needs and marginal budget share, due to limited space, this paper only gives the analysis results of the four years of 2003, 2006, 2009 and 2012, this difference may represent the basic Chinese in recent ten years, the consumption structure change and area. As can be seen, in recent years, with the rapid development of China's economy, the per capita income of urban residents has been increasing, family consumption structure has undergone a more obvious change. The marginal budget share of clothing consumption is declining in China, which is much lower than that in the eastern part of China, which reflects the great differences in the economic development of China. It is worth noting that the food consumption in the East and West also showed a higher marginal budget share, and with the increase of time showing a U distribution, which shows that Chinese low-income residents in case of gradually out of poverty, household food consumption expenditure proportion gradually decreased, while high-income residents to pursue more nutrition the food, a better quality of life, food expenditure is also rising, also occupy most of the total household consumption expenditure. Traffic and communication consumption marginal budget share growing in China urban households, maintained a high level in the middle, this may be due to the central urban households per capita income is in the middle level Chinese, with ability for regular traffic and communication consumption, but also occupy the total consumption of family economy less the most. Household equipment and services as well as health care spending in China, especially in the eastern region, showing a downward trend year by year, indicates that this part of the products and services in the market has basically reached saturation. Cultural and entertainment products and services of the urban marginal budget share in the eastern region of total household consumption budget occupies the main position, relatively low in the central and western, and this gap is widening situation. The above analysis shows that there is a great difference between the consumption structure of urban residents in China area, the eastern region of the marginal budget share more focused on education and entertainment and three industry, consumption structure and consumption structure is the leader, the central and western regions relative to the eastern performs a certain lag.

TAB. 2: The consumption structure of urban households in 2003 and 2006 regression calculation results

Consumption type	class	2003			2006		
		east	middle	west	east	middle	west
clothing	basic needs	478.359	408.436	245.320	668.661	574.238	461.613
	marginal budget proportional	0.043	0.141	0.145	0.058	0.134	0.139
food	basic needs	1179.225	502.154	599.827	1821.321	439.036	836.604
	marginal budget proportional	0.114	0.102	0.200	0.105	0.161	0.175
housing	basic needs	329.581	119.981	238.877	718.023	418.119	304.300
	marginal budget proportional	0.121	0.121	0.129	0.068	0.059	0.132
equipment	basic needs	155.194	180.511	205.014	218.778	182.68	167.086
	marginal budget proportional	0.148	0.211	0.080	0.139	0.241	0.148
information	basic needs	247.689	117.786	127.659	308.480	251.453	294.077
	marginal budget proportional	0.164	0.115	0.145	0.212	0.248	0.159
hospitalization	basic needs	318.751	282.219	167.948	470.348	480.755	126.171
	marginal budget proportional	0.076	0.043	0.148	0.067	0.008	0.118
education	basic needs	292.495	286.431	286.902	343.577	311.069	291.644
	marginal budget proportional	0.172	0.160	0.160	0.200	0.195	0.181
other	basic needs	77.334	146.678	343.057	131.015	331.345	505.667
	marginal budget proportional	0.152	0.107	0.000	0.151	0.025	0.000
Basic aggregate demand		3078.628	2044.196	2214.604	4680.203	2988.695	2987.162

Source: (National bureau of statistics in China, 2004-2013), using stata12.0 for regression.

The basic expenditure of all kinds of consumption of urban residents is closely related to the degree of prosperity in the region. 2003 Eastern, central and western urban residents per capita basic total demand expenditures were 3078.628, 2044.196 and 2214.604 yuan, of which, the eastern part is more than 1.4 times the western region, while the western region is slightly higher than the central. In 2006 it was 4680.203, 2988.695 and 2987.162 yuan, urban residents in the eastern region of the total expenditure per capita basic demand is about 1.57 times that of the Western Midwest has not much difference between. 2009 East of this data has reached 1.67 times in the west, the gap in 2012 to further expand, reaching 1.72 times, the central and western regions have gradually opened. As can be seen, China's urban residents per capita basic aggregate demand expenditure showed a very significant level, and the gap is gradually expanding. From inside the area of urban residents basic consumption expenditure, expenditure of basic demand in almost all consumer categories on the eastern region are higher than the Midwest, the consumption structure of the central and western regions is relatively low, the basic demand is concentrated in food, housing and other living

consumer goods. The eastern town of consumers pay more attention to the quality of life, health care, transportation and communication, education and entertainment products and services of the basic needs of higher in food consumption is far higher than the Midwest, which is mainly caused by the high cost of living in the eastern region. Therefore, the eastern region of urban residents has the optimal consumption structure, and the difference between the central and western regions is the most optimal consumption structure.

TAB. 3: The consumption structure of urban households in 2006 and 2009 regression calculation results

Consumption type	class	2009			2012		
		east	middle	west	east	middle	west
clothing	basic needs	1388.638	1249.625	573.260	1583.583	1434.284	634.867
	marginal budget proportional	0.045	0.151	0.120	0.038	0.127	0.131
food	basic needs	2564.956	1285.132	1323.976	3182.402	2714.761	1655.381
	marginal budget proportional	0.112	0.166	0.119	0.120	0.092	0.151
housing	basic needs	1466.109	1115.439	1203.934	1512.172	667.601	1121.157
	marginal budget proportional	0.051	0.011	0.168	0.026	0.107	0.006
equipment	basic needs	338.386	110.734	129.016	502.479	275.576	335.193
	marginal budget proportional	0.144	0.281	0.173	0.134	0.181	0.097
information	basic needs	498.318	121.348	294.237	818.250	304.649	789.200
	marginal budget proportional	0.213	0.351	0.104	0.187	0.263	0.109
hospitalization	basic needs	835.890	372.878	190.059	1210.830	679.255	393.907
	marginal budget proportional	0.033	0.167	0.152	0.005	0.063	0.114
education	basic needs	393.623	287.051	214.880	440.473	325.976	235.482
	marginal budget proportional	0.223	0.214	0.105	0.246	0.242	0.193
other	basic needs	176.924	194.856	232.141	159.621	427.258	108.817
	marginal budget proportional	0.179	0.104	0.047	0.242	0.025	0.199
Basic aggregate demand		7262.844	4737.063	4361.503	9409.81	6829.36	5474.004

Source: (National bureau of statistics in China, 2010-2013), using stata12.0 for regression

3.2. The influence factors of urban residents' consumption structure analysis

Table 4 reports the regression results of the effect of financial development on the consumption structure of urban residents. In the total consumption expenditure, wage income, operating income and financial scale and financial efficiency of the interaction in different extent reached statistical significance, illustrate the impact of wage income, operating income to total consumption expenditure elasticity by the financial scale and

financial efficiency, and the regression coefficient of property income though did not reach statistical significance, but the financial scale and financial efficiency of the interaction on the total consumption expenditure has a significant influence, shows that the elasticity of property income to total consumption expenditure entirely received the influence of financial development level of the area, transfer leads to the total consumption expenditure. Specifically, the financial scale increases the wage income (0.022), this is because, on the one hand, due to the existence of precautionary savings, savings as consumers will prevent countermeasures of future income decline, liquidity constraints, and the financial scale continues to expand, the large amount of consumers can alleviate the liquidity constraints of consumer credit the marginal propensity to consume, so as to improve the working families, as wage income increases consumption elasticity. On the other hand, the financial scale continues to expand, intensify the competition in the financial industry, thus reducing the financial intermediation, and accelerate the speed of transactions, convenient for consumers to settle transactions, and stimulate consumer desire. But the financial scale reduces the consumption elasticity of operating income (-0.178), which shows that the current Chinese in the overall operating income on consumption of "financial repression" phenomenon, this may be due to the operator is the strong demand of credit resources, but the current financial China scale development level is still not high, the operator can obtain from financial institutions with only a small portion of credit resources, on the one hand, or difficult to obtain a low level of credit resources will reduce the operator's expectations for the future; on the other hand, the income gap between the level of widening operators, lower overall operating income elasticity of consumption. On the contrary, the financial efficiency of consumption elasticity of property income (0.092), this may be due to the financial efficiency of financial institutions presents the relation of input and output, the efficiency of financial development on the whole household property income and property income was reduced between high and low income people the gap (Chen Gang, 2015), which improves the overall property income and consumption elasticity of marginal propensity to consume.

From the consumption structure, the wage income of various types of commodity consumption expenditure significantly promoted, but some will be constrained and adjustment of financial development, the consumption expenditure of urban residents Chinese "mental account" is weak, tend to put money hard-earned money in consumer spending, to get more utility this family, and the consumption of rural residents have strong "mental account" contrast (Tao, 2013). Specifically, the financial scale of transportation and communication outside the seven types of consumer or service wage income consumption elasticity has a significant positive effect, which may be due to traffic and communication consumption is more dispersed, not by financial measures such as consumer credit. The financial efficiency promotes the elasticity of wage income on health care, education and entertainment equipment and service consumption, consumption of which two belong to the same service expenditure,

financial efficiency to stimulate consumption through the wealth effect of households. At the same time, its clothing, food, housing, household equipment and services, health care, five kinds of goods or services, the property income elasticity of consumption also has a significant role in promoting. Financial scale and financial efficiency of operating income in all kinds of commodities, almost all appeared "financial repression" phenomenon, especially in the domestic equipment and service consumption is the most serious. What is interesting is that the financial efficiency of entertainment education equipment and services consumption of property income elasticity has a inhibitory effect, which also shows that the rapid development of the financial sector will enable investors to reduce the enjoyment of entertainment education.

TAB. 4: Regression results

Consumption type ^⓪	lnall ^⓪	lnclot ^⓪	lnfood ^⓪	lnhous ^⓪	lnequi ^⓪	lninfo ^⓪	lnhosp ^⓪	lneduc ^⓪	lnothe ^⓪
Intercept ^⓪	1.931*** ^⓪ (14.69) ^⓪	-1.870*** ^⓪ (-8.95) ^⓪	0.864*** ^⓪ (4.37) ^⓪	1.528*** ^⓪ (5.13) ^⓪	-2.980*** ^⓪ (-10.49) ^⓪	-2.659*** ^⓪ (-9.48) ^⓪	0.187 ^⓪ (0.578) ^⓪	0.288 ^⓪ (1.04) ^⓪	0.525 ^⓪ (0.99) ^⓪
lwage ^⓪	0.544*** ^⓪ (13.94) ^⓪	0.789*** ^⓪ (12.49) ^⓪	0.530*** ^⓪ (9.00) ^⓪	0.178*** ^⓪ (1.98) ^⓪	0.339*** ^⓪ (3.94) ^⓪	0.820*** ^⓪ (9.66) ^⓪	0.409*** ^⓪ (4.10) ^⓪	0.579*** ^⓪ (7.05) ^⓪	0.660*** ^⓪ (4.15) ^⓪
fina ^⓪	0.005 ^⓪ (0.11) ^⓪	-0.100 ^⓪ (-1.27) ^⓪	-0.118 ^⓪ (-1.60) ^⓪	-0.214** ^⓪ (-1.90) ^⓪	-0.233** ^⓪ (-2.17) ^⓪	0.199* ^⓪ (1.87) ^⓪	-0.318** ^⓪ (-2.53) ^⓪	0.265*** ^⓪ (2.55) ^⓪	-0.197 ^⓪ (-0.96) ^⓪
busi ^⓪	0.126** ^⓪ (2.09) ^⓪	0.386*** ^⓪ (4.04) ^⓪	0.293*** ^⓪ (3.26) ^⓪	0.363*** ^⓪ (2.66) ^⓪	0.669*** ^⓪ (5.15) ^⓪	-0.039 ^⓪ (-0.30) ^⓪	0.227 ^⓪ (1.48) ^⓪	0.037 ^⓪ (0.29) ^⓪	0.094 ^⓪ (0.38) ^⓪
tran ^⓪	0.202*** ^⓪ (8.42) ^⓪	-0.79** ^⓪ (-1.89) ^⓪	0.124*** ^⓪ (3.32) ^⓪	0.303*** ^⓪ (5.10) ^⓪	0.337*** ^⓪ (5.94) ^⓪	0.159*** ^⓪ (2.84) ^⓪	0.353*** ^⓪ (5.66) ^⓪	-0.033 ^⓪ (-0.67) ^⓪	0.237** ^⓪ (2.28) ^⓪
scal×lwage ^⓪	0.022*** ^⓪ (4.70) ^⓪	0.029*** ^⓪ (3.64) ^⓪	0.028*** ^⓪ (3.93) ^⓪	0.029*** ^⓪ (2.56) ^⓪	0.041*** ^⓪ (3.85) ^⓪	0.017 ^⓪ (1.61) ^⓪	0.046*** ^⓪ (3.81) ^⓪	0.021*** ^⓪ (2.12) ^⓪	0.020*** ^⓪ (3.52) ^⓪
effi×lwage ^⓪	-0.006 ^⓪ (-0.16) ^⓪	0.074 ^⓪ (1.25) ^⓪	0.013 ^⓪ (0.23) ^⓪	-0.042 ^⓪ (-0.49) ^⓪	0.354*** ^⓪ (4.37) ^⓪	0.004 ^⓪ (0.05) ^⓪	-0.257*** ^⓪ (-2.68) ^⓪	0.204*** ^⓪ (2.56) ^⓪	-0.173 ^⓪ (-1.15) ^⓪
scal×fina ^⓪	-0.012 ^⓪ (-1.35) ^⓪	0.001 ^⓪ (0.07) ^⓪	-0.029 ^⓪ (-1.08) ^⓪	0.003 ^⓪ (0.15) ^⓪	-0.016 ^⓪ (-0.81) ^⓪	-0.025 ^⓪ (-1.20) ^⓪	-0.030 ^⓪ (-1.23) ^⓪	-0.006 ^⓪ (-0.28) ^⓪	0.014 ^⓪ (0.38) ^⓪
effi×fina ^⓪	0.092* ^⓪ (1.69) ^⓪	0.188*** ^⓪ (2.16) ^⓪	0.299*** ^⓪ (3.67) ^⓪	0.375*** ^⓪ (2.96) ^⓪	0.411*** ^⓪ (3.49) ^⓪	-0.052 ^⓪ (-0.44) ^⓪	0.529*** ^⓪ (3.81) ^⓪	-0.264*** ^⓪ (-2.29) ^⓪	0.297 ^⓪ (1.29) ^⓪
scal×busi ^⓪	-0.178** ^⓪ (-2.14) ^⓪	-0.040*** ^⓪ (-2.82) ^⓪	-0.014 ^⓪ (-1.12) ^⓪	-0.041** ^⓪ (-2.02) ^⓪	-0.042** ^⓪ (-2.18) ^⓪	-0.002 ^⓪ (-0.10) ^⓪	-0.043** ^⓪ (-2.00) ^⓪	-0.022 ^⓪ (-1.24) ^⓪	-0.031 ^⓪ (-0.91) ^⓪
effi×busi ^⓪	-0.063 ^⓪ (-1.00) ^⓪	-0.211** ^⓪ (-2.11) ^⓪	-0.231*** ^⓪ (-2.46) ^⓪	-0.248* ^⓪ (-1.74) ^⓪	-0.758*** ^⓪ (-5.59) ^⓪	0.056 ^⓪ (0.42) ^⓪	-0.075 ^⓪ (-0.47) ^⓪	-0.053 ^⓪ (-0.39) ^⓪	-0.007 ^⓪ (-0.03) ^⓪
Hausman test ^⓪	1.01 ^⓪	793.53*** ^⓪	9.96 ^⓪	155.52*** ^⓪	45.27*** ^⓪	131.21*** ^⓪	10.15 ^⓪	12.04 ^⓪	8.84 ^⓪
effect ^⓪	re ^⓪	fe ^⓪	re ^⓪	fe ^⓪	fe ^⓪	fe ^⓪	re ^⓪	re ^⓪	re ^⓪

Source: (National bureau of statistics in China, 2004-2013), using stata12.0 for regression.

Note: (1) In parentheses represent the t test value of regression coefficient, Hausman test for chi-square value; (2) " * * ", " * ", " * " respectively under the level of 1%, 5% and 10% to achieve statistically significant.

Conclusion

In this paper using the extended linear expenditure system (ELES) model the trends of Chinese urban resident family's consumption structure based on 2003-2009 years provincial panel data were studied. The perspective of financial scale and financial efficiency was followed studying the impact of financial development level on the consumption structure of urban residents in China using panel data model. This paper find: firstly, the consumption structure of the western region lags behind the eastern region. Secondly, on the whole, the influence of financial development level on the different types of family income and different types of consumption of urban residents' family is different, the promoting effect of financial scale on the consumption elasticity of wage income is almost identical in each consumer category; Third, the phenomenon of "financial repression" exists in the consumption of operating income on household equipment and services. Above all can be seen, Financial development is conducive to improve the consumption structure of urban residents in eastern China, improve the development level of financial coverage, the expansion of consumer credit, financial scale and financial efficiency and various income supporting upgrades is to improve the consumption structure of urban residents China, important measures to expand domestic demand.

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LACK OF SOFT SKILLS AMONG NEWLY RECRUITED EMPLOYEES

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Keywords:

soft skills – graduates – new recruits – communication – mindfulness

JEL classification: I2, A22

Abstract:

This discusses the issue of the apparent lack of soft skills among university graduates. The authors aimed to find out how students with some work experience view the need that employees wield soft skills. The results of applying the frequency analysis on part-time students' essays are shown and discussed. The survey pointed at the new recruits' lack of communication skills and at their exaggerated financial expectations. The potential follow-up research should focus on what can be done to improve student's soft skills, including alternative approaches like mindfulness training.

Introduction

This paper aims to determine what might be done in order to improve university graduates' soft skills as these skills are becoming extremely vital to both young graduates who are looking for a new job as well as those who have already got one. This study focuses on determining the most common mistakes that young graduates tend to make when they start their first job and problems they may encounter. This paper is based on views of part-time students, who study Management of Travel and Tourism at Faculty of Informatics and Management, University of Hradec Kralove. These part-time students have already been employed and have therefore personal experience from their workplace.

1. Methods, literature overview

The apparent lack of soft skills among employees is currently one of the hottest issues of the job market. For instance, Buhl (2016) lists six essential soft skills, namely communication skills, teamwork and collaboration, adaptability, problem solving, critical observation, conflict resolution, and he emphasizes that when it comes to soft skills, one should show they have them. According to businessdictionary.com (2016), soft skills are defined as follows: “Communicating, conflict management, human relations, making presentations, negotiating, team building, and other such ability, defined in terms of expected outcomes and not as a specific method or technique such as statistical analysis.” When defining soft skills, authors (e.g. Itani and Srour, 2016 or

Hurrell, 2016) often repeat terms like non-technical, interpersonal and intrapersonal, social skills, teamwork and communication. Despite the fact that one may find a lot of definitions of this concept, not everyone agrees that it is clear what should be understood by soft skills and how to train them. For example, Matteson, Anderson and Boyden (2016) maintain that even though soft skills are a collection of people management skills important to many professions and job positions, the concept of soft skills still lacks definition, scope, instrumentation, and systematic education and training.

Meanwhile, it seems that soft skills are currently becoming a very important asset for those who are looking for a new job and universities therefore need to respond to this trend. For instance, Itani and Srour (2016) insist that researchers and employers agree that the 21st-century engineer must have a set of skills that were not emphasized in the past. They (Itani and Srour, 2016) add that many universities have started to implement program changes to produce well-rounded graduates and aim in their article to assess the gap between what universities are exposing their engineering students to and the requirements of the industry. The current efforts to enhance employability skills in undergraduate and graduate studies are also mentioned by Levant, Coulmont and Sandu (2016). They (Levant, Coulmont and Sandu, 2016) analyse the role of business simulations in developing soft skills based on an international survey of students' perceptions of developing soft skills during business simulations. According to Aclan, Abd Aziz and Valdez (2016), soft skills development is seen as essential in the 21st century knowledge economy but pedagogical tools to realise it are inadequate. They claim that debate practice can develop soft skills, particularly quick critical thinking and effective communication skills. Another author, namely Hurrell (2016), declares that soft skills are receiving ever more attention as employers frequently report that employees lack these skills but adds that organizations themselves may be to blame for their soft skills gaps if they do not contextually integrate selection, induction and training practices with their skills needs. Moreover, he (Hurrell, 2016) contends that soft skills gaps inside the organization may reflect poor recruitment, selection and training practices, or even negative reactions of employees to the employer. Also Schwartz (2016) emphasizes that the need to develop engineering students' communication skills is frequently discussed in meetings with industry representatives and at engineering education conferences.

This study was meant to find out how students with some work experience view the need to have soft skills. The authors decided to employ the frequency analysis. Part-time students who studied Management of Travel and Tourism (in the academic years of 2015/2016 and 2016/2017) were asked to write seminar papers - essays - answering the following question: What mistakes do graduates usually make in the first couple of months in their first jobs and what problems do they often encounter? More than ahundred papers were collected and analysed. All relevant data were collected and

arranged according to the frequency of similar answers. It was possible to assess two groups of responses. In the first group, there are data collected from all 100 essays. The second group consists of information gathered from essays of those 32 students who have had experience with a managerial job. The procedure resulted in generating two lists of the most common problems as they were seen by students with work experience.

Of course, this is only a pilot study but its findings correlate with those of other studies (e.g. Aclan, Abd Aziz and Valdez, 2016; Itani and Srour, 2016). Consequently, the following findings may be useful for universities and their employees in their efforts to implement either courses or methods aiming at improving their soft skills and therefore having a better chance of getting a good job.

2. Results

Based on all students' essays, the most frequent typical comments of the respondents about the newly recruited graduates are listed in TAB. 1.

TAB. 1: New recruits' most common problem issues

Ranking	The newly recruited employees...	Incidence
1	have exaggerated salary requirements.	72
2	cannot deal with people.	61
3	are unruly (latecomers, do not meet deadlines).	53
3	have exaggerated expectations about benefits.	53
5	cannot communicate adequately.	45
6	are too self-confident.	43
7	deal with their private matters in the workplace.	31
8	are impolite.	27
8	cannot tell how important a task is.	27
10	cannot express themselves precisely.	23
11	behave in an arrogant way.	21
11	use company devices for private purposes.	21
11	are not capable of introspection.	21

11	cannot take responsibility.	21
11	do not like to participate at corporate events.	21
16	are not active or enterprising.	18
17	are not determined.	17
17	like to criticize all and everyone.	17
17	have no idea what they are allowed to do.	17
20	are careless.	16
20	are not flexible.	16
22	take criticism very badly.	15
23	are not willing to become/capable of becoming team members.	14
23	do not want to learn new things.	14
23	are lazy.	14
26	sometimes underrate themselves and are diffident.	11

Source: the authors

The survey pointed at the new recruits' lack of communication skills as they cannot communicate and deal with others adequately. Moreover, they cannot express themselves precisely. They are often too self-confident, impolite and arrogant. Another criticism aims at their exaggerated financial expectations concerning both their salary and benefits.

Respondents with managerial experience have shared the following experience with their newly recruited colleagues and subordinates. They say that new recruits do not know that they do not know or cannot do something. Then, young graduates are used from universities do get everything without effort, have a big ego and no humility. They want a lot of money for little work, are conceited, do not look for help even though they do not know how to solve a problem. They also tend to demand their rights without carrying out their duties and are not willing to do anything that is not paid for. New recruits do not distinguish the difference between the important and the trivial, they procrastinate, do not ask about anything as they do not know what to ask about. Last but not least, they have unrealistic expectations.

3. Discussion

The findings suggest that the respondents agree that newly recruited employees lack soft skills. It may be in line with the results cited above, namely with Aclan, Abd Aziz and Valdez (2016), who contend that the soft skills development is seen as essential in the 21st century knowledge economy but pedagogical tools to realise soft skills development are inadequate, or Schwartz (2016), who perceives the need to develop students' communication skills.

Our further research should look into the ways how to improve soft skills development at our faculty. The authors teach Business Ethics at the Faculty of Management, University of Hradec Králové. This subject is concerned with human behaviour in the workplace as well as with communication both in business and in general. Of course, students who attend BE classes have enough opportunities to practice their communication skills but it remains to be proved whether or not they are able to transfer the results of this training into the business setting. This is therefore one possible outline of a follow-up research.

Another potential line of research lies in determining what else can be done to improve student's soft skills. For instance, new ways of teaching soft skills may be introduced. In 2016, mindfulness training was introduced to BE classes for the first time. An external teacher was invited to lead a lesson based on this approach, which can be explained as paying attention to the present moment and has to do with both communication and introspection. Based on the immediate reactions of students who attended the class, the authors believe that mindfulness practice is worth getting some space in BE classes.

Conclusion

The current issue of the lack of soft skills among newly recruited graduates opens a discussion about ways how implement soft skills training and development into university education. This paper showed that students themselves, albeit those who already have a job and study only part-time, recognize this lack of soft skills and are critical about it. They perceive that new recruits usually cannot communicate and deal with their colleagues adequately. Unhealthy self-confidence, impoliteness and arrogance thrive in the workplace as well as exaggerated expectations concerning salaries and benefits.

The question remains, how to adjust undergraduate training to improve the situation. It is not clear whether or not it is possible to transfer the traditional training of communication skills into the business setting. Alternative types of training, e.g. mindfulness training, may look promising but it also needs time before they prove their worth, become established in the syllabi and bear their fruits.

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BUILDING A DATABASE SYSTEM FOR MANAGEMENT OF RAIL LOADING PROCESSES SUPPORT

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Keywords:

process management – database system – aggregate mine – rail loading

JEL classification: O310, O320

Abstract

The paper presents the possibilities of improving the rail loading process at a mine of aggregate and building a database system as an element of the process management system to be implemented. An analysis of the production process indicated possibilities for improvements, inter alia, in the provision of freight cars or in the flow of information and documents. The use of a dedicated database system is a natural consequence of the need to support the process management through computerization. The outcomes of the study include for example the shortening of the time from the arrival of a set of cars to the commencement of car loading operations or the improvement in the method of reporting.

Introduction

The growing demand for aggregate produced in Poland and the related investments in the infrastructure development determine the need to use more and more technologically sophisticated production and auxiliary processes. The mere implementation of process management does not guarantee obtaining competitive advantage and meeting all customer's requirements, so it is also necessary to support it by computerization and improvements (Brocke 2016; Camisón, 2016; Weske, 2010). The popular saying “If you can’t measure it, you can’t manage it” (Bolsinger 2015) gains in importance.

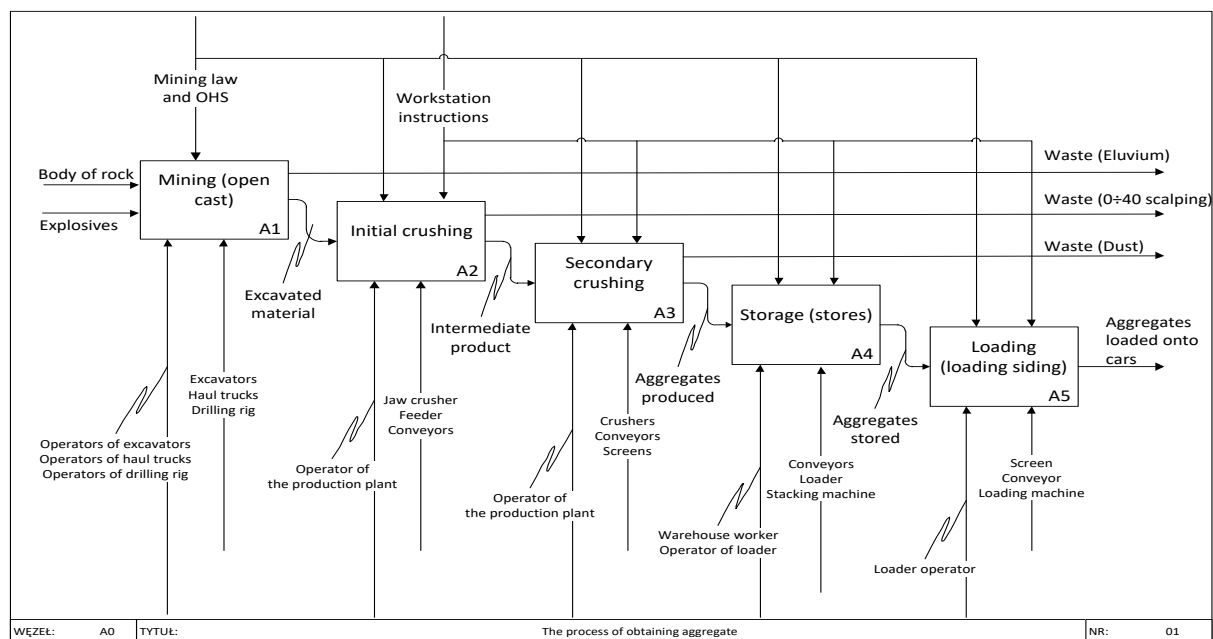
The aggregate mine in question has several main processes, the control and improvement of which is very important from the point of view of the competitiveness. They include haulage from the open cast to production, as well as the production and loading of aggregate onto cars. The necessity for improvements in logistic processes results from the assumption that it is necessary to achieve the level of daily shipments of aggregate of 8,000–10,000 Mg/24 h. However, to ensure that the maximum daily tonnage is loaded on cars, a very well organized process is required, in which there are

neither downtimes, information errors nor drops in performance, while an efficient flow of documents is guaranteed.

1. Description of the process of aggregate production

The aggregate mine in question is an opencast mining plant located in the Lower Silesian Province, near the border with the Czech Republic. Due to the favourable location, the aggregate is sold both on the Polish and Czech markets. In recent years, a new production line has been launched. It is able to process 1.5 million Mg in the processing plant, which means output at a level of 2 million Mg per year. In order to provide such an amount of the material for processing, mining operations must be organized well. The extraction process is conducted using a blasting technique and a mechanical mining technique (excavator). The output is hauled from the open cast by haul trucks with a load capacity of 25–30 Mg which transport the blasted material to a jaw crusher. The resulting intermediate product is transported by conveyors from the jaw crusher to the secondary crushing stage and then is stored in the buffer store. The transport between plants, storage places and railway siding takes place with the use of belt conveyors (some conveyors have a capacity up to 700 Mg/h). The finished products are transported from screens to the buffer store where they are stored in nine piles. General diagram showing the flow of material is presented in Fig. 1. The description was performed with the use of IDEF. This is a family of methods comprising the methods for modelling companies in terms of their functions (Mayer, 1994).

FIG. 1: General diagram of the processes – from the open cast to loading aggregate onto freight cars, IDEF0



Source: own study

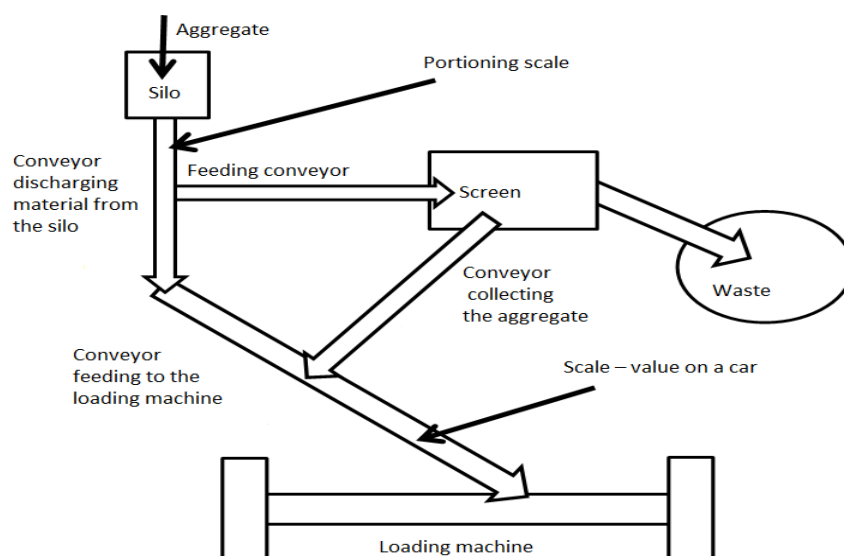
Crushed aggregate created during processing operations is used in construction of buildings, roads and railways. In the road construction sector, aggregates are used for subgrade and some pavements, regardless of layer, while in the rail industry – as rail subgrade and ballast. In construction of buildings, aggregates are used in high-strength concrete. Different types of aggregates are produced. They meet the requirements set out for them according to their applications. Quality standards determine the grain size distribution, absorption capacity, PSV value, freeze resistance, dust content, cubicity of grains and strength.

2. Loading process (state before improvements)

The process of rail loading is one of the major processes – right next to the production process. The expected efficiency can be achieved only if all disturbances are limited and there is an effective organization of people's work and the course of the process. The owners of the process are logistics specialists, who are responsible for its proper implementation. At the process input, there are: empty cars, loading plan, and stored aggregate. In turn, at the process output, there is a set of loaded cars ready for departure from the mine. The supplier of empty cars as an input component is the carrier, who is also a client of this process. The primary objective of the process is to load the set of cars provided by the carrier.

The rail loading process includes four locations: the buffer store located at the production and the main store, the loading siding located at the mine (Fig. 2) and the railway siding that handles rail loading, which is located at a distance of approx. 3 km from the mine.

FIG. 2: Diagram of the loading siding



Source: own study

The loading process can be divided into many different activities and sub-processes combined into sequences. The most important are two sub-processes: admission to the last car and portioning of the material. In this case, process management must take into account the information flow associated with operations of loading cars and entire sets, as well as the flow of documents between the activities, which are used before, during and after the loading process. The information provided plays an important role in the process, because the decisions concerning the order of providing the cars and loading the fractions are made. The most important documents related to the process include: list of cars, weighing report and loading report.

The transport from the store is carried out with the use of conveyors, which are located in the tunnel under the piles of finished products. The material from the cones is fed onto a belt conveyor through vibration chutes. The cars to be loaded arrive first at the service siding where they are registered – a list of cars is created. After the staff operating the siding that handles loading operations has provided the information about the arrival of cars to the logistics department, a decision on which set is to be loaded as the next one is taken on the basis of the weekly loading plan.

After the entire set of cars has been loaded, the loading operator hands over a list of cars along with the tonnage loaded on each car, which takes into account the maximum load capacity of each car in the set. The amount of aggregate loaded is taken from printouts from the scale located on the conveyor that feeds the material to the loading machine.

3. Process areas that require improvements

When analysing the loading process, several main areas that need to be improved can be indicated:

- a) provision of cars,
- b) lack of standardization of settings,
- c) capabilities of the system that handles loading operations are not used fully,
- d) errors or deficiencies in the information flow,
- e) no analysis of causes of downtimes,
- f) problems with the flow and analysis of documents.

Provision of cars – currently the loading operator sets car during their arrival. There is a possibility of improvement by making appropriate markings on loading tracks for the driver providing the cars. The cars must be set in such a way that the motion sensor is able to identify the cars standing at the machine.

Another element that requires improvement is the computer system that handles loading operations. The capabilities of this system are not fully used. The loading operator loads cars one by one. After the operator has set a batch by, the cars are loaded in the automatic mode or by the operator in the manual mode. It is possible in the system to

define an entire set of cars and their loading in the automatic mode without participation of the operator, but this requires a reconfiguration of the system.

Admissions to the last car – the last car should be loaded with the same amount of aggregate in order to not exceed the load planned for the entire set. This situation is complicated by the fact that the structure of fractions in the aggregate must remain unchanged. It is a time-consuming task – admission for one fraction takes approx. 15 minutes. At five fractions in the mix of aggregates, the time of loading is extended by over an hour. Eliminating the admission would require checking and calibrating the scales located in the store and within the production and loading process.

The flow of information – lack of information about the cars departing from the siding that handles loading operations. The lack of information results in a delay in the start of rail loading operations. The time of travel of cars from the service siding to the loading siding is approx. 20 min. This is a sufficient period of time, which allows preparing for the start of loading operations at the time of entry of cars. In the absence of this information, the preparations for the start of loading operations can commence after the entry of cars to the loading siding. Another element concerning the problems is the lack of information for operators from the logistics department on the schedule of sets of cars for a given day of loading, which results in a suspension of the preparations for the start of loading operation until the arrival of the cars.

The flow of the documents associated with loading operations is also very important. It allows setting the system properly and controlling the loading process. The main document, which allows starting the loading operations, is the list of cars that contains information about the numbers of cars, load limit, car length, the amount of cars put on each of the loading tracks. This information is recorded at the siding that handles loading operations, from where it later gets to the loading siding in the form of printout. On the basis of the information included in the list of cars, the operator can determine the size of a batch per car. The problem with the flow of this document is such that it does not always get to the loading siding, which creates problems during loading operations and forces the operator to check the load capacity and length of cars. A useful document from the point of view of operators is the loading plan. Unfortunately, the operators do not have access to it, which makes it difficult for them to identify the correct set of cars. Another document used to control the loading process is the loading report that takes into account the parameters such as the time of provision of cars, start/end of loading, the number of cars, the carrier, and downtimes. However, this document is analysed only superficially – for example: whether a lot of time has passed from the provision of cars to the start of the loading process, how many cars were loaded at a given time. There is no accurate analysis of the performance. In addition, the report is created in a paper version and the logistics department enters the data to the electronic version and sends it to all persons concerned. Within the loading report, records of downtimes interrupting the loading operations are kept, however an

analysis of such downtimes in terms of the type and importance of the downtime is not performed. Summing up the problems to be solved, the following is proposed:

- a) changing the method of reporting,
- b) eliminating redundant activities,
- c) adding verification activities,
- d) identifying additional necessary information,
- e) improving the availability of the information on loading operations to loading operators and the departments that do not participate directly in the process,
- f) collecting data for the needs of the performance and downtime controls,
- g) assigning permissions to enter and review the documents relating to loading operations,
- h) changing the manner of communicating the information about the cars between the siding that handles loading operations, the loading siding and the logistics specialist,
- i) changing the flow and availability of selected documents.

4. Improvement of the loading process with the use of the database system

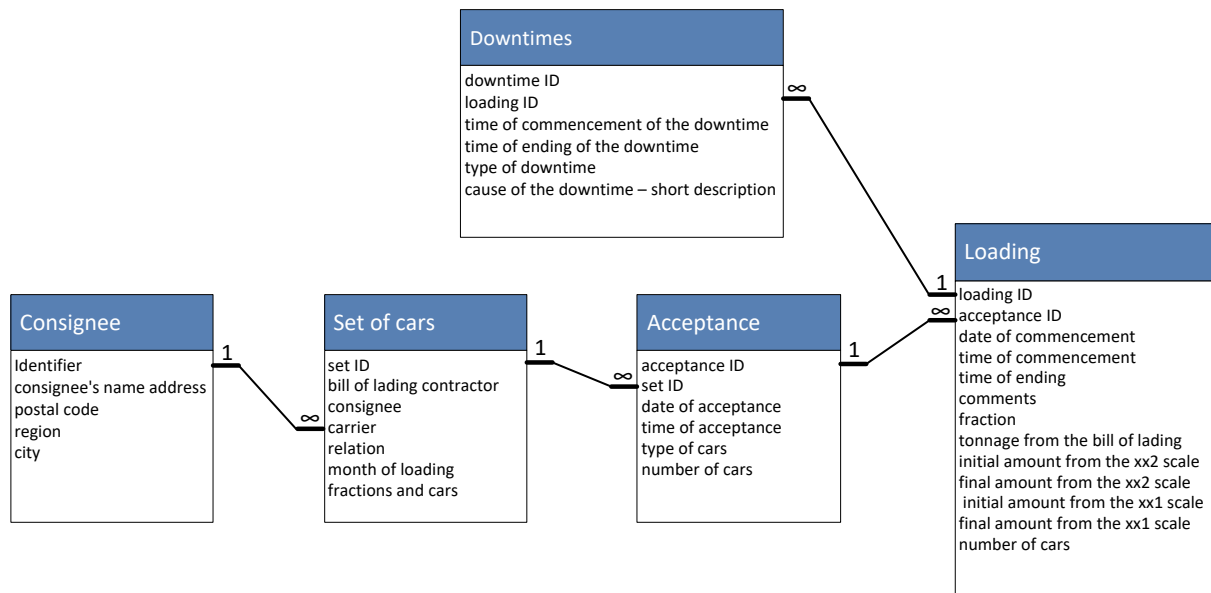
Currently, the flow of information associated with the process of rail loading takes place with the use of mobile phones or electronic mail. Using the database, the same information can be sent and its flow can be changed. The database will be created on the basis of a relational model, i.e. with the use of tables that represent relations and are linked with each other.

The first element necessary to create the database for the needs of improvements would be the definition of the necessary information that should be included in the database. Identifying this information will allow not only controlling the process on a current basis, but will also offer the possibility of performing further analyses for the needs of subsequent improvements of the process that will take place later. Selection of appropriate information will enable a deeper understanding of the process in terms of the load amount, duration of loading operations, performance and downtimes. The necessary information has been divided into tables that are linked by relations. The tables include: *Consignee*, *Set of cars*, *Acceptances*, *Loading* and *Downtimes*. Each table has its own master key that identifies the row in the table. The most important is the *Set of cars* table, the master key of which is the number of the set of cars. Not all the tables in the database are important from the point of view of the loading process; some of them will be used for performing the analyses concerning the amounts of the aggregate per consignees and the amounts of the aggregate which were taken by a given carrier, or for defining a specific relation concerning the type of cars used by a given customer.

Each of the tables entered into the database contains different information, which prevents data inconsistencies. The *Consignee* table is linked with the *Set of cars* table through a unique name of the consignee. The *Set of cars* table serves as a plan of

loading operations and has a reference to the *Acceptances* table through the master key. In the *Set of cars* table, the most important data in terms of loading are: number of cars, fraction and type of cars. The *Acceptances* table includes the information on provision of cars – time of provision, number of cars and type of cars. The *Acceptances* table is linked through the master key with the *Loading* table, which contains information about start/end of loading, the number of cars, type of cars, indications of the portioning scale that gives the value on a car. The *Loading* table is linked with the last table – *Downtimes*, which contains information about the start and the end of a downtime, a note describing a given downtime and type of the downtime. All the tables and relations between them have been included in Fig. 3.

FIG. 3: Tables of the database system and relations between them



Source: own study

Creating a relationship in such a way allows assigning many sets of cars to a single consignee, many acceptances to a set of cars, many loading processes to acceptances, and many downtimes to loading processes.

Completion of information in the database is based on the forms that have been developed. Two forms (*Consignee* and *Set of cars*) will be completed by specialists in logistics and sales. The form of the *Consignee* is functioning as a separate form. A sub-form adding records to the table of *Acceptances* is attached to the form of the *Set of cars* table. The last form used for the *Loading* table contains a sub-form of downtimes. The data in the *Loading* form and the *Acceptance* and *Downtimes* sub-forms are completed by the loading operator. Access of operators to other forms is blocked. The forms contain the number of the set of cars, so that the operator can identify the set, to which the data being added apply.

In addition to the forms, several reports have been designed. They will enable better control of the loading process. The reports in the database are generated and updated automatically just after entry of data by authorized persons. The following reports are generated: report on amount, report on performance, and report on downtimes.

The report on the amount concerns the amounts of aggregate that have been loaded. The difference between the indication of the portioning scale and the scale giving the value on the car is also shown. This report is designed for the needs of registration of the amounts that are collected from the main store and the buffer store. It is very useful for the warehouse workers who will be able to analyse whether there is a difference in indications between the scales. In the case of sets of cars with mixture and grit loads it will allow them to determine whether there is a need to calibrate the scales. In turn, in the case of sets of cars with broken stone, it will allow recording the waste generated as a result of screening of fines and dust. This report could be accessed by: Logistics Department (loading operator, warehouse worker, logistics specialists, laboratory), production manager, director of the mine, the electrical and machine supervision. The information used and generated by this report are presented in TAB. 1.

TAB. 1: Report on the amount of aggregate – the data generated and the data used

Report	Data generated	Data used
Report on the amount of aggregate	Tonnage according to xx1 weighting scale	Indications of the xx1 scale at the beginning and at the end of loading of a given set of cars (the value of the portion on a car)
	Tonnage according to the xx2 weighting scale	Indications of the xx2 scale at the beginning and at the end of loading of a given set of cars (the value on a car)
	Difference between xx1 and xx2	Difference in the indications of the scales
	Type of material	The type of material taken from the <i>Loading</i> table
	Number of the set of cars	The number of the set of cars taken from the <i>Set of cars</i> table

Source: own study

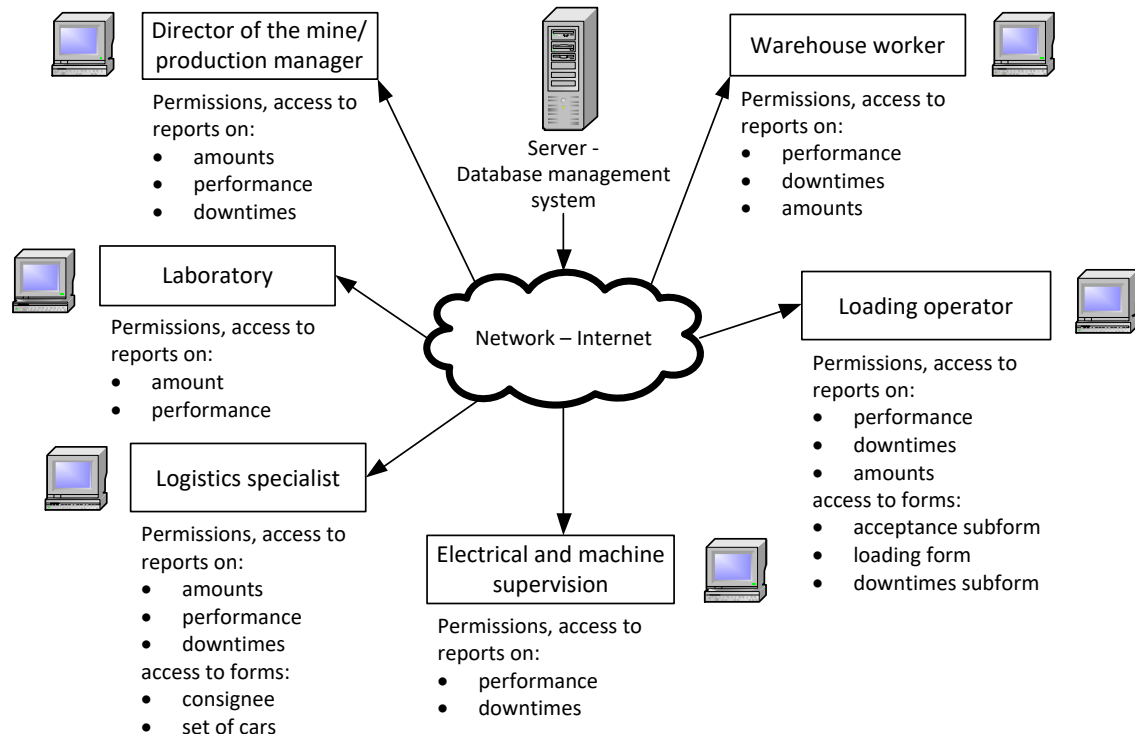
These reports could be accessed by: logistics department, the director of the mine, the electrical and machine supervision, and the production manager. This report is very important from the point of view of planning and ongoing control of loading operations. It is most useful for the logistics department. On that basis of such reports, it will be possible to determine the average time for loading of different sets of cars.

The last report included in the database would be the report on downtimes. Based on the times of start and end of downtimes, their durations would be calculated. Downtimes would be divided into categories, on the basis of which the downtimes in a given month

would be summed up. The information collected in this way would allow performing an analysis in accordance with the principle of "vital few and trivial many" – Pareto analysis (Juran, 1992) and determining the most important types of downtimes, the reduction or complete elimination of which would improve the quality of the process and extend the availability of the entire loading line. A classification of downtimes would be useful (both from the point of view of the logistics department and the maintenance department) for analysing the downtimes associated with failures related to electrical and mechanical components of machines or devices assigned to the rail loading process. During control activities this would allow focusing the attention on the factor that causes interruptions in the loading process most often.

The database would function on a client-server basis (Fig. 4). The server prepared especially for the operation of the database would host the database along with a database management system. The database was built in SQL language, which is also used to download and add data – reports and forms. The database management system also imposes a number of restrictions on users. A lack of possibility of modifying and adding data by unauthorized persons and the restrictions in the access of individual persons to the reports and view the reports are associated with the integrity and security of data.

FIG. 4: Manner of access to the database and permissions



Source: own study

The use of the database will bring many benefits and will improve the work of people using the data specified in the database being created, through:

- a) elimination of paper versions of reports, which had little significance, apart from the fact that they were prepared,
- b) elimination of the need to prepare the same reports in two versions – electronic and printed,
- c) automatic generation of several reports that take into account different information related to rail loading operations,
- d) access to current information at any time; a report in the paper version had been sent once a day,
- e) universal reports useful for several departments,
- f) protection of data against access by third parties.

Conclusion

The focus on the process management may bring many benefits to an organization oriented on control and improvement of processes. This takes place through familiarization with the manner of the process implementation. Each time it is necessary to determine the most important characteristics of the process, such as inputs/outputs, suppliers/customers, process structure, goals or measures.

The changes made, which constitute a solution to the problems identified, will enable a better process control, faster access to information and flow of information, more efficient planning, automatically generated performance analyses, shortening the time from the arrival to the start of loading operations, and a longer time to make a decision on the preparation for loading. These changes require the support from the organization's management, conducting adequate training and overcoming the barrier of reluctance of workers to changes (Jasiulewicz-Kaczmarek, 2016). The proposed improvements are only a part of possible improvements to the process in question. They are a prelude to further reorganization of the process. At this stage, the costs that have been incurred are associated only with building a prototype of the database system; other changes are based on organizational solutions.

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COOPERATIVES' MARKET ACTIVITIES IN THE SPHERE OF SALES MARKETING: AN EXAMPLE OF HOUSING COOPERATIVES FROM ŚWIĘTOKRZYSKIE PROVINCE

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Keywords:

cooperatives – market activities – sales marketing

JEL classification: M2, M3

Abstract:

The aim of the article is to identify activities creating value for the customer in the area of sales marketing. In the article, on the basis of results of direct interviews with representatives of the top management of housing cooperatives, are analyzed implemented activities in the sphere of sales marketing. The analysis of conducted research shows that market activities in the area of sales marketing are in different extent implemented by the housing cooperatives from the Świętokrzyskie Province.

Introduction

Companies now widely recognize that to achieve and sustain competitive advantage, they must become more customer-focused. Many have changed their strategies, structures, and processes, leading to dramatic increases in customer satisfaction (Epstein, Yuthas, 2007). Cooperatives just as other entities implement activities that affect the customer value creation. One of such activities are activities connected with sales marketing. Therefore, the aim of the article is to identify activities creating value for the customer in the area of sales marketing. In the article, on the basis of results of direct interviews with representatives of the top management of housing cooperatives, will be analyzed implemented activities in the sphere of sales marketing. The activities within the framework of sales marketing include: offering of products at competitive prices, offering of products with a competitive warranty coverage, individualization of the offer, offering of products on favourable terms of payment / financing, the use of special sales conditions (discounts), targeting advertisement to final customers, offering of products with a rich set of pre-, peri- and after-sales services, and offering of competitive price of pre-, peri- and after-sales services.

1. Literature overview

Marketing is composed of four activities centered on customer value: creating, communicating, delivering, and exchanging (Saylor). The term value means the benefits buyers receive that meet their needs (Saylor). People satisfy their needs and wants with products. A product is any offering that can satisfy a need or want, such as one of the 10 basic offerings of goods, services, experiences, events, persons, places, properties, organizations, information, and ideas (Kotler, 2002). In terms of marketing, the product or offering will be successful if it delivers value and satisfaction to the target buyer. The buyer chooses between different offerings on the basis of which is perceived to deliver the most value (Kotler, 2002). For marketers the identification and stimulation of customer needs and wants and the associated presentation of satisfiers of those needs and wants are considered to be one of the core functions of marketing (Baker, Hart, 2008). Buyer behaviour is a problem-solving process and entail the following decisions:

- a) Need identification:
 - I. Determined by the discrepancy between what we have and what we want,
 - II. Determined by the relative importance of the problem,
- b) Information search and processing is a five-step:
 - I. Exposure,
 - II. Attention,
 - III. Reception,
 - IV. Retention,
 - V. Retrieval and application,
 - VI. Identification and evaluation of alternatives,
 - VII. Product/service/outlet selection,
 - VIII. The purchase decision,
 - IX. Postpurchase behaviour (Burnett, 2008).

To meet the needs and satisfy the buyer the offer should include pre-purchase and post-purchase activities that are relevant to marketing management. Pre-purchase activities would include the growing awareness of a want or need, and the search for and evaluation of information about the products and brands that might satisfy it (Baker, 2003). Before the purchase, the consumer will have formed expectations of the product's capabilities in terms of:

- a) equitable performance (what can be reasonably expected given the cost and effort of obtaining the product),
- b) ideal performance (what the consumer hopes the product will do), and
- c) expected performance (which is what the product probably will do) (Blythe, 2005).

Post-purchase activities would include the evaluation of the purchased item in use, and any attempt to assuage feelings of anxiety (Baker, 2003). Post-purchase evaluation refers to the way the consumer decides whether the product purchase has been a success

or not. This process usually involves a comparison between what the consumer was expecting to get, and what was actually purchased, although sometimes new information obtained after the purchase will also color the consumer's thinking (Blythe, 2005). If the marketer does a good job of understanding consumer needs; develops products that provide superior value; and prices, distributes, and promotes them effectively, these products will sell very easily (Kotler, Armstrong, 2010), and the entity will receive profits.

2. Results

Research on the implementation of activities in the area of sales marketing have been conducted in housing cooperatives from the Świętokrzyskie Province, which had given their consent. The research tool was an interview questionnaire. Executives were asked to indicate activities implemented by cooperatives, which affect, in their opinion, the value for customers in the market. The results of the interviews are presented in Tab. 1 and Fig. 1.

TAB. 1: Housing cooperatives' market activities in the sphere of sales marketing

Cooperatives' market activities	% of indications
Offering of products at competitive prices	25
Offering of products with a competitive warranty coverage	13
Individualization of the offer	13
Offering of products on favourable terms of payment / financing	25
The use of special sales conditions (discounts)	0
Targeting advertisement to final customers	25
Offering of products with a rich set of pre-, peri- and after-sales services	38
Offering of competitive price of pre-, peri- and after-sales services	50

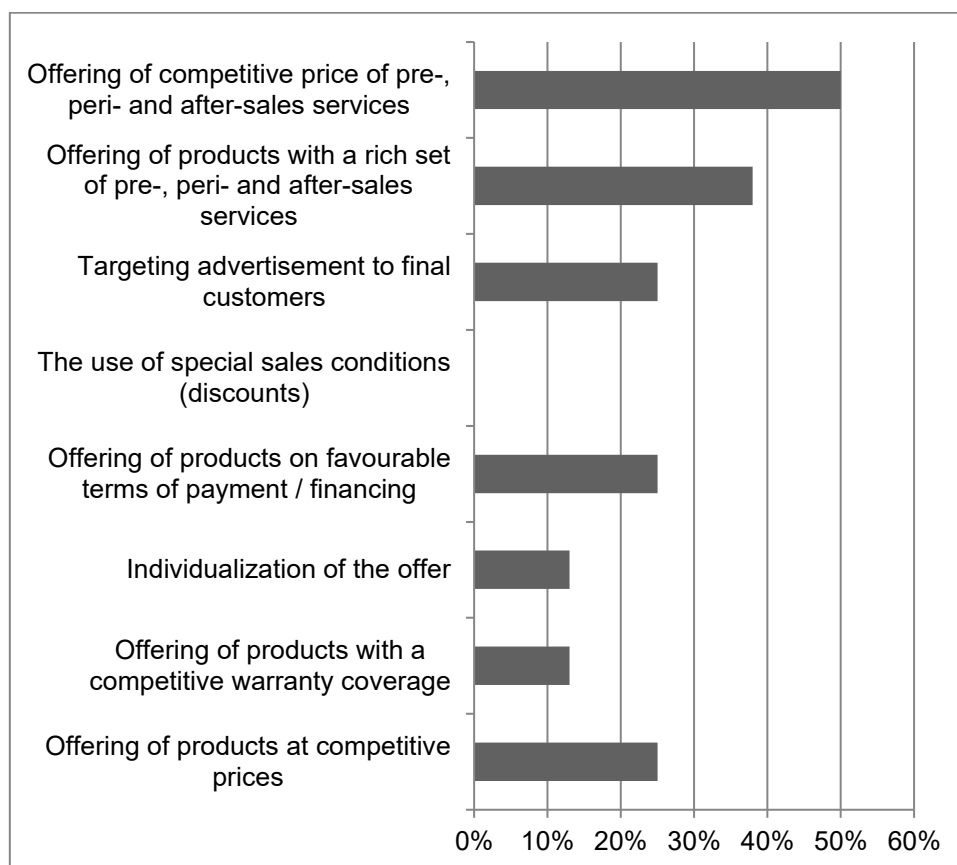
Source: compiled by author

When analyzing the Tab. 1 and Fig. 1, it can be stated that:

- c) activities related to the use of special sales conditions (discounts) are not implemented on the market,
- d) activities related to the offering products with a competitive warranty coverage, and individualization of the offer are implemented by 13% of analyzed housing cooperatives on the market,
- e) activities related to the offering of products at competitive prices, offering of products on favourable terms of payment / financing, and targeting advertisement to final customers are implemented by 25% of analyzed housing cooperatives on the market,
- f) activities related to the offering of products with a rich set of pre-, peri- and after-sales services are implemented by 38% of analyzed housing cooperatives on the market,

- g) activities related to the offering of competitive price of pre-, peri- and after-sales services are implemented by 50% of analyzed housing cooperatives on the market.

FIG. 1: Housing cooperatives' market activities in the sphere of sales marketing



Source: compiled by author.

3. Discussion

As can be seen, market activities in the area of sales marketing are in different extent implemented by the housing cooperatives from the Świętokrzyskie Province. The similar situation is among dairy cooperatives, which show the following research results. However, comparing previously conducted research results with research results of housing cooperatives it is seen that they do not correspond with each other, especially when comparing the responses of executives and students.

There was conducted the research among dairy cooperatives aiming to identify activities creating the value for customers from Świętokrzyskie Province market, the other Polish provinces' market, the EU markets, and other major markets in the sphere of sales marketing. Taking into account research results, it is seen that despite the fact that activities related to sales marketing influence the customer value only some of them were implemented by each of the cooperatives being under research. Most cooperatives

indicated that they implement activities aimed at directing advertisement to final customers on the other Polish provinces' market, the broad sharing of information about their offer and individualization of the offer on Świętokrzyskie Province market. Three activities were not implemented by the dairy cooperatives in any of the identified markets. These were: offering competitively priced products, the use of consumer promotion (e.g. sample, coupons, contests, lotteries, gifts, etc.) and offering products with a rich set of services pre-, peri- and after-sales. In addition, according to the analyzed data, on the Świętokrzyskie Province and other provinces' markets were implemented 7 of 14 activities, on the EU market dairy cooperatives implemented 2 activities, while on other major markets were not implemented any of the activities (Konieczna, 2016).

Another research aiming an analysis of the validity of the features of the offer for customers in the area of the sales marketing that was based on the results of conducted research in dairy cooperatives from the Świętokrzyskie Province, showed that all indicated features of the offer were considered as extremely or very important for such customers as wholesalers, and local retail chains. Moreover, as extremely important were considered different features for each type of customers, i.e. for consumers – the payment terms, for wholesalers – the price of the product, for local retail chains – the range of pre-, peri-, and after-sales services, and for companies-users (gastronomy) – promotional prices, the price of pre-, peri-, and after-sales services, and the crediting of purchases. Taking into account the mean for all types customers in assessing the validity of the features of the offer it was seen that the highest were rated the promotional prices, then the price of pre-, peri-, and after-sales services, the price of the product, the range of pre-, peri-, and after-sales services, the crediting of purchases, the availability of information about the offer / product, the loyalty programs, lower were rated the payment terms, the individualization of the offer, the special sales conditions (discounts), the novelty prices, advertisement, the consumer promotion (e.g. samples, coupons, contests, raffles, gifts, etc.), public relations, and the lowest was rated publicity (Konieczna, 2016a).

The other research aimed to show how future managers, i.e. current students of business studies from Poland Ukraine, perceive activities in the sphere of sales marketing, implemented by their potential future places of work, i.e. cooperatives. The research results showed that the respondents considered that cooperatives, in the average extent, pursue activities in the sphere of sales marketing. Respondents from both countries agreed that in the greatest extent cooperatives implement the following activities: offer products on favourable terms of payment / financing, offer products with a competitive scope of warranty coverage, and use special conditions of sale (discounts) (Konieczna, Garasym, 2014a). The narrowed to dairy cooperatives research showed that respondents better assess activities of nationwide dairy cooperatives than regional ones in the use of promotional prices, targeting advertisement to final customers, the use of loyalty

programs, the use of public relations, the use of publicity, extensive sharing of information about the offer. On the other hand, respondents better assessed regional dairy cooperatives in the use of consumer promotion (samples, coupons, contests, raffles, gifts, etc.). (Konieczna, Garasym, 2014).

Conclusion

Taking into account the results of research, it is clear that, although activities related to sales marketing affect the value for the customer, none of them is implemented by all cooperatives. Moreover, one of indicated activities is not implemented by any cooperative. Only one activity is implemented by 50% of cooperatives being under research, i.e. offering of competitive price of pre-, peri- and after-sales services. Also one activity is implemented by 38% of housing cooperatives. Three activities are implemented by 25% of cooperatives, and two by 13% of housing cooperatives. Results of this research should prompt executives of housing cooperatives to take actions to improve the effectiveness of activities in the sphere of sales marketing. It is known that customers are affected by such activities, and when cooperatives are more open to such actions it will affect the willingness to purchase products offered by cooperatives, and this will translate into financial results.

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AUSTRALIA: IS IT TIME FOR TAX REFORM?

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Keywords:

Australia – tax reduction – DSGE model – productive sector

JEL classification: H21, C50

Abstract:

This paper investigates the tax reduction effects of the productive sector in Australian economy using a new Keynesian dynamic stochastic general equilibrium model for a small closed economy. The goal is to decide whether currently discussed need of tax reform in Australia is relevant and if the proposed solution can improve the situation. The effects on economy are examined using impulse response functions of shocks in the stochastic components of the taxes on labour and capital income. According to our results we suggest to implement a reform of reducing current direct taxes in favour of indirect taxes.

Introduction

Australian economy faces the same challenges as almost all developed countries. The public finances are in weak condition recovering from the last global financial crisis. Actual status of demography prognoses the future significant increase in costs on health and social system and the decrease of working population. The consolidation of public sector is therefore a crucial task for government and policy makers to deal with in the next years.

The aim of this article is to analyse possible effects of decreasing the taxes on capital and labour on Australian economy using dynamic stochastic general equilibrium (DSGE) model that is considered as main approach to the macroeconomic modelling nowadays. The model is built on microeconomic theoretical background of optimizing agents divided into sectors covering the whole economy.

1. Methodology and data

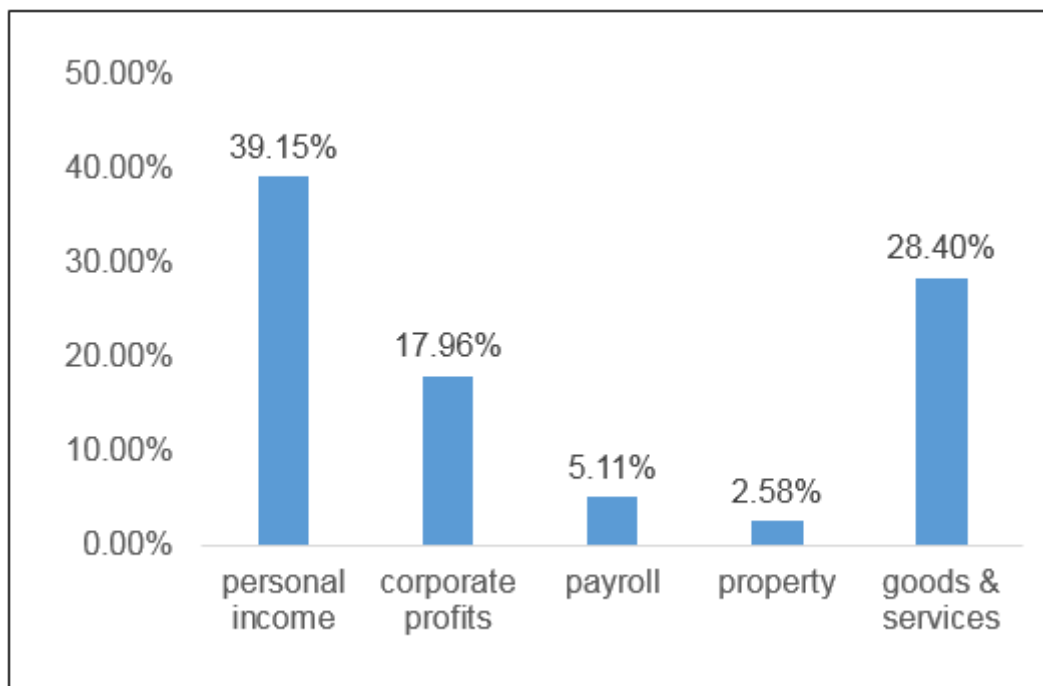
Australian population is aging. The number of people aged 65 and over increased by 10% in last 5 years and is accounted for 15% of the population. The trend in youth population is opposite, decrease by 2% to 18.8% of population and there are no indications for change in the near future (OECD, 2016a). There will be definitely more pressure on health and social system in the future requiring more.

On the other side the government budget has not outperform the last global financial crisis yet. It moved the budget from surplus 1.68% to deficit 5.61% in 2009 and the current deficit is 2.8% (OECD, 2016b). The situation with government debt is even worse, the debt has almost doubled since 2007 and is accounted for 64.2% of GDP. The call for consolidation of public finances is therefore still in place and policy makers are under pressure to choose the effective fiscal tool. In general, there are only two simple solutions how to deal with the budget's problems. The government can cut the spending or increase the revenue.

The taxes collection is the essential part of the government income and can be influenced by the composition of tax system as the distortion effect on economy varies amongst the type of taxes. According to OECD (2010) corporate and personal income taxes have the strongest negative effects on economy, consumption taxes and property tax are on the opposite side. The main trend in fiscal policy is a move from direct to indirect taxes. As Mamatzakis (2005) confirmed, the shift can invoke an economic growth without changes on revenue side.

Figure 1 shows the different types of taxes and their share on taxation in Australia. Direct taxes compound more than 2/3 of taxation and therefore there is place for improvement of tax system. The reform in favour of indirect taxes is nowadays discussed and highly promoted by institutions to gain the public's vote.

FIG. 1: Taxes types in Australia (% of taxation)



Source: Author's construction, OECD(2016d)

1.1. Model

The model chosen for analysis is according Costa Junior and Sampaio (2014) who examined the tax reduction effects of the productive sector in Brazilian economy. The model represents small closed economy, all interactions are made by three sectors: households, firms and government (authority). The omission of international trade is motivated by intention to use as much simple model as possible and also by the fact that Australia is the 3rd least open economy in OECD with trade only 41% of GDP (OECD, 2016e).

There are two types of households in the economy. *Active (Ricardian) households* maximize their intertemporal utility function by choosing the consumption, savings, investments and leisure. They contribute to the pension system and pay taxes. *Inactive (non-Ricardian) households* are the retired workers who are not allowed to maximize their intertemporal utility or make savings and are limited by benefits received from government.

The final good of economy is created in two stages. Firstly, the *wholesale sector* represents number of firms in monopoly competition producing different intermediate goods. They choose the quantities of production factors taking the prices given in order to minimize the costs. Second stage is *retail industry*, a single firm facing perfect competition that produces a single good for consumption by aggregating the intermediate goods. The firm maximizes its profit taking the prices of goods from wholesalers given. According to Calvo pricing the prices in economy are subject to change, but only a randomly selected fraction of wholesalers is able to set the optimal price in every period. The remaining part of firms use only the price from previous period.

The government is both, fiscal and monetary authority and also manager of the simple social security system with no capitalization. *Fiscal authority* finances the purchases of goods and services by revenues from the taxes. The government issue bonds which allow to finance its spending on debt. *Monetary authority* uses the simple Taylor rule (1993) to control the interest rate. The goal of monetary policy is output growth and price stability.

1.2. Calibration

The model is calibrated for actual Australian economy to perform stochastic analysis of economy's reaction to shocks in taxes. Structural parameters are obtained from economic literature, other DSGE works and papers or calculated from available statistics. Following Table 1 presents the values, description and source for parameters reflecting the Australian economy.

TAB. 1: Structural parameters

Parameter		description	Source
σ	1.17	relative risk aversion coefficient	Gandelman and Hernández-Murillo (2014)
ψ	1	marg.disutility of labour	Sheen and Wang (2014)
τ_c	0.14	imp. tax rate on consum.	OECD (2016d)
τ_k	0.257	Imp. tax rate on capital	Carey and Tchilinguirian (2000)
τ_l	0.277	Imp. tax rate on labour	OECD (2015)
τ_p	0.015	tax on payroll	OECD (2016d)
ω	0.22	pension beneficiaries	OECD (2016a)
PEN	0.035	benefit payments	OECD (2016c)
φ	0.3	price stickiness index	Cagliarini, Robinson and Tran (2011)

Source: Author's construction

2. Results

In this section we analyse the effects of negative unit shocks in capital and labour income taxes using impulse response functions generated for 50 periods (see Fig.2 and Fig.3). The shocks return to their steady-state value (no shock) after 45 iterations.

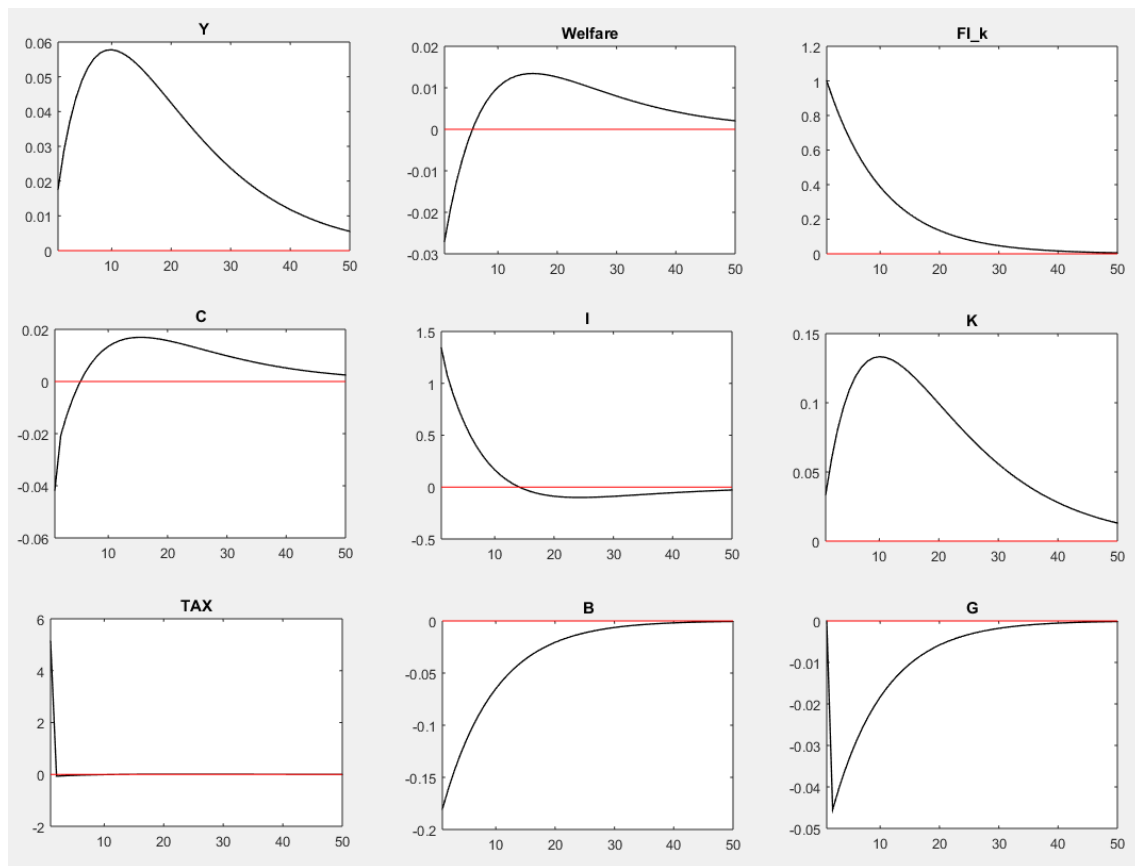
The effects of both shocks are quite similar, for the most variables they differ just in size. There is no significant effect on prices of final product and production factors, the increase caused by shock diminish after 2 periods. The relevant variable of the shock (capital K / labour L) reacts positively accompanied by the increase in output Y . The economy is more sensitive to the shock in labour income taxes.

2.1. Changes in consumption

Consumption is aggregated from Ricardian and non-Ricardian households. The shock in labour taxes increases the consumption of active workers who can observe it directly and adjust their decision. Inactive workers are limited by payments from government and because of decrease in government spending they are forced to reduce their consumption. This is reflected by the steep line in the first simulated periods.

In case of shock in capital taxes we can see the first decrease in consumption and then increase from steady-state level. We can explain it by expectations of Ricardian households who do not trust the change in taxes. They reduce their consumption in favour of their future consumption. After few periods the mistrust diminishes as they see this change is positive and start to spend more. Non-Ricardian household are again limited by the negative change in government spending and deepen the decrease in the first periods.

FIG. 2: Impulse response function on shock in capital income tax



Source: Author's construction

2.2. Changes in tax revenue, debt and government spending

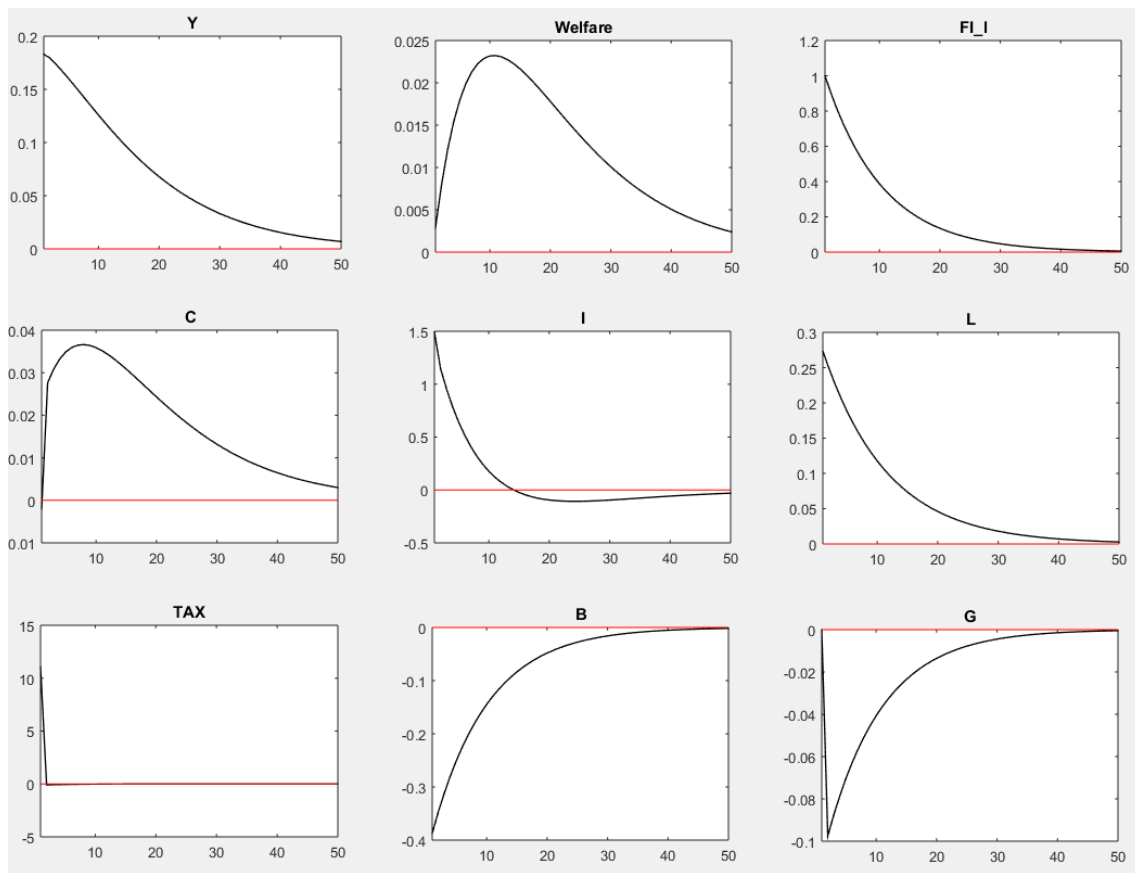
The expected decline in tax revenue after reduction taxes is compensated by the increase of consumption and the overall result is flat for both types of shocks.

The debt and government spending react in the same direction for both types of shocks, but more for labour shock. The decline in debt is greater than decline in government spending which indicate that reducing indirect taxes can help government with consolidation of public finances.

2.3. Changes in investments

Investments reacts in positive way on both type of shocks in the first periods but we can see it diminishes quickly even to the decrease from the steady-state level. This negative impact can be surprising, but also explained by expectations of households and government spending. Gradual increase in consumption and spending displace the investment from economy.

FIG. 3: Impulse response function on shock in labour income tax



Source: Author's construction

Conclusion

In this paper we presented the reactions on the tax reductions of productive sector in Australian economy using DSGE model for small closed economy. The economy is more sensitive to the shock in labour income taxes than to the shock in capital income taxes. We can conclude that reduction of taxes results in the growth of output, consumption and also investments for some periods of time.

It can help to improve the condition of public finances as the debt and government spending decline thanks to the changes in taxes. The government participation in the economy is reduced and so that the debt. This supports the idea of tax reform that reduced the direct taxes in favour of indirect. Currently proposed tax reform in Australia should be implemented.

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Czech Republic

PRINCIPLES OF INDIRECT TAX HARMONIZATION IN THE EU

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Abstract:

Since the beginning of 60's of the 20th century the European Community has been voicing its concerns about the need for tax harmonization. First attitudes towards tax harmonization were very ambitious. The aim was not only reach structural harmonization, but also harmonization of rates. The article explores the nature and course of the harmonization process while addressing its legislative modifications. The article analyses and compares the most important indirect taxes (value added tax, excise taxes) in the Member States of the European Union.

Introduction

Following the partial failure to implement harmonization measures, the notion of tax harmonization has begun to be closely linked with the single internal market and its smooth functioning. Still, there are clashing opinions whether it is better to preserve tax competition (i.e. a situation where there are different tax systems and different tax rates via which states seek to attract investors), or seek tax harmonization from two points of view – within the European Communities and the individual Member States.

According to Babčák (2016), the background of the harmonization process in the EU is characterized by the process of gradual reform steps, which required a constant search for compromise solutions. The indirect taxation is – clearly and without any calling into question – "soaked" by the legal rules of the EU in the most significant way.

The harmonization of the indirect taxes has resulted in consequences in the national legislation of VAT and also in the excise duties legislation. When comparing the results of the harmonization between VAT and excise duties, we believe that the harmonization of VAT is far more complex than the harmonization of excise duties. However, the harmonization of indirect taxes is accompanied by a number of practical problems. For example, in some instances the rules implemented in the EU directive are interpreted in different ways by the individual Member States, several states have temporary

exceptions from the common rules (and not always are these exemptions and reductions justified and reasonable), and problematic is also the practical implementation of taxation by the VAT by applying the principle of the country of origin, etc.

1. Methods, literature overview

Tax harmonization is a process of tax systems convergence on the basis of common rules. The situation where some countries use common tax provisions along with tax provisions of national character is called partial tax harmonization. The tax theory defines total harmonization as a result of structural harmonization (ie. harmonization of the structure of the tax system) and harmonization of tax rates.

Tax harmonization can be understood as a process and as a result at the same time. The notion of tax harmonization within the European Communities is defined as the introduction of a single market and its smooth functioning. (Nerudová 2005) If tax harmonization is perceived as a tool through which a single market could be achieved, we can divide it into positive and negative. Harmonization is a positive process of convergence of national tax systems of the European Community countries through the implementation of regulations, directives and other legal instruments. If all Member States are bound by the same rules, the result is positive harmonization. The best way to achieve a genuine single market is through positive harmonization.

Results of the activities carried out by the European Court of Justice (ECJ) are perceived as negative harmonization. If national tax systems feature measures based on the tax laws of the ECJ instead of being based on regulations or directives, we are talking about negative harmonization. Since it does not provide Member States with the same rules, negative harmonization cannot be perceived as harmonization in the true sense. (Solík 2007)

Given the recent developments in the field of tax harmonization, harmonization can still be divided into direct and indirect harmonization. Direct harmonization could be perceived as a classical harmonization process which seeks to harmonize tax provisions directly - that is through tax directives. Indirect harmonization strives for harmonization of certain tax provisions through other areas of law - for example business law.

Tax harmonization and competition

The first factor speaking against tax harmonization in the European Community is a need to maintain maximum fiscal autonomy. In the context of the monetary union the role of national banks is limited because their powers were partly taken over by the European Central Bank. Member countries therefore can intervene into their own economy only using fiscal instruments (mainly taxes and the level of government spending). Therefore the use of fiscal instruments should be autonomous so states would have an opportunity to cope with economic shocks by themselves. Another even more

important reason for the negative attitude towards tax harmonization is the fact that tax rates correspond to the preferences and particulars of the Member States.

Tax competition in itself can lead to the so-called spontaneous harmonization effect. It is a spontaneous convergence of rates and therefore it is not necessary to harmonize taxes artificially. This effect may occur, for example, between the two neighbouring countries in case of value added tax. Residents of one member country can buy goods in a neighbouring Member State which has a lower rate of value added tax. Therefore such a neighbouring Member State is a cheaper place to buy goods. Such a situation will cause the so-called spontaneous harmonization effect - spontaneous convergence of tax rates.

Negative aspects of harmonization can be summarized as follows: harmonization leading to higher tax rates – without the competitive pressure the government sets a higher tax rate, i.e. harmonization does not create pressure on the budget spending; harmonizing causes slower economic growth - higher tax rates reduce overall productivity and deters foreign investments; does not prevent excessive expansion in the public sector; interferes with national sovereignty of Member States; may pose a serious risk to the budget revenue of countries with higher tax rates and for which tax harmonization is an essential part of state budget revenues; brings about the loss of fiscal autonomy.

Tax competition may lead to the following issues: the tax burden on the immobile factors is increasing, especially labour. Conversely, the tax burden on highly mobile factors, especially capital, is decreasing. It leads to the inappropriate structure of government spending since the government provides a variety of incentives, subsidies and support to attract investments.

2. Results

According to Directive 67/227 / EEC, the introduction of VAT is important for the following reasons: the creation of a common market with healthy competition which acts as a national market; exclusion of factors which may distort conditions of competition at national level; abolish tax on imports and tax refunds on exports in trade between Member States; VAT reaches the greatest simplicity and neutrality.

2.1. Value Added tax

With effect from 1993 Directive 92/77 / EEC has introduced the minimum limit of VAT. The standard minimum VAT rate was 15% and the reduced VAT rate was 5%. It also stipulated that Member States may apply only two reduced rates. In 2007, Directive 2007/75 / EC has been adopted which allowed Poland to use the exemption with the entitlement to deduct taxes on deliveries of books and magazines by the end of 2010. Also, by the end of 2010 it allowed the use of reduced VAT rates no lower than 7% for

the provision of selected services. Directive 2010/88 / EU has extended the period to 31st December 2015 stating that the basic VAT rate shall not be lower than 15%.

TAB. 1: Development of the standard VAT rate in EU Member States

Country	2009	2010	2011	2012	2013	2014	2015
Belgium	21	21	21	21	21	21	21
Bulgaria	20	20	20	20	20	20	20
Cyprus	15	15	15	17	18	19	19
Czech Republic	19	20	20	20	21	21	21
Denmark	25	25	25	25	25	25	25
Estonia	20	20	20	20	20	20	20
Finland	22	23	23	23	24	24	24
France	19,6	19,6	19,6	19,6	19,6	20	20
Greece	19	23	23	23	23	23	23
Netherlands	19	19	19	19	21	21	21
Croatia	22	23	23	25	25	25	25
Ireland	21,5	21	21	23	23	23	23
Lithuania	19	21	21	21	21	21	21
Latvia	21	21	22	22	21	21	21
Luxembourg	15	15	15	15	15	15	17
Hungary	25	25	25	27	27	27	27
Malta	18	18	18	18	18	18	18
Germany	19	19	19	19	19	19	19
Poland	22	22	23	23	23	23	23
Portugal	20	21	23	23	23	23	23
Austria	20	20	20	20	20	20	20
Romania	19	24	24	24	24	24	24
Slovakia	19	19	20	20	20	20	20
Slovenia	20	20	20	20	22	22	22
Spain	16	18	18	18	21	21	21
Sweden	25	25	25	25	25	25	25
Italy	20	20	20	21	21	22	22
United Kingdom	15	17,5	20	20	20	20	20
EU – 28	19,9	20,5	20,8	21,1	21,5	21,5	21,6

Source: (processed according to the Taxation trends in the European Union)

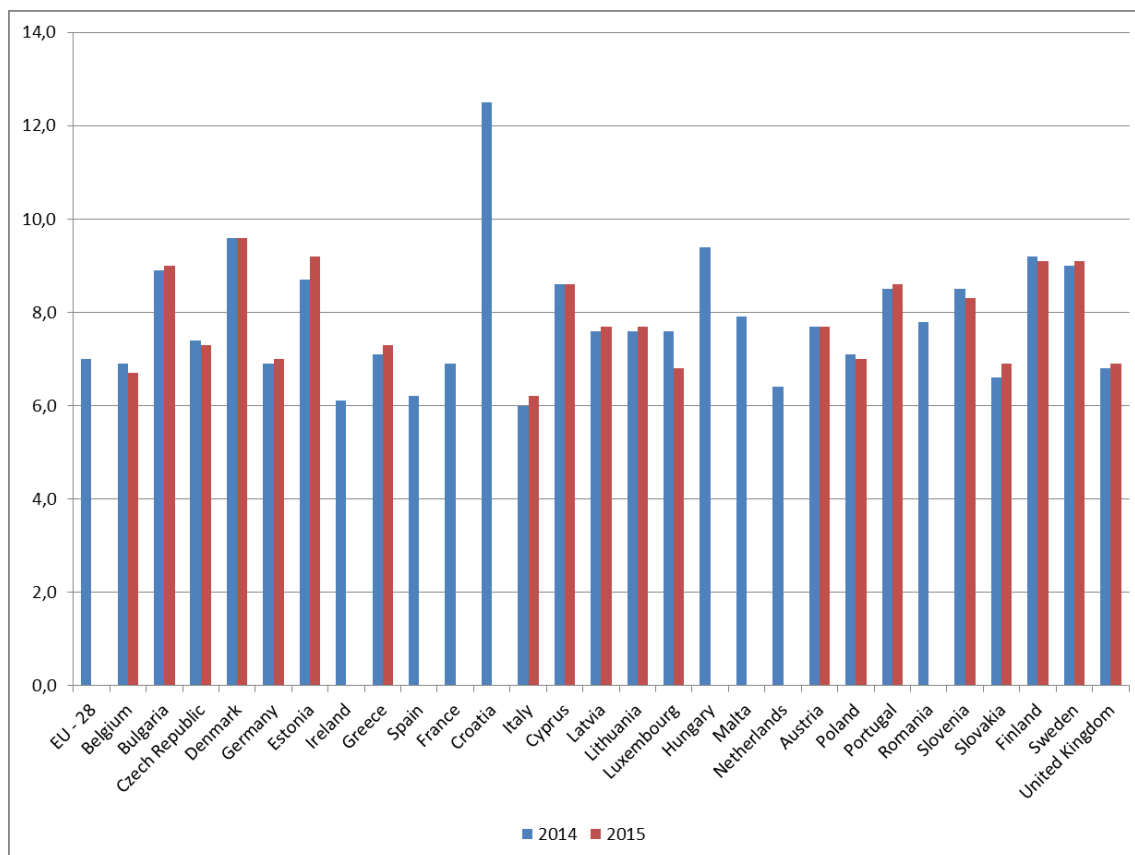
According to the table above it is clear that all EU Member States respect a minimum level of basic VAT rate that is in accordance with Directive 92/77 / EEC set at 15%. Currently, the highest VAT rate of 25% is present in Denmark, Croatia and Sweden. Luxembourg as the only state in 2014 had opted for the minimum VAT rate of 15%, in 2015 this rate increased to 17%.

TAB. 2: Development of the reduced VAT rates in EU Member States

Country	2009	2010	2011	2012	2013	2014	2015
Belgium	6/12	6/12	6/12	6/12	6/12	6/12	6/12
Bulgaria	7	7	9	9	9	9	9
Cyprus	5/8	5/8	5/8	5/8	5/8	5/9	5/9
Czech Republic	9	10	10	14	15	15	10/ 15
Denmark	-	-	-	-	-	-	-
Estonia	9	9	9	9	9	9	9
Finland	8/17	9/13	9/13	9/13	10/14	10/14	10/14
France	5,5/2,1	5,5/2,1	5,5/2,1	5,5/7/2,1	5,5/7/2,1	5,5/10/2,1	5,5/10/2,1
Greece	9/4,5	5,5/11	6,5/13	6,5/13	6,5/13	6,5/13	6,5/13
Netherlands	6	6	6	6	6	6	6
Croatia	10/0	10/0	10/0	10/0	5/10	5/13	5/13
Ireland	13,5/4,8	13,5/4,8	13,5/9/4,8	13,5/9/4,8	13,5/9/4,8	13,5/9/4,8	13,5/9/4,8
Lithuania	5/9	5/9	5/9	5/9	5/9	5/9	5/9
Latvia	10	10	12	12	12	12	12
Luxembourg	6/12/3	6/12/3	6/12/3	6/12/3	6/12/3	6/12/3	8/14/3
Hungary	5/18	5/18	5/18	5/18	5/18	5/18	5/18
Malta	5	5	5/7	5/7	5/7	5/7	5/7
Germany	7	7	7	7	7	7	7
Poland	7/3	7/3	5/8	5/8	5/8	5/8	5/8
Portugal	5/12	6/13	6/13	6/13	6/13	6/13	6/13
Austria	10	10	10	10	10	10	10
Romania	5/9	5/9	5/9	5/9	5/9	5/9	5/9
Slovakia	10	6/10	10	10	10	10	10
Slovenia	8,5	8,5	8,5	8,5	9,5	9,5	9,5
Spain	7/4	8/4	8/4	8/4	10/4	10/4	10/4
Sweden	6/12	6/12	6/12	6/12	6/12	6/12	6/12
Italy	10/4	10/4	10/4	10/4	10/4	10/4	10/4
United Kingdom	5	5	5	5	5	5	5

Source: (processed according to the Taxation trends in the European Union)

According to the table above it is clear that some EU Member States do not respect the obligation to apply only two reduced rates of VAT. This obligation is not being respected by France, Ireland and Luxembourg. Moreover, the minimum threshold of a reduced rate of VAT in accordance with Directive 92/77 / EEC - 5% is also not being respected. France still applies a reduced VAT rate of 2.1%, Ireland applies a reduced VAT rate of 4.8% and Luxembourg applies a reduced VAT rate of 3%. By 2009, Greece applied a reduced VAT rate of 4.5%, and up to 2012 Croatia applied a reduced VAT rate of 0%.

FIG. 1: VAT revenues in EU Member States between 2014 and 2015 (in % of GDP)

Source: (processed using EUROSTAT)

Croatia generates the highest revenues from VAT at the level of 12.5% of GDP, which is 5.5% more than the EU average which is equal to 7% of GDP. The lowest VAT revenues are generated by Italy at the level of 6% of GDP. Slovakia generates revenue from VAT at the level of 6.6% of GDP. The European Union generates VAT revenue amounting to 975,901.6 million EUR. The highest VAT revenues are made by Germany (203,081 mil. EUR). The lowest VAT revenues are generated by Malta, where VAT revenues amount to EUR 642.2 million EUR. For some Member States figures for 2015 are still not available.

2.1. Excise duties

The ground-breaking date for the harmonization of excise duties was the day of the introduction of the single market on 1st January 1993. On this day entered into force Directive 92/12 / EEC, which is essential for the harmonization of excise duties. This Directive outlines the products which are subject to excise duty like mineral oils, alcohol and alcoholic beverages and tobacco. That directive was in 2008 replaced by a new Directive 2008/118 / EC on the general arrangements for excise duty.

Directive 92/81 / EEC from 1992 defines different types of mineral oils which are subject to excise duty. The subject of the Directive is mineral oil that is intended for the consumption, is further sold and/ or used as fuel. Directive 2003/96 / EC amends the taxation of energy products and electricity. This Directive expands the taxation of mineral oils and covers coal, natural gas and electricity. Some Member States use other types of taxes of environmental nature, for example waste tax, tax on fertilizers, packaging tax, pollution tax and other.

Taxation of alcohol and alcoholic beverages is regulated by Directive 92/83 / EEC. Directive divides the above products mentioned into beer, wine, intermediate products and alcohol and alcoholic beverages. Excise duty on beer is covered by Directive 92/84 / EEC. The Directive sets a minimum tax rate of € 0.748 / hl of beer. Excise duty on wine is covered by Directive 92/84 / EEC which distinguishes between still wine and sparkling wine. For both products there is a minimum tax rate of € 0 / hl. The zero rate was introduced due to the reluctance of traditional wine producers (France, Spain, Italy) to adopt this tax. The minimum rate for intermediate products is set at € 45 / hl. Excise duty on alcohol and alcoholic beverages is subject to Directive 92/84 / EEC. The Directive sets a minimum tax rate to € 550 / hl of pure alcohol.

Directive 95/59 / EC governs the taxation of tobacco products. Directive divides the above tobacco products into cigarettes, cigars and cigarillos, fine-cut tobacco for the rolling of cigarettes and other tobacco for smoking. Directive 2010/12 / EU with effect from 1st January 2014 set tax on cigarettes to 60% of their average retail selling price. This tax must not be less than € 90 per 1000 cigarettes. For cigars and cigarillos Directive set a tax of 5% of the retail selling price, including taxes, or € 12 per 1000 pieces or a kilogram. With regard to tobacco intended for smoking Directive imposes a tax of 20% of the retail selling price, including taxes, or € 22 per kilogram. Tax rates for fine-cut tobacco for rolling cigarettes has been since 1st January 2015 set at 46% of the retail selling price, including taxes, or € 54 per kilogram. Entering into force on 1st January 2018 the tax rate will amount to 48% of the retail selling price, including taxes, or € 60 per kilogram, these numbers will rise to 50% of the retail selling price, including taxes, or € 60 per kilogram starting 1st January 2020.

Conclusion

Despite the fact that the tax harmonization had been the centre of attention already in the 60s of the 20th century, there are still ever-clashing opinions on whether it is better to preserve tax competition or opt for tax harmonization. EU Member States are aware that the harmonization of value added tax may lead to substantial alterations in tax structures and may have consequences in the budgetary, social and political spheres. Given these circumstances, own national interests and awareness of the need for unanimous decisions on tax matters of all 28 EU Member States, it is impossible to expect major changes in VAT policies. This concerns the principle of the transition

from the country of destination to the country of origin. However, the principle assumed a single tax rate across the EU because otherwise a product offered on markets with different tax rates would be sold for different prices. It can be assumed that the current system of the country of destination will remain unchanged. It is a proven system and Member States are not inclined to align their tax rates.

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TRENDS IN CONSUMPTION OF SELECTED FOOD COMMODITIES IN VISEGRAD COUNTRIES

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Consumption – food commodities – Visegrad countries – trends – descriptive statistics

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Abstract:

This article focuses on trends in the consumption of basic food commodities in Visegrad countries (V4). The main aim is to identify differences in food commodity consumption and define trends among selected food commodities. Are there differences in consumption in individual countries? How consumers changed their habits in observed countries during the reference time period? Individual data (time series of consumption of selected food commodities) are sourced from Czech (CZ), Hungarian (HU), Polish (PL) and Slovakian (SK) statistical offices. Analysed time period differs in selected markets, as statistical offices provides different amount of data. Available data ranges from 1998 to 2014. Descriptive statistics and time series analysis are used for the trend evaluation. Article deals with potatoes, meat (including pork, poultry and beef), milk and dairy products. Statistical analyses is proceed in Statistica software. Results present different levels of per capita consumption of selected food commodities in V4. Amount of meat consumed is stable in selected markets (excluding Slovakia), but consumption preferences of consumers have changed, beef is substituted by poultry. Potatoes consumption declined significantly in CZ and SK, it could be explained by substitution of potatoes by other vegetables and fruits.

Introduction

Dietary preferences change over time. They might be influenced by, among others, food-choice factors and socio-demographic factors (Wadolowska et al, 2008); price, demand, price elasticity of demand, budgetary constraints or utility (Skalova & Stavkova, 2012). Food production, with respects to its further prospects, cannot be considered as sustainable as different authors observe serious environmental problems (Reisch et al, 2013), population growth (Cuffaro, 1997) global hunger, changing diet and life-style in both developed and developing countries (Kearney, 2010). With respect to aforementioned information, food availability might be endangered in near future (Keating et al, 2013). By large, enormous wastage and increasing meat consumption will drive world food demand and will influence food prices although increased

production efficiency increased total amount of globally produced food in the past (D'Odorico et al, 2014).

Around 66 countries are not able to cover their self-sufficiency because of natural constraints such as fertile land or water (Fader et al., 2013), in those situations international sourcing is very important. Liberalisation of world markets leads to rise in food trade (D'Odorico et al, 2014). Unfortunately some countries rely fully on few food suppliers, concentration of resources leads to rising fragility of world food systems and to more vulnerable instability (MacDonald et al, 2015).

Instability in food markets influence developing as well as developed countries. Global price development of food commodities, similarly to aforementioned factors, influence consumers in their nutrition habits adjustments. Changing nutrition habits influence national food self-sufficiency in relevant commodities. As food self-sufficiency belongs among important factors of national security (FAO, 2003) and among public goods (Halova et al, 2015), governments monitor changing food preferences and adjust, if needed, national policies to sustain food-availability (Chetvertakov, 2015).

As it has been monitored before (Kotyza & Slaboch, 2014; Smutka et al, 2015), Visegrad countries have problems with own food self-sufficiency although food availability is secured from common market of the European Union or other international markets. Therefore it is important to monitor changing nutrition habits and predict possible complications in food availability that may appear in the near future.

1. Methods

The main objective of this article is to identify tendencies in the consumption of selected food commodities in Visegrad countries. To fulfil aforementioned objectives following data and statistical methods are utilised. Individual data (time series of kilogram consumption of selected food commodities per capita and year (kg/p.c./y)) are sourced from Czech (CZ), Hungarian (HU), Polish (PL) and Slovakian (SK) statistical offices by applying the balance method. Analysed time period differs in different markets, as statistical offices provides different amount of data. Available data ranges from 1998 to 2014. Descriptive statistics and time series analysis are used for the trend evaluation. This article focuses on consumption of potatoes, meat (including pork, poultry and beef), milk and dairy products.

Among the selected descriptive statistical methods belong indicators of position (mean, median) and margin (variance, max, min, standard deviation and coefficient of variation). Other indicators as kurtosis or skewness were not used in the article.

Linear trend functions of the average per capita consumption is calculated for each food commodity for individual Visegrad country. Calculation was conducted in the software Statistica. P-value and R-squared is calculated for each trend function.

This article focuses on trends in the consumption of basic food commodities in Visegrad countries. The aim is to identify differences in food commodity consumption and define trends among selected food commodities. Are there differences in consumption in individual countries? How consumers changed their habits in observed countries during the reference time period?

2. Results and discussion

As it is mentioned in the methodology, average annual per capita food consumption is analysed in the case of potatoes, meat, milk and dairy products.

2.1. Potatoes

Values of descriptive statistics of potatoes are presented in the Table 1. The results present, that per capita consumption in SK and HU is twofold lower than average consumption in Poland and in the Czech Republic where consumption reach 71 kg/p.c./y. Tendency is similar in all countries, consumption of potatoes has decreasing trend. As trend functions present (Table 2), consumption of potatoes in Poland decreases every year by 2.3 kg/p.c., similar trend is observed in Slovakia. In the Czech Republic and Hungary it was observed reduction of consumption by 0.6 and 0.5 kg respectively.

TAB. 1: Descriptive statistics - consumption of potatoes in V4

	mean	median	min	max	variance	stand. dev.	coef. of var.
CZ	71.71882	71.44000	64.87000	77.00000	12.81219	3.579411	4.990895
SK	56.25385	55.11599	47.00000	74.80000	74.65769	8.640468	15.35978
HU	64.05625	64.25000	58.60000	68.20000	10.08663	3.175945	4.958056
PL	120.8571	121.0000	102.0000	134.0000	98.13187	9.906153	8.196581

Source: Authors – Statistica software

TAB. 2: Linear trend function of consumption of potatoes in V4

	trend function	p-value	R ²
CZ	$Y = 77.172 - 0.606x$	0.00001	0.7308
SK	$Y = 71.077 - 2.117x$	0.00000	0.9110
HU	$Y = 68.272 - 0.496x$	0.00100	0.5529
PL	$Y = 138.26 - 2.321x$	0.00000	0.9606

Source: Authors – Statistica software

In Visegrad countries, consumption development copies general trend of developed countries. In 19th century, potatoes reached highest popularity as they were considered as cheapest food, main livestock feed and material for alcohol production. Since then

per capita consumption has been decreasing mainly due to the changed consumer preferences. Even though consumption falls in developed countries, developing countries evince consumption rise as food demand grows significantly (Harris, 1992). Similar results are presented by FAO (2008). The FAO analyses presents world data that describes decline of potatoes consumption mainly in developed countries, while opposite tendency is observed in developing countries (Asia, South America). Nearly 1/3 of world potatoes production is produced in China and India

2.2. Meat

From the perspective of meat consumption (Table 3 and Table 4) it is obvious that largest portion of meat is consumed in the Czech Republic (average 79 kg/p.c./y), followed by other countries with annual average consumption between 57 and 68 kg/pc/year. The Czech Republic, Hungary and Slovakia evince negative consumption trend, Poland is an exception where consumption is on rise. The fastest decline is observed in the case of Slovakia where consumption has been declining by 1 kg/p.c./y. In Slovakia, total meat consumption felt by 12 kg/p.c./y over 12 years, in the Czech Republic by 6 kg/p.c./y over 15 years.

TAB. 3: Descriptive statistics - consumption of meat in V4

	mean	median	min	max	variance	stand. dev.	coef. of var.
CZ	79.51176	79.80000	74.80000	83.00000	4.672353	2.161563	2.718544
SK	57.36154	58.70000	47.90000	61.60000	16.70256	4.086877	7.124769
HU	64.23750	63.85000	55.80000	72.30000	21.83983	4.673311	7.275051
PL	68.62857	68.60000	63.80000	72.70000	5.602198	2.366896	3.448850

Source: Authors – Statistica software

TAB. 4: Linear trend function of consumption of meat in V4

	trend function	p-value	R ²
CZ	Y= 82.232-0.302x	0.0015	0.4984
SK	Y= 63.862-0.928x	0.0000	0.7830
HU	Y= 68.453-0.496x	0.0459	0.2552
PL	Y= 68.282+0.046x	0.7816	0.0067

Source: Authors – Statistica software

Reached results are supported by Kearney (2010), who points out the fact that meat consumption falls in developing countries (Europe, North America) mainly due to the fall in consumption of pork and beef meat and its substitution by white meat, also due to the changing consumer preferences and slowing income growth rate (Henchion et al, 2014; Rosochatecka et al, 2013) or fear from diseases (e.g. e.g. mad cow disease etc.) (Kearney, 2010). In Hungary, consumer preferences changed mainly due to changes in

life (Lorinczi, 2008) while in Poland mainly due to low beef quality (Konarska et al, 2014).

2.3. Milk and dairy product

Consumption of milk and dairy products is characterized in Table 5 and Table 6. From the observed data it can be concluded, that Czech people has highest average annual consumption of milk and dairy products (230 litre/p.c./y in milk equivalent). On contrary milk and dairy products are consumed the lowest in Slovakia and Hungary (fluctuation between 150 and 157 litre/p.c./y). In Poland consumption rise continually, in 2014 average Pole consumed 212 litres/p.c./y of milk equivalent. The linear functions have growing trend in all Visegrad countries, according to the functions, the fastest growth is further expected in CZ, where parameter adds more than 2 l/p.c./y. Although income elasticity of food expenditures is inelastic (Syrovatka, 2004; Andreyeva et al, 2010), decrease in milk and dairy prices after milk quota abolition will result in increased consumption. Milk price reduction might be critical from self-sufficiency perspective for the Czech Republic and Slovakia, both countries are characterised by lower technical efficiency comparing to Poland (Špička, 2015), similarly Hungary needs to face low competitiveness of its dairy sector (Voneki et al, 2015). Nevertheless in the old EU member states consumption of dairy products is expected to be driven mainly by processed milk products, while consumption of raw milk is on decline (Bouamra-Mechemache et al, 2008; EU, 2015), similar trend is expected in new EU member states as some dietary patterns of older and new EU members become similar (Elsner & Hartmann, 1997; Ratinger & Slaisova, 2001).

TAB. 5: Descriptive statistics - consumption of milk and dairy products in V4

	mean	median	min	max	variance	stand. dev.	coef. of var.
CZ	229.3471	234.1000	197.1000	249.7000	212.2389	14.56842	6.352129
SK	157.5846	156.9000	152.4000	166.8000	24.68308	4.968207	3.152723
HU	149.8125	151.1500	134.3000	162.1000	57.99450	7.615412	5.083295
PL	191.2421	192.0490	177.6710	211.5620	91.22247	9.551045	4.994218

Source: Authors – Statistica software

TAB. 6: Linear trend function of consumption of milk and dairy products in V4

	trend function	p-value	R ²
CZ	$Y = 209.688 + 2.184x$	0.0004	0.5733
SK	$Y = 155.51 + 0.296x$	0.4453	0.0539
HU	$Y = 145.775 + 0.475x$	0.2970	0.2640
PL	$Y = 184.555 + 0.892x$	0.1674	0.1525

Source: Authors – Statistica software

Conclusion

Significant differences were observed in consumption of selected food commodities in Visegrad countries. Results of the time series analyses presented evident decline of potatoes per capita consumption in all monitored countries. Potatoes usage fell most significantly in Slovakia and Poland, where per capita consumption was reduced by 27 and 26 kg/per capita/year respectively. Even though Poland evinced strong decline, it is important to mention, that average annual per capita consumption is about 100 kilos, while in Slovakia potatoes usage reach only 46 kg/per capita/year. Linear trend functions expects further decline in potatoes usage. Significant changes can be also observed in meat consumption. Slovakia can be characterised by the lowest meat consumption, its consumption is by 12 kg lower than consumption in the Czech Republic. Based on the linear trend functions It can be assumed that gradual decline of meat consumption will continue. It is interesting to follow changes in structure of meat consumed – beef meat is on decline and substituted by poultry, while pork consumption remains relatively constant (Slovakia is the only exception where also poultry meat declines). Based on available data it can be concluded that only consumption of milk and dairy products have increasing tendency, other analysed food commodities have declining tendency. Trend functions evince, that highest increase in milk consumption might be expected in the Czech Republic (average increase by 2.1 kg/p.c./year), in other countries increase is expected by 0.3 – 0.9 kg/p.c./year. Significant difference was observed between Czech Republic and Hungary, consumption of milk and dairy products differs by 85 kg.

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TO THE DESIGN AND USE OF STRATEGIC AND OPERATIONAL PERFORMANCE MANAGEMENT MODEL

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Keywords:

performance indicators – performance management – balanced scorecard – performance model

JEL classification: M10, M21

Abstract:

The performance, its measurement and management have been fields of interest of the researchers for long time. Based on the secondary data, the paper theoretically analyses the performance measurement and management with the emphasis on the performance indicators. A model of strategic and operational performance management has been designed in order to systemise the measurement and management of the performance in an enterprise at both (strategic and operational) levels. The analysis, synthesis, comparison, and generalization have been used so that to create first draft of performance model, which will be used for further research and testing, among the companies in a specific industry (or industries).

Introduction

The contemporary era favours the performance of individuals (also as employees), enterprises and the whole society. The literature offers many different opinions on the performance measurement and management, however the performance models/systems/frameworks are often focused on a respective level of performance (either strategic or operational) and many of them are working with the balanced scorecard concept (or expanding it). Many different articles have been published, dealing with the issue of performance measurement, management as well as performance systems, models, or frameworks (Beamon & Balcik, 2008, Greiling, 2008, Folan & Browne, 2005, Bourne, 2005, Bromberg, 2009, Sousa & Aspinwall, 2010, Kristensen & Westlund, 2004, Ljungholm, 2015 etc.).

1. Methods, literature overview

Based on the secondary research, the aim of the paper is to theoretically describe and analyse the performance measurement, with the emphasis on the performance indicators. Further, the author proposes the model of strategic and operational

performance management based on the principles of balanced scorecard at the strategic level of performance and principles of business process performance management at the operational level of performance. The paper represents the base for further research in this field of interest. Following methods have been used in the paper: the analysis, the synthesis, the deduction and induction, the comparison, and the generalization.

The business performance is dynamic and constantly changing quantity. The performance measurement is a complex interrelation criteria between the effectiveness, efficiency, quality, productivity, quality of work life, innovation, and profitability (Rolstadås, 1998, in Ishaq Bhatti & Awan & Razaq, 2013). On the other hand, business performance, especially of entrepreneurial businesses, is a multifaceted concept that is difficult to measure (Haber & Reichel, 2005, Kalleberg & Leicht, 1991, Shane & Venkataraman, 2000, in Kariv, 2008) and, considering the statement of Klementová & Hvolková & Klement (2016) that human resources represent an essential part of every business, the business performance depends often on the quality of those resources. Performance measurement can be introduced at all levels in an organisation: to identify problems and improve the efficiency of specific tasks, to assess customer satisfaction, and to deploy strategic objectives. It can act as a means of controlling improvement initiatives and can facilitate the decision-making process (Sousa & Aspinwall, 2010). Ishaq Bhatti & Awan & Razaq (2013) call the performance measurement a "phenomenon" which is used by the organisations to ensure that they are going in right direction, achieving targets in terms of organizational goals and objectives. Carlucci writes (2010), the selection of performance indicators is one of the major tasks in designing system of performance measurement. The authors Franceschini & Galetto & Turina (2009) claim indicators always exert an impact on the actions and decisions of companies despite their initial aim and the decision of introducing a new performance indicator (or a set of indicators) is enough to influence the organisation. Butler (1995) complements, the set of key indicators must be created, carefully chosen, and consistently reviewed so as to serve as a measure of the operation's progress and performance, to help isolate and measure the activities that are required and valued to ensure operational success, to plan and set the objectives, to aid communications within a group and to act as an incentive for higher levels of performance. Finally, Gosselin (2005, in Ishaq Bhatti & Awan & Razaq, 2013) defines the performance indicators as the physical values which are used to measure, compare, and manage the overall organisational performance, while Hughes & Bartlett (2002) consider a performance indicator being the selection, or combination, of action variables that aims to define some or all aspects of a performance. One of the main concerns in performance management is to find the 'right' indicators for monitoring a given process or system (Franceschini & Galetto & Turina, 2009). What is important is to consider there is no algorithmic procedure to identify the 'optimal' set of performance measures (Roberts, 1979, Roy, 1996, Franceschini et al., 2006; Franceschini & Galetto & Maisano, 2007, in Franceschini & Galetto & Turina, 2009). This is confirmed by Butler (1995) who argues

that having too many indicators may be worse than having none at all, serving to confuse and send out mixed messages. Also, Carlucci (2010) states it is reasonable that any effective PMS should include a limited number of indicators, i.e. key performance indicators (KPIs), capable of providing an integrated and complete view of company's performance. Selecting performance indicators is very individual and complex decision making process. In general, there are two main groups of performance indicators: financial (cost-based) indicators and non-financial (non-cost-based) indicators. In the organisational context, the enterprises mostly use the cost-based indicators as these are relatively easy to measure, evaluate and manage. As White confirms (1996, in Ishaq Bhatti & Awan & Razaq, 2013), the costs/financial, quality, time, delivery reliability, flexibility are largely accepted indicators of organisational performance. According to the available literature (Sinclair & Zairi, 1995, Ishaq Bhatti & Awan & Razaq, 2013, Beamon & Balcik, 2008, Folan & Browne, 2005, Kristensen & Westlund, 2004, Nunes et al., 2011, Sližytė & Bakanauskienė, 2007, Sousa & Aspinwall, 2010, Huang, 2008), following performance indicators can be taken into consideration when deciding about measuring and managing performance (many of them being divided into the sections or following the well-known models such as BSC, EFQM, etc.): customers' satisfaction and/or loyalty, quality, delivery reliability, employees' factors / satisfaction, productivity, financial performance, safety, environment/social/community performance, internal processes, learning and growth, flexibility, time, manufacturing lead time, the shortest delivery lead time, the quantity of final product produced, innovation, precision etc. Browne et al. (1997) has identified that different organisations use different measures for their performance, they generally measure performance of the organisation by breaking-up the overall business into processes. And the most organisations measure their performance by allocating the indicators to individual processes. As Sližytė & Bakanauskienė (2007) confirm, the selection and implementation of performance measurement tool in organisation should be very individual process. Folan & Browne (2005) state different frameworks for inter-organisational performance measurement including the framework typologies and the dimensions of measurement, e.g. Beamon's framework, Supply chain balanced scorecard framework, Lapide's framework, Dreyer's framework, etc. Sližytė & Bakanauskienė (2007) came to conclusion that organisations manage performance through performance measurement. They claim performance measurement must be linked to the organisational strategic plan to be effective. Performance management essentially uses performance measurement information to manage and improve performance and to demonstrate what has been accomplished.

2. The model of strategic and operational performance management

Based on the available literature and summarizing the opinions of many different authors involved in this topic as well as own experience, a model of strategic and operational performance management based on two main ideas (concepts) can be

further described. It's been worked on the assumption that the performance in an enterprise is divided into two levels - operational performance and strategic performance, which must be mutually interconnected. The first idea of the model is to use a balanced scorecard concept in the strategic performance area. The second idea is to measure the performance in the operational performance area by breaking it up into the individual processes. The main elements representing the operational performance area are business processes. That is the base for the operational performance management. Business processes transform the inputs into the outputs, "running" through the whole enterprise, its departments or business units. They "utilize" the employees from the specific work positions so that the responsibilities for process ownership as well as process execution are clear. The process attribute is the characteristic/property of a specific process, sub-process, or activity, e.g. basic attributes for the proposed model are cost, quality, and time. The performance indicator is the measure indicating the level of fulfilment of the objectives which have been set for the process attributes as well as for the processes, e.g. the number of rejected products divided by the total number of products produced. The performance indicators have their own attributes (indicator attributes), which are their characteristics such as the relation to the strategic objectives or business strategy, target value, the calculation formula etc. The responsibilities for the performance indicators must be given in order to measure, evaluate, and manage the operational performance, e.g. the responsibility for defining the indicator, for defining the target value, for measuring, recording and evaluating the real values etc. The strategic performance is based on the set of strategic objectives and their indicators (key performance indicators). One of the BSC principles has been used so that to keep the heterogeneity of the performance management and to offer different views on the performance. The strategic objective is the future desired value, transforming the mission and the vision into the specific tasks and activities, coming out from the overall business strategy and measurable by qualitative and quantitative indicators. The strategic objectives are divided into perspectives, respecting the balanced scorecard principle: the financial perspective, the customer perspective, the business process perspective, the learning, and growth perspective. The strategic map consisting of the strategic objectives needs to be balanced and the objectives mutually interrelated. Key performance indicator (KPI) is the measure indicating the level of fulfilment of the strategic objectives which have been set for accomplishing the overall business strategy. That is also the performance indicator from the operational level of performance, measuring the level of fulfilment of the strategic objective. The responsibilities for the KPIs as well as KPIs' attributes are set (as shown at the operational performance level). KPIs are the element of performance management at both levels, so they represent the connection between the strategic and operational performance management of the enterprise. There are 14 links among the elements in the performance model. The process attribute as the characteristic of process (1); the performance indicator as the measure of the process attributes (2) as well as of the business processes (3); the organisational units as the place of business process

Based on the experience with design of the proposed model under the conditions of real engineering enterprise, we defined several key factors influencing the model of strategic and operational performance management: the need for process management implementation and the understanding of its necessity in an enterprise; the creation of work team for process management implementation and performance management; the existence of process model of an enterprise; the identification of the business processes of an enterprise and the process analysis including the process relevance or potential reorganisation so that to achieve high performance; setting the competencies and responsibilities for the processes; systematic approach to the business processes management and their performance, management of business process performance and setting the process attributes and performance indicators; appropriate and updated business strategy; continual review and updating of the performance register; appropriate strategic and operational performance management and their improvement; defining the conditions for employees' mind-changing and building the right corporate culture, appropriate and efficient system of top-down as well as bottom-up communication; harmonising the process of preparation as well as implementation of performance management with the operational activities of an enterprise; connecting the process and performance management with other managerial systems such as quality systems, information systems, software support. By using the opinions of the researchers, e.g. W. Artley, D. Ellison and B. Kennedy (2001, in Sližytė & Bakanauskienė, 2007), who state performance-based management is a systematic approach to performance improvement through an ongoing process of establishing strategic performance objectives, measuring performance, collecting, analysing, reviewing and reporting performance data, and using that data to drive performance improvement, the proposed key factors mentioned above can be confirmed. Authors also claim performance measurement system must support strategic objectives, have an appropriate balance among short term and long term results, number of performance measures must be limited, it must include only essential measures, include the measures that have comprehensible specifications, it should concentrate on the fields which are influenced, measures should be comparable with competitors' measures, measurement must differ for different departments, it must be easily changeable in time and these preconditions are met in the proposed model.

Conclusion

The performance measurement and performance management including the proposal of the performance management model have been discussed and analysed in the article. The model needs to be further revised and supplemented with the strategic objectives map of an enterprise/s. Finally, the factors influencing the business performance need to be taken into consideration so as to better control of the performance and to create the usable and comprehensive model of overall business performance.

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SELECTED ISSUES OF FOREIGN TRADE OF CENTRAL EUROPEAN COUNTRIES

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Keywords:

Czech Republic – export – foreign trade – import

JEL classification: F43, O11

Abstract:

This article deals with the selected aspects of foreign trade of countries from central Europe, namely of Germany and countries of Visegrad Four. Countries of Visegrad Four share similar history and they also have similar economic development, especially after the fall of Iron Curtain. Germany, on the other hand, is one of the most developed countries from the world, and it is also very important trade partner for all Visegrad Four countries, especially for the Czech Republic and Poland. This article analyses selected aspects of foreign trade and compares the development in Visegrad Four countries with development in Germany. The analysis shows that there exist significant differences not only between the development in Germany and Visegrad Four countries, but also among member states of Visegrad Four themselves.

Introduction

Macroeconomic theory shows that Gross Domestic Product (GDP) is one of the most important indicator showing and evaluating development in particular country. This indicator can be calculated in three different ways, as described in Andrews, Bernake & Croushore (2011), or Samuelson & Nordhaus (2010).

First approach is based on the definition of GDP, where it measures value of the goods and services in specific year in all industrial sectors in particular country. Second approach of GDP calculation is based on income earned by all the factors of production in economy, which presents wages paid to labour, rent earned by land, and the return on capital in the form either of interest, or entrepreneur's profit. Last approach for GDP calculating is based on spending of different groups that participate in the economy. According to this method, GDP is a measure of consumer spending (C), business investment (I), government spending (G), and net exports, which is exports minus imports (X - M), which means

$$\text{GDP} = C + I + G + (X - M). \quad (1)$$

From above mentioned description is quite obvious that foreign trade is important for every state because it can either improve the GDP level (in case that export is higher than import) or worsen it (in the opposite case). Nevertheless, foreign trade is important for every country because of other reasons as well, such as solving of proportionality problem, demonstrative effect of foreign trade, and others. Author of this article already analysed foreign trade (see Kovárník & Hamplová, 2016), but the importance of foreign trade has been evaluated in other articles by other authors too, for example Baier, Bergstrand & Feng (2014), Cieslik, Bieganska & Sroda-Murawska (2016), Do, Levchenko & Raddatz (2016), Giordano & Zollino (2016), Gladkov (2016), or Vannoorenberghe (2014).

1. Methods

As was already mentioned, this article deals with the problematic of foreign trade of selected countries from central Europe, namely of Germany, the Czech Republic, Slovakia, Poland, and Hungary. Foreign trade can be analysed by different indicators and methods, but one of the possible way can be calculation of export / GDP ratio, where this indicators measures openness of particular economy. Higher results means opener economy, and vice versa.

Data, which has been used for the calculations, has been obtained in general available database of Eurostat (see Eurostat, 2016a, and Eurostat, 2016b), and consequently calculated and evaluated by author.

The analysis focuses on several partial topics:

- a) Analysis of GDP development of above mentioned countries. GDP is traditionally one of the most frequently used macroeconomic indicator, which can help evaluate economic development of particular country, and also compare different economies among others.
- b) Analysis of foreign trade development of above mentioned countries. As was explained, foreign trade is part of GDP formula and it can either increase or decrease the level of GDP. Foreign trade of both goods and services will be evaluated.
- c) Analysis of export / GDP ratio of all analysed countries is last part of this article. As was already mentioned, this indicator measures openness of economy, and the results will be again compared for Germany and Visegrad Four countries both for goods and services.

2. Results

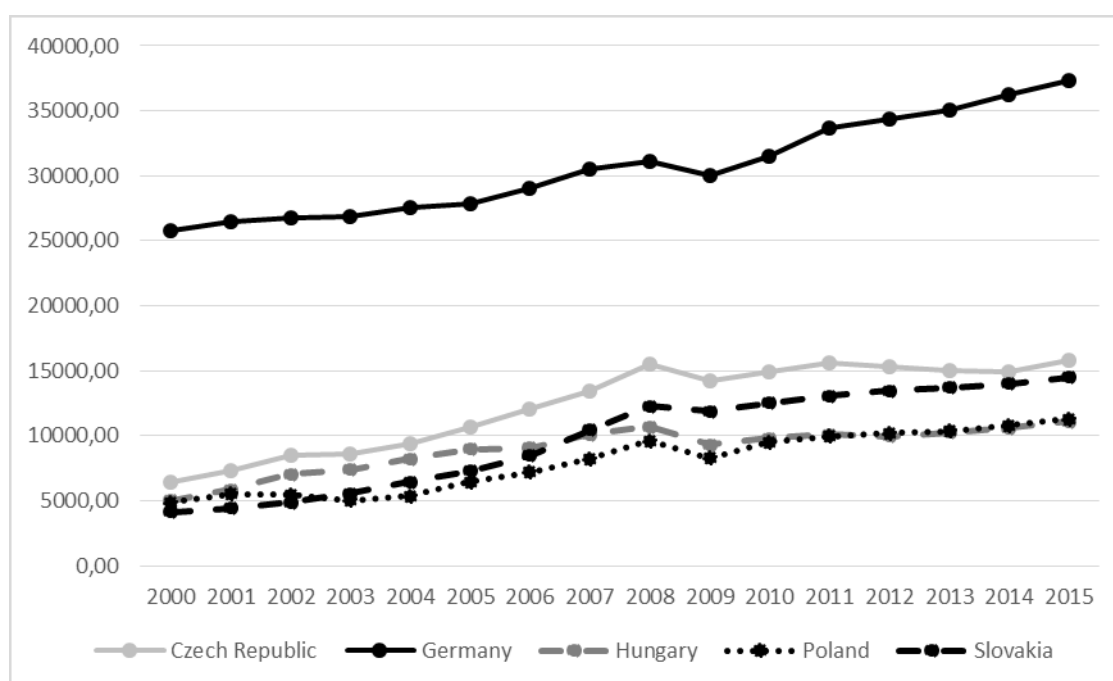
2.1. GDP Development Analysis

Germany has had more than eighty millions of inhabitants, Poland around thirty eight millions, the Czech Republic over ten millions, Hungary currently less than ten

millions, and Slovakia little bit more than five millions. Therefore it is quite obvious that the GDP in millions of euro is the highest in Germany, Poland is on the second position, the Czech Republic on the third place, Hungary on the fourth place, and Slovakia is the last one.

However, for mutual comparison of different countries is necessary to recalculate the level of GDP per capita. Following Fig. 1 shows the development of GDP per capita in analysed countries in whole analysed period 2000 – 2015.

FIG. 1: GDP per capita Development (Euro)



Source: own calculations based on Eurostat (2016b)

Firstly, Germany has had significantly higher level of GDP per capita than other analysed countries, which is proof about its economic development and about undisputed position of Germany as one of the most developed countries of the world. It is also obvious that there exist some similarities, but also some differences among analysed countries. For example, in all analysed countries can be seen decrease in the year 2009 as a result of economic crisis. However, after-crisis development is different. Germany, Poland, and Slovakia have been growing after crisis since 2009, but level of GDP per capita in the Czech Republic was decreasing between the years 2011 and 2014, and level of GDP per capita in Hungary decreased between 2011 and 2012.

As far as position of Visegrad Four countries is concerned, the Czech Republic has been on the second place (after Germany) for the whole analysed period of time, but because of its irregular development, especially after crisis, its lead is decreasing. In 2000 was on the third position Hungary, but its development was really slow and irregular too,

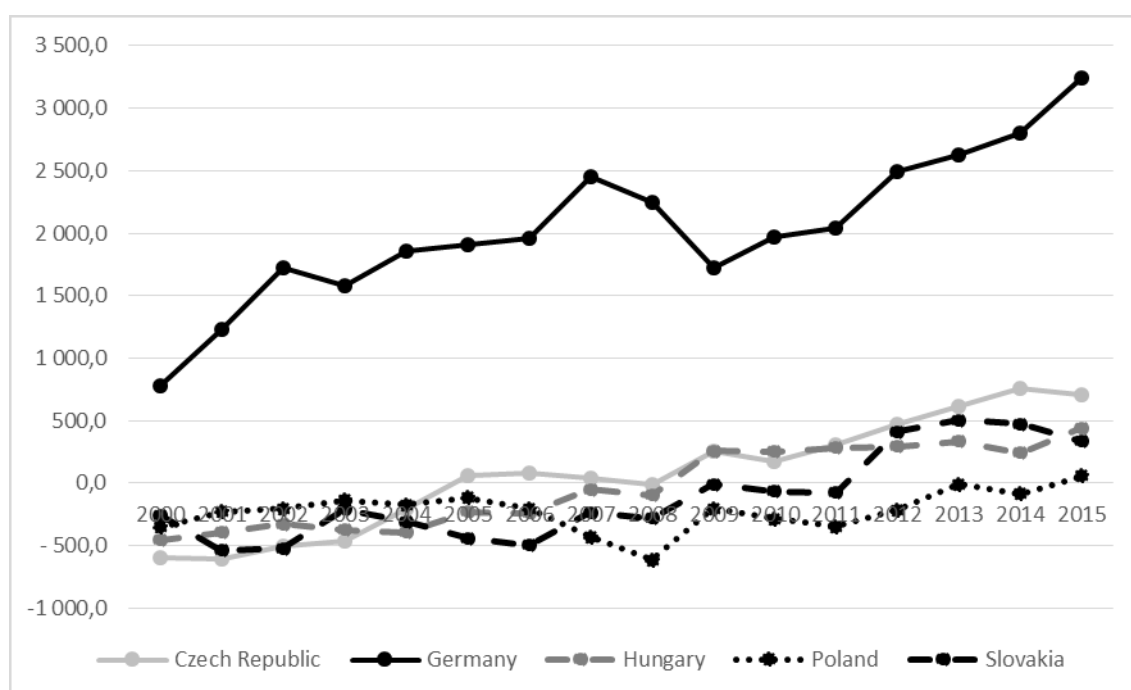
therefore currently is Hungary on the last position, where it was exceeded by Slovakia in 2007 and by Poland in 2012. On the fourth position in 2000 was Poland, where its position is unchanged, but it managed to exceed Hungary in 2012 and it was exceeded by Slovakia in 2003.

Moreover, it is quite obvious that the gap between Germany and Visegrad Four countries is not closing, on the contrary, it is getting wider. Even if some Visegrad Four countries (Slovakia or Poland) are developing, especially after crisis, the growth is too slow compared to the Germany.

2.2. Foreign Trade Development Analysis

Following Fig. 2 describes the development of net balance of foreign trade with goods recalculated per capita in all analysed countries. Recalculation per capita was necessary, because Germany is significantly better in net balance than other analysed countries in millions of euro. Not only Germany has had positive net balance in the whole analysed countries, its surplus was over 263 billion of euro. All Visegrad Four countries had deficit in foreign trade with goods in 2000, and even if all of them had surpluses in 2015, the second highest surplus was in the Czech Republic in the amount around 7.5 billion. The difference between Germany and other countries is so extreme that recalculation was necessary for mutual comparison.

FIG. 2: The Net Balance of Trade with Goods Development (Euro per capita)



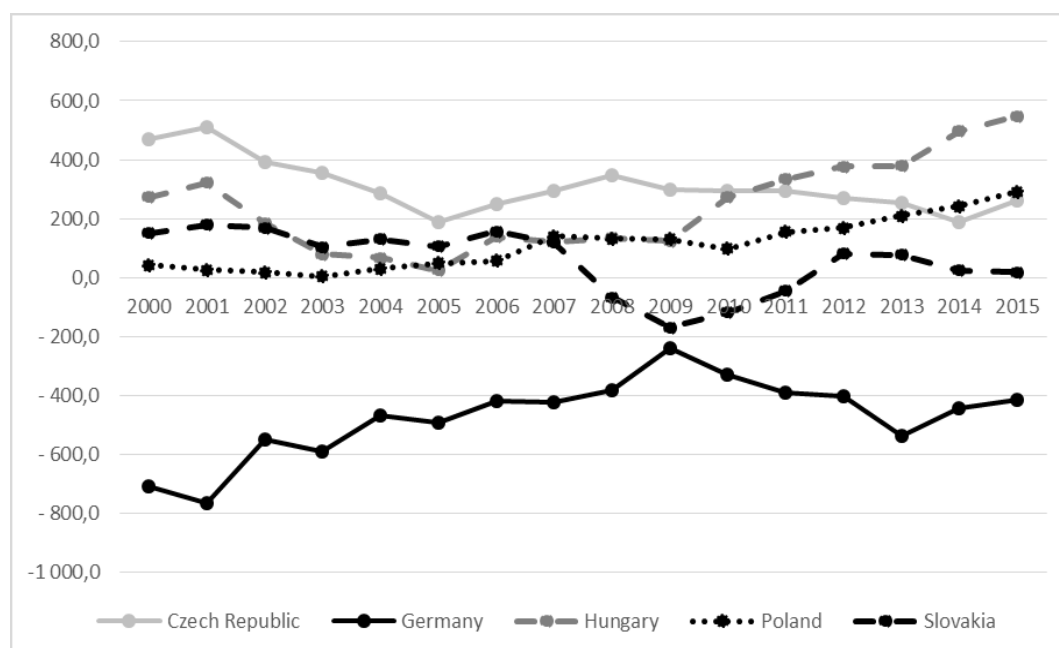
Source: own calculations based on Eurostat (2016a)

import of services are significantly lower than in case of goods, nevertheless, the positions of the strongest and weakest economies are relatively surprising. The development (recalculated per capita) is described in following Fig. 3. Even after this recalculation remains Germany on the first position with significantly higher surplus (more than 3,200 in 2015). This is only another proof of economic strength of Germany, where this country really understand that foreign trade is basic engine of economic development of every country. On the second position in 2015 was the Czech Republic, but it was on the last position in 2000. That means that the Czech Republic has been growing in terms of trade with goods in past, however, the after-crisis development in the Czech Republic has been dealing with some problems. Another well developing country is Hungary, where it was on the fourth position in 2000, and currently has Hungary the third highest surplus per capita. The worst country in 2015 was Poland, where this country had significantly lower surplus than other Visegrad Four countries. Moreover, it managed to achieve the first surplus in 2015, where the Czech Republic had surplus in 2005, Hungary in 2009, and Slovakia in 2012.

The development of net balance per capita is relatively irregular, however, some interesting facts can be found in the Fig. 2. For example, in 2009 the net balance decreased in Germany, while it increased in all Visegrad Four countries. However, in 2010 was the development exactly the opposite, the net balance increased in Germany and decreased in Visegrad Four countries.

However, the analysis of foreign trade in services shows relatively unexpected results. The amounts of both export and

FIG. 3: The Net Balance of Trade with Services Development (Euro per capita)



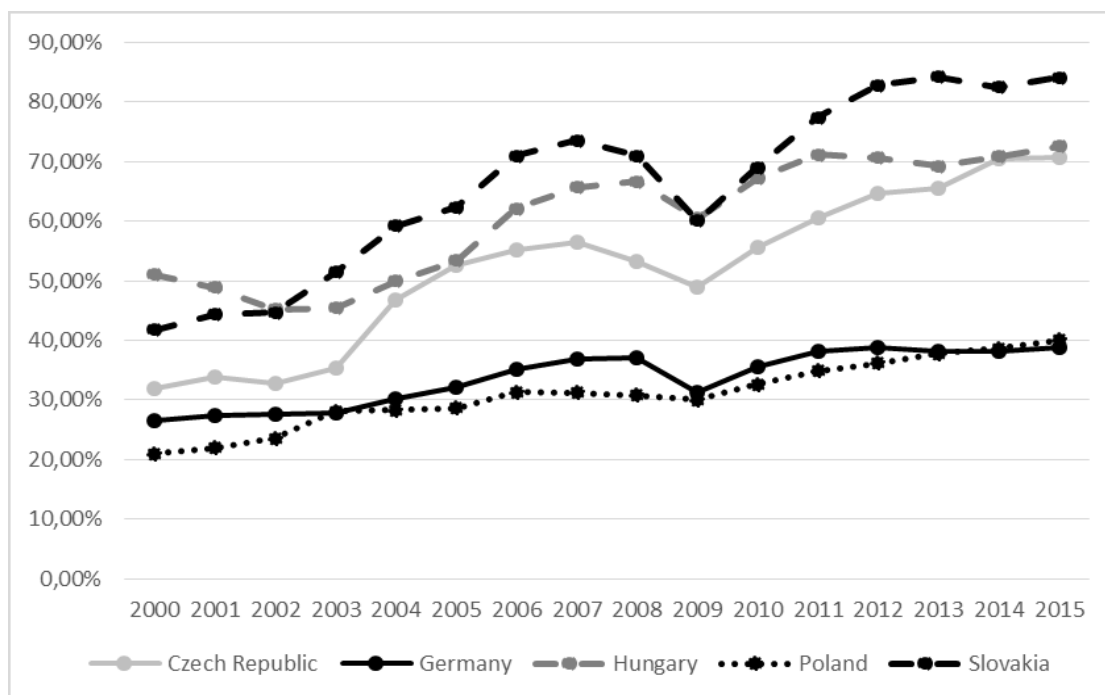
Source: own calculations based on Eurostat (2016a)

The development of this net balance is also very irregular, but it is quite obvious that Germany has been the worst country in terms of trade with services, where it has been in deficit for the whole analysed period of time. The country with currently the best position is Hungary with the highest surplus per capita, where its development after crisis is really fast. The second highest surplus in 2015 had Poland, where the Czech Republic was on the third position, even if it had the highest surplus in 2000. Moreover, the Czech Republic and Slovakia are the only countries, where the balance in 2015 is worse than in 2000. Hungary and Poland has been developing in positive balances, where Germany has remained in deficit, but this deficit in 2015 is lower than in 2000.

2.3. Export and GDP Ratio

As was already explained, one of the possible indicators for evaluation of foreign trade of particular country is export / GDP ratio, where this indicator measures the openness of particular country. The development of export of goods / GDP ratio is described on following Fig. 4.

FIG. 4: Export of Goods on GDP Ratio

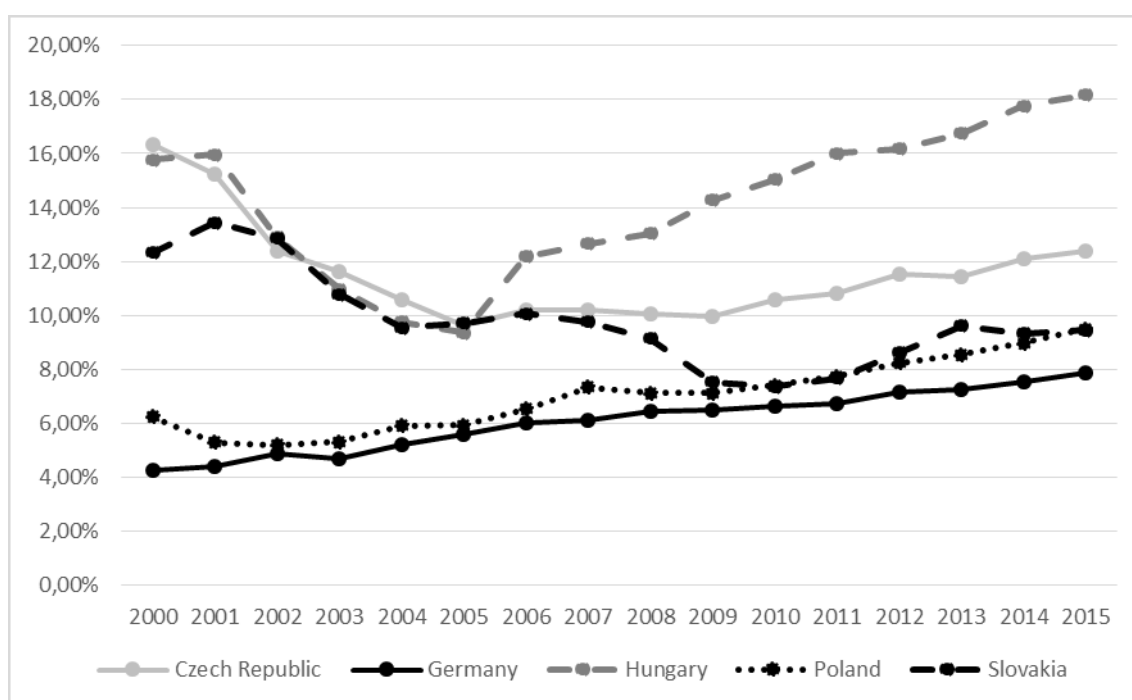


Source: own calculations based on Eurostat (2016a)

This Fig. 4 again shows relatively unexpected results. As was described on previous Fig. 2, Germany has had the highest net balance in terms of goods, where its surplus is almost incomparable with results in Visegrad Four countries. Despite this fact Fig. 4 proves that Germany is relatively close economy, where export / GDP ratio is currently only around 40%. It can be explained in such way that even if Germany has huge

surplus in trade with goods, its GDP is created mostly by other (domestic) factors. On the other hand, Visegrad Four countries can be considered as relatively open economies, with the only exception of Poland. The most open economy is Slovakia, where this ratio is more than 84%. It can be again explained in that way that these countries try to improve their positions (in terms of GDP) through export (more precisely through foreign trade), because of the lack of domestic factors. Following Fig. 5 describes the export of services / GDP indicator.

FIG. 5: Export of Services on GDP Ratio



Source: own calculations based on Eurostat (2016a)

It is quite obvious that in terms of services are all analysed countries relatively close, where the highest indicator is in Hungary (more than 18%), and the lowest again in Germany (less than 8%). However, Germany has been growing in almost whole analysed period, as well as Poland, Hungary has been growing in relatively fast pace from 2005, but the development in the Czech Republic and Slovakia is irregular and both countries had worse results in 2015 than they had in 2000. It can be explained in such way that even if trade in services is not so important as trade in goods for all analysed countries, some of them are developing even in this area, while the Czech Republic and Slovakia are getting worse and are focusing more on trade in goods.

3. Discussion

Comparative analysis in this article shows some expected results, but also some unexpected. It is quite expected that Germany is the strongest economy both in terms of

total GDP and in terms of GDP per capita. According to the total GDP, on the second position is Poland, the Czech Republic is on the third position, Hungary is the fourth, and Slovakia is the last one as a result of number of inhabitants. However, after recalculation per capita is the Czech Republic on the second place, Slovakia is the third, Poland on the fourth position, and Hungary is the last one. Nevertheless, based on the development can be expected that the Germany will remain the strongest economy, but the situation among the other countries can change in the future, because especially the Czech Republic has had some problems in its development.

International trade balance is an important part of GDP formula, but such irregular development of trade balance both in goods and in services has been relatively unexpected. The development of both export and import is relatively similar to GDP development, the only difference is the size of increases and decreases. These differences are the reason while the final net balance is so irregular. However, in spite of this irregular development can be seen relatively significant growth of net surplus in terms of goods in Germany, while the other countries are growing really slowly. Partial conclusion can be made that Germany is strong economy with increasing exports, which helps consequently to improve GDP again. Nevertheless, the net balance of services shows that the Germany is the only country in deficit, where all Visegrad Four countries are in surplus. The strongest economy in terms of services is Hungary, which is again relatively unexpected result.

The last analysed part in this article was openness of the particular economy, which can be analysed by export on GDP indicator. In terms of goods, the worst economy is (surprisingly) Germany, where this indicator is less than 40%, while for example in Slovakia is more than 80%. It can be explained that the even if net balance in Germany is growing, its GDP development is supported mostly by other (domestic) parts of GDP formula, while Visegrad Four countries are using foreign trade as the important factor for their GDP development. As far as services are concerned, the ratio is obviously significantly lower, but the worst result is again in Germany. Additionally, the Czech Republic and Slovakia are the only countries where this ratio has decreased. The best result is again in Hungary (more than 18%).

Conclusion

The aim of this article was to analyse the selected topics of foreign trade in Germany and in Visegrad Four countries, with special focus on export / GDP ratio. The analysis shows that all countries have been growing in terms of GDP per capita, however, after the world economic crisis (since 2009) has been the Czech Republic dealing with the lowest growth rate, while Poland and Slovakia have been growing really fast. However, the Czech Republic still has some lead from previous years, but this lead is weaker every year because of the slow growth rate. Nevertheless, all Visegrad Four countries are significantly weaker than Germany.

As far as international trade is concerned, Germany has the highest surplus in terms of goods, where Visegrad Four countries had deficits in 2000, but all of them had already surplus in 2015. In terms of services, Germany is surprisingly the weakest with deficit in whole analysed period of time, where all Visegrad Four countries have surpluses. The strongest of them is Hungary.

Additionally, the indicator evaluating the openness of particular economy shows that Germany is relatively close economy, where export / GDP ratio is less than 40% (in goods) and less than 8% (in services). It can be explained in such way that Germany is using other (internal) sources for its GDP growth. All Visegrad Four countries are relatively open in terms of goods (more than 70%), except Poland (around 40%). In terms of services are these countries also relatively close, but more open than Germany (more than 9%, in Hungary even more than 18%). That means that these small and economically weak countries are dependent on international trade, their internal sources are probably not able to start economic development.

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POLISH – CZECH TRADE IN AGRI-FOOD PRODUCTS BEFORE AND AFTER ACCESSION TO THE EUROPEAN UNION

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JEL classification: F01, F11, F23

Abstract

This article aims to identify the changes that have occurred in the Polish foreign trade in agri-food products with the Czech Republic before and after accession to the EU. The study used data from Eurostat, IAFE-NRI, and CSO. There were analysed the value, balance and assortment structure of the Polish trade in agri-food products with the Czech Republic in the years 2003-2015. For groups of products involved in the Polish-Czech trade set ratios coverage of import by export (trade coverage – TC) and Grubel-Lloyd indexes of intra-branch trade (GL). Poland has a comparative advantage in trade in agri-food articles in general, but in the case of certain groups of products, particularly agricultural products, there is a lack of specialization. Also, some product groups have a long-term downward trend, suggesting that the Polish comparative advantage in relation to the Czech Republic for exports of these product groups will decrease.

Introduction

Since many years one of the more important trading partners for Poland is the Czech Republic. It occupies a leading position on the Polish list of suppliers and recipients. On positive trade relations between Poland and the Czech Republic have an impact: their geographical location (neighbourhood), operation within the Visegrad Group, as well as accession to the European Community at the same time.

Influence of food industry on The Czech Republic GDP is not so significant and, moreover, its share on GDP has been more or less decreasing (Vokoun et al., 2015). The position of Czech food industry has decreased also in comparison with manufacturing industry. While the number of employees in manufacturing industry remains almost the same, the number of employees in the food industry has decreased. Moreover, value added in manufacturing industry has increased rapidly, while the value added in food industry has remained almost the same (Putićová, Mezera, 2008).

Other analysis shows that productivity of Czech agriculture has considerable reserves. Gross value added in the Czech Republic in the prices of agricultural producers has increased insignificantly after the accession to the EU, while economically developed countries have achieved usually significantly higher gross value added growth rate (Boháčková, Mach, 2015).

Despite these facts, food industry is still important not only for internal purposes, but for trade as well, especially between neighbour countries. It is known (Jámbor, 2015), that trade will be greater the closer countries are geographically, because the distance between countries well reflects transport costs.

With respect to the Czech agricultural foreign trade, it is possible to identify several fact after the EU accession. Firstly, the Czech agricultural trade is developing very dynamically, where the values of exports and imports experience a significant growth. Moreover, export growth rate exceeded the import growth rate, but there is still negative trade balance, which is relatively stable in recent years.

Territorial structure of the Czech agricultural trade shows that its orientation is focusing gradually more on EU-countries, where the share of these countries reaches about 90%. The most important importers for the Czech Republic are EU15 countries, however, their share is gradually decreasing in comparison with “new member states”. The growth rate of exports is still the highest in relation to EU15, followed by EU13 (new member states) and other countries. It is worth to emphasize that this dependency on EU market is not good, because it does not provide enough stimuli for inter-regional development.

The agricultural exports are based on a relatively small number of commodity aggregations. There can be found milk and milk products, cereals, beverages and spirits, tobacco and tobacco products, preparations of cereals, residues and waste from the food industries, oilseeds, vegetable oils and oils, sugars and sugar confectioneries. The most important import aggregations in the long term are meat and edible meat offal, miscellaneous edible preparations, edible fruit and nuts, preparations of cereals, beverages, spirits and vinegar, animal fodder, edible vegetables, animal and vegetable fats, oils, cocoa and cocoa preparations.

Positive trade balance has the Czech Republic in relation to commodity aggregations cereals, live animals, dairy produce, oil seeds and oleaginous fruits, sugars and sugar confectionery, tobacco and manufactured tobacco substitutes, and products of the milling industry, malt and starches. Negative trade balance is generated within aggregations meat and edible meat offal, edible fruit and nuts, edible vegetables, preparations of vegetables and fruits, live trees and other plants, animal fodder, cocoa and cocoa preparations, and preparations of cereals.

However, the Czech agricultural market still does not have any profiled structure of comparative advantage and thus it misses a definitively defined commodity structure, especially in relation to the EU member states (Smutka et al., 2015).

1. Methods, literature overview

To achieve the objective there was used the data from: European Union Statistical Office (Eurostat), Polish Institute of Agricultural and Food Economics – National Research Institute (IAFE-NRI) and from Central Statistical Office in Poland (CSO). There was analysed the value, balance and assortment structure of the Polish trade in agri-food products with the Czech Republic in the years 2003-2015. For agri-food products in general and their specific groups there were calculated indices of external competitiveness as a coverage ratio of import by export (trade coverage – TC), whereas to assess the intensity of intra-branch trade between the two countries – Grubel-Lloyd index (GLI).

The coverage ratio of import by export (TC) allows to determine one sequence in which the proceeds from the export of products of the branch cover expenditure on imports (Orlowski & Salvatore, 1997; Olszańska, 2016). Value ratio below ones means the trade balance deficit and the lack of competitiveness in foreign markets. The indicator is calculated based on the formula (1):

$$TC = \frac{Ex_j}{Im_j} \quad (1)$$

where:

Ex - the export value of the j-th product of the country i-th,

Im - the import value of the j-th product of the country i-th,

The Grubel-Lloyd index of intra-branch trade (GLI) measures the intensity of the phenomenon and expresses the ratio of intra-branch trade to total trade taking place within the i-th branch of the country j-th (Grubel, Lloyd, 1975; Kowalska, 2016). Its value is in the scale (0-1):

$$GLI = \frac{(Ex_j + Im_j) - |Ex_j - Im_j|}{(Ex_j + Im_j)} \quad (2)$$

where:

Ex - the export value of the j-th product of the country i-th,

Im - the import value of the j-th product of the country i-th,

2. Results

2.1. The value and the balance of Polish – Czech trade in agri-food product

The Czech Republic is for many years one of the most important economic partners for Poland. In 2015 this country was the third largest Polish trade partner in terms of share in Polish export value (6.9%) and seventh in import value (3.0%). Poland was also the third largest trading partner for the Czech Republic in terms of import value (share 5.8%), after Germany (32.5%) and Slovakia (8.96%) (<http://wits.worldbank.org>). An important place in the structure of Polish-Czech trade exchange occupy the agricultural and food products, in addition to electromechanical and metallurgy articles. The share of agri-food goods in total Polish exports to the Czech Republic in 2015 constituted 13.8% (of which: food products - 5.4%, vegetables - 4.9% and livestock - 3.5%) and was the highest in the analysed period (Table 1).

TAB. 1: Turnover of Polish foreign trade in agri-food product with the Czech Republic in 2003-2015 (billion euro,%)

Specification	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Agri-food trade with the Czech Republic (billion euro)													
export	0.20	0.28	0.38	0.55	0.63	0.74	0.75	0.85	1.02	1.12	1.24	1.30	1.64
import	0.13	0.15	0.20	0.27	0.34	0.41	0.36	0.37	0.45	0.49	0.45	0.43	0.48
balance	0.07	0.13	0.18	0.28	0.29	0.33	0.40	0.47	0.57	0.62	0.79	0.87	1.16
Agri-food trade with the Czech Republic (previous year = 100)													
export	100	139	135	144	116	117	102	113	121	109	111	105	126
import	100	115	132	135	130	118	87	105	122	108	92	95	112
balance	100	181	139	154	103	115	120	120	120	110	126	111	133
Share of agri-food products in a total Polish foreign trade (%)													
export	-	-	11.6	11.2	11.2	11.1	13.1	11.8	12.0	12.3	12.9	12.1	13.8
import	-	-	6.8	7.6	8.3	8.0	9.1	7.4	8.0	8.7	7.9	7.1	7.8
Share of the Czech Republic in total Polish foreign trade in agri-food products (%)													
export	5.0	5.3	5.4	6.4	6.4	6.5	6.7	6.3	6.7	6.2	6.1	6.0	6.9
import	3.7	3.4	3.7	4.2	4.3	4.0	3.9	3.4	3.6	3.6	3.2	2.9	3.0

Source: own study based on (CSO, 2016); Note: - no data.

In the years 2003-2015 the export value of Polish agri-food products to the Czech Republic was a growing tendency and in 2015 amounted to 1.64 billion euros, ie. over 7 times more than in 2003. The average annual growth rate amounted to almost 109 million euro. It was set on the basis of the trend line with a very good fit ($R^2 = 0.98$). Also the import of agri-food goods from the Czech Republic in the analysed period has, with slight fluctuations, rising trend. In the years 2003-2015 import of these products

increased by 271.3 p.p. and in 2015 it reached 483.5 million euros. The average annual growth of import amounted to 29.8 million euros and, like in the case of exports, it had an upward tendency, which is indicated by the equation of the trend line with the matching on the level of $R^2 = 0.85$.

Trade balance of products in agri-food sector with the Czech Republic throughout the considered period was positive. The highest value it reached in 2015 and amounted to 1.16 billion euro. Thanks to increasing exports of products from this sector to the Czech market in the coming years trade balance value should also increase.

The positive balance of trade in Polish products of agri-food sector with the Czech Republic and the growing share of this sector in total exports, as well as in export on the Czech market confirms the positive structural changes that have occurred since 2004 in the exchange of products from this sector with southern neighbours and their growing importance for the Polish economy (Tarnowska, 2014). Increase the competitiveness of this sector and its ever wider links with the Czech market are not only gaining markets for Polish food, but also to stabilize the internal market.

2.2. The structure of export and import of agri-food sector products in the Polish-Czech exchange

In comparison with 2003 in the commodity structure of Polish exports of agri-food products to the Czech Republic in 2015 has significantly increased the share of meat and offal (from 0.9% to 14.6%), oils and animal fats (from 0.2% to 13.3%) as well as coffee, tea and spices (from 1.9% to 12.9%). Whereas significantly decreased the share of dairy products (from 11.6% to 8.7%), vegetables (from 28.6% to 3.9%), cereals products and sweet bread (from 13.4% to 6.1%) as well as other food products (from 34.3% to 6.4%) (Table 2).

TAB. 2: Value and structure (of value) of the Polish-Czech trade in agri-food products between 2003 and 2015

Products	Export				Import			
	2003		2015		2003		2015	
	mln EUR	%	mln EUR	%	mln EUR	%	mln EUR	%
Animals	1,7	0,8	5,8	0,4	2,0	1,4	26,5	5,0
Meat & offal	1,8	0,9	234,5	14,6	0,1	0,1	7,7	1,5
Fish, crustaceans, molluscs & others	2,3	1,1	15,8	1,0	1,1	0,8	4,5	0,9
Dairy products	23,4	11,6	140,3	8,7	6,1	4,4	47,9	9,1
Meat by-products	0,4	0,2	2,3	0,1	0,8	0,6	5,6	1,1
Vegetables	28,6	14,2	62,0	3,9	2,8	2,0	10,5	2,0
Fruits & nuts	10,4	5,1	40,8	2,5	0,4	0,3	22,3	4,2
Coffee, tea & spices	3,9	1,9	207,0	12,9	3,3	2,4	11,2	2,1
Cereals	1,3	0,6	18,2	1,1	10,6	7,7	41,2	7,8
Mill products, malt, starch	0,2	0,1	6,4	0,4	25,9	18,7	28,3	5,4

Oil seeds & fruits	2,7	1,3	27,1	1,7	9,6	7,0	28,4	5,4
Oils & animal fats	0,4	0,2	213,9	13,3	0,8	0,6	43,4	8,3
Meat & fish products	8,5	4,2	41,8	2,6	0,3	0,2	8,3	1,6
Sugar & sweets	9,4	4,7	31,6	2,0	4,2	3,0	22,5	4,3
Cocoa & other products with cocoa	14,8	7,3	91,0	5,7	10,0	7,2	22,0	4,2
Cereals products & sweet bread	27,0	13,4	98,7	6,1	6,8	4,9	40,4	7,7
Fruit & vegetable products	19,2	9,5	49,5	3,1	3,1	2,3	12,4	2,4
Other food products	34,3	17,0	102,9	6,4	32,1	23,2	29,9	5,7
Non-alcoholic & alcoholic beverages	2,5	1,2	73,1	4,5	3,2	2,3	52,2	9,9
Prepared animal feed	2,5	1,2	34,7	2,2	13,7	9,9	54,9	10,4
Tabacco & tabacco products	5,5	2,7	105,6	6,6	0,1	0,1	2,6	0,5
Other non-food products	1,2	0,6	3,9	0,2	1,4	1,0	2,6	0,5
Total	201,9	100	1606,7	100	138,3	100	525,5	100

Source: own study based on ComExt-Eurostat 2016.

Between 2003 and 2015 the biggest increase in terms of value of export was recorded in the case of: oils and animal fats - from 0.4 million to EUR 213.9 million EUR (48,439.2% of increase); meat and offal - from 1.8 million to EUR 234.5 million (12,905.6% of increase); coffee, tea and spices - from 3.9 million to EUR 207.0 million (338.0% of increase).

In the case of the commodity structure of imported agri-food products from the Czech Republic the largest share in 2015, in terms of value, were: prepared animal feed (10.4% – higher than in 2003 about 0.5 p.p.); non-alcoholic & alcoholic beverages (9.9% – upper by 7.6 p.p.) and dairy products (9.1% – 4.7 p.p. more).

In the commodity structure significantly declined, during analysed period, the share of other food products (about 17.5 p.p.) as well as mill products, malt and starch (about 13.3 p.p.). The largest increase in terms of imports value in the studied period was observed in the case of: meat and offal - from 0.1 million EUR to 7.7 million EUR (an increase of 9,802.9%); oils and animal fats - from 0.8 million EUR to 43.4 million EUR (an increase of 5,577.8%); fruits and nuts - from 0.4 million EUR to 22.3 million EUR (an increase of 5,145.1%).

2.3. Rating indicators of competitiveness of the Polish agri-food sector in the market of the Czech Republic

In order to complement the analysis of the balance of foreign trade in products of agri-food sector with the Czech Republic there was calculated TC ratio. It shows what proportion of spending on imports are covered by revenues from exports, as well as reports directly on the scale of the trade surplus, and indirectly about the economic benefits of the exchange. Analysis of the data in Table 3 shows that in all the years the level of this ratio for agri-food products in total was higher than one, which means a relative comparative advantage in terms of trade in this sector in relation to the partner (co-called specialization). The value of this indicator in the analyzed period grew (with

small stratigraphy) and in 2015 reached a level of 3.06 (the value of export of agri-food sector exceeded its import by 206 p.p.). This means specialization of Poland in the exchange of agri-food products and leads to the conclusion that Polish companies of agri-food sector in general have competitive advantages over partner from the Czech Republic.

Ratio TC analysis in the specific groups of product from agri-food sector, however, has shown its multidirectional fluctuations. In some groups this ratio was below one, which means that in these groups of product specialization in the exchange reached the Czech Republic.

The group of products for which the value of the indicator (TC) throughout the period considered amounted to less than one (ie. The Czech partner, has specialized in the field of exchange with Poland) were: animals, cereals, mill products, malt, starch, as well as oil seeds and fruits (where only in 2014 there was a slight predominance of Poland). As is clear from the presented data value ratio (TC) of trade in fruit and nuts, dairy products (especially after the accession to the EU) and preparations of meat and fish shows, however, long-term downward trend. This suggests that the competitiveness of Poland export of these groups of product on the Czech market declines. Indicator (TC) took on the greatest value in the case of meat and offal, tobacco and tobacco products as well as coffee, tea and spices, which means Polish specialization in sales of these groups of product to the Czech Republic. Increase also specialization in export of: oils and animal fats, cocoa and other preparations containing cocoa, fish, crustaceans, molluscs and other food products.

TAB. 3: The coverage ratio of import by export (TC) of agri-food products between Poland and the Czech Republic in 2003-2015

Products	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Animals	0.85	0.70	0.32	0.17	0.09	0.12	0.18	0.09	0.10	0.21	0.10	0.18	0.22
Meat & offal	23.2	7.36	28.6	23.1	13.4	9.62	27.4	21.9	25.0	22.6	24.8	23.5	30.4
Fish, crustaceans, molluscs & others	2.13	1.52	2.10	1.90	1.31	3.69	5.81	2.36	2.26	1.96	2.32	2.17	3.48
Dairy products	3.8	10.8	10.6	5.56	3.59	5.18	5.96	4.86	4.69	4.54	3.69	3.39	2.93
Meat by-products	0.52	0.91	0.53	0.80	0.37	0.18	0.20	0.22	0.28	0.47	0.46	0.46	0.40
Vegetables	10.2	7.84	5.05	5.58	5.60	4.23	3.76	4.45	3.99	4.65	3.61	4.29	5.88
Fruits & nuts	24.4	7.97	3.42	4.05	1.44	1.65	1.50	1.60	1.22	0.53	0.56	0.77	1.83
Coffee, tea & spices	1.17	1.64	2.33	2.35	2.74	3.13	5.62	5.25	7.77	5.97	6.93	12.3	18.5
Cereals	0.12	0.25	0.07	0.10	0.09	0.06	0.08	0.09	0.06	0.32	0.48	0.42	0.44
Mill products, malt, starch	0.01	0.03	0.02	0.01	0.07	0.06	0.11	0.09	0.11	0.12	0.24	0.38	0.23
Oil seeds & fruits	0.28	0.45	0.33	0.28	0.34	0.27	0.12	0.48	0.45	0.46	0.78	1.29	0.96
Oils & animal fats	0.58	0.45	0.67	2.71	3.41	4.32	4.57	1.69	2.26	1.87	1.94	2.87	4.93
Meat & fish products	33.4	31.8	26.7	19.6	11.5	7.82	6.72	8.27	9.76	2.65	5.70	4.41	5.01
Sugar & sweets	2.26	0.72	0.53	0.25	1.64	1.59	0.76	1.65	1.87	3.19	2.95	2.04	1.40
Cocoa & other preparations containing cocoa	1.48	3.66	2.62	2.12	1.85	1.64	2.18	2.56	2.55	2.99	3.56	2.55	4.13
Cereals products & sweet bread	3.97	6.61	3.96	3.52	2.82	2.96	3.74	3.17	2.89	3.12	2.48	2.29	2.45
Fruit & vegetable products	6.16	4.13	3.73	4.59	2.32	3.53	3.88	4.04	3.15	3.31	3.40	3.65	3.98
Other food products	1.07	1.14	1.14	2.41	2.12	2.11	2.07	3.03	2.92	2.95	3.37	3.14	3.44
Non-alcoholic & alcoholic beverages	0.77	0.71	0.73	2.00	0.85	1.02	1.62	0.99	1.29	1.09	1.39	1.86	1.40
Prepared animal feed	0.18	0.22	0.55	0.76	0.50	0.48	0.49	0.54	0.77	1.08	1.05	1.15	0.63
Tabacco & tabacco products	77.5	5.66	1.15	1.96	6.05	19.7	30.9	42.5	6.08	5.51	12.2	10.8	40.1
Other	0.85	0.77	1.00	1.42	2.28	3.00	2.68	1.06	1.72	1.85	0.58	0.85	1.50
Total	1.46	1.70	1.69	1.93	1.70	1.68	2.02	2.10	2.08	2.08	2.44	2.73	3.06

Source: own study - ComExt-Eurostat 2016.

Note: in grey boxes index value is above 1, which means that specialization in the exchange reached Poland

TAB. 4: Intra-branch trade index (GLI) of agri-food products between Poland and the Czech Republic in 2003-2015, change in %

Specification	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2003 (%)
Animals	0.08	0.18	0.51	0.71	0.84	0.79	0.70	0.84	0.81	0.65	0.82	0.70	0.64	785.2
Meat & offal	0.92	0.76	0.93	0.92	0.86	0.81	0.93	0.91	0.92	0.92	0.92	0.92	0.94	102.1
Fish, crustaceans, molluscs & others	0.36	0.21	0.35	0.31	0.13	0.57	0.71	0.40	0.39	0.33	0.40	0.37	0.55	153.5
Dairy products	0.58	0.83	0.83	0.69	0.56	0.68	0.71	0.66	0.65	0.64	0.57	0.54	0.49	83.9
Meat by-products	0.32	0.04	0.31	0.11	0.46	0.69	0.67	0.64	0.56	0.36	0.37	0.37	0.42	134.4
Vegetables	0.82	0.77	0.67	0.70	0.70	0.62	0.58	0.63	0.60	0.65	0.57	0.62	0.71	86.3
Fruits & nuts	0.92	0.78	0.55	0.60	0.18	0.24	0.20	0.23	0.10	0.30	0.28	0.13	0.29	31.8
Coffee, tea & spices	0.08	0.24	0.40	0.40	0.47	0.52	0.70	0.68	0.77	0.71	0.75	0.85	0.90	1118.1
Cereals	0.79	0.60	0.87	0.82	0.84	0.89	0.85	0.84	0.89	0.52	0.35	0.41	0.39	49.4
Mill products, malt, starch	0.98	0.94	0.97	0.98	0.86	0.90	0.80	0.83	0.80	0.78	0.61	0.45	0.63	64.4
Oil seeds & fruits	0.56	0.38	0.50	0.57	0.49	0.58	0.79	0.35	0.38	0.37	0.12	0.13	0.02	4.0
Oils & animal fats	0.27	0.38	0.20	0.46	0.55	0.62	0.64	0.26	0.39	0.30	0.32	0.48	0.66	246.6
Meat & fish products	0.94	0.94	0.93	0.90	0.84	0.77	0.74	0.78	0.81	0.45	0.70	0.63	0.67	70.8
Sugar & sweets	0.39	0.16	0.31	0.60	0.24	0.23	0.13	0.25	0.30	0.52	0.49	0.34	0.17	43.4
Cocoa & other preparations containing cocoa	0.19	0.57	0.45	0.36	0.30	0.24	0.37	0.44	0.44	0.50	0.56	0.44	0.61	316.3
Cereals products & sweet bread	0.60	0.74	0.60	0.56	0.48	0.49	0.58	0.52	0.49	0.51	0.42	0.39	0.42	70.2
Fruit & vegetable products	0.72	0.61	0.58	0.64	0.40	0.56	0.59	0.60	0.52	0.54	0.55	0.57	0.60	83.0
Other food products	0.03	0.07	0.07	0.41	0.36	0.36	0.35	0.50	0.49	0.49	0.54	0.52	0.55	1612.0
Non-alcoholic & alcoholic beverages	0.13	0.17	0.16	0.33	0.08	0.01	0.24	0.00	0.13	0.04	0.16	0.30	0.17	127.2
Prepared animal feed	0.70	0.64	0.29	0.13	0.33	0.35	0.34	0.30	0.13	0.04	0.02	0.07	0.23	32.4
Tobacco & tobacco products	0.97	0.70	0.07	0.32	0.72	0.90	0.94	0.95	0.72	0.69	0.85	0.83	0.95	97.6
Other	0.08	0.13	0.00	0.17	0.39	0.50	0.46	0.03	0.26	0.30	0.26	0.08	0.20	245.3
Total	0.19	0.26	0.26	0.32	0.26	0.25	0.34	0.35	0.35	0.35	0.42	0.46	0.51	785.2

Source: own study based on ComExt-Eurostat 2016.

Note: in grey boxes marked high intensity of intra-branch trade (GLI ≥ 0.70)

The high value of the Polish balance of trade in agri-food sector products with the Czech Republic, in some analyzed years, indicates the high competitiveness of this industry. The consequence of the occurrence of the balance at a high level, however, is the low intensity of intra-branch trade, which has been measured by Grubel-Lloyd indicator (tab.4). The proposed share of intra-branch index trade in total trade depends on the size of the present trade imbalance. The bigger it is, the smaller is the share of intra-branch trade (lower net trading). In the years 2003-2015 intra-branch index (GLI) for agri-food products from the Poland were at a medium level (in 2015 it amounted in total 0.51), which means, that in this case the balance of trade did not exist. Positive occurrence, however, is a systematic increase in this indicator in the period considered. This means that it will be probably increase in subsequent years. While analyzing the specific groups of product it can be stated that in some of them were recorded high values of this indicator in the reporting period, ie. for meat and edible offal (76-94%), tobacco and tobacco products (70-97%, with the exception of the years 2005-2006, when they were very low), as well as coffee, tea and spices (40-85%, with the exception of the period before accession to the EU, when they were much lower) in comparison with 2009 (68 – 85%). Such high ratios in these groups of product represent occurrence in the case of high-intensity intra-branch trade. Such high ratios values in these groups of products mean occurrence in their case a high intensity of intra-branch trade. Decreasing the intensity of intra-branch trade in the years 2003-2015 was seen in the case of dairy products, vegetables, seeds and oleaginous fruits, fruit and nuts, cereals and products of milling, malt and starch.

Conclusion

Poland foreign trade since many years is one of the main stimulant of economic growth. Mainly thanks to him Poland's economy has managed to avoid the serious consequences of the global financial crisis. Polish products and services for export, especially offered by the agri-food sector, characterized by favourable price to quality ratio.

Value of products sold to the Czech Republic is growing year-on-year. This is evident especially after accession of Poland and the Czech Republic to the EU. The Czech Republic is an important receiver of Polish agricultural and food products. The development of exchange between these two countries results, among others, from the proximity of the target market, which provides a lower cost of transport and potentially shorter delivery time. Despite the upward trend in trade with the Czech Republic, it has changed, however, the structure of the commodity in terms of value. In the structure of goods exported by Poland to the Czech Republic an important place are occupying currently: meat and poultry, vegetable oils and animal fats, as well as coffee, tea and spices. However, in the structure of the products imported into Poland from the Czech Republic significant in terms of value are: prepared animal fodder, alcoholic and soft drinks, and dairy products.

TC index took on greater value in the case of meat, offal and poultry, tobacco and tobacco products as well as coffee, tea and spices, which means Polish specialization in sales of these product groups to the Czech Republic market. Also GLI indicators for these groups of product took on high-value, which indicates the occurrence in their case the high intensity of intra-branch trade.

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FINANCIAL SELF-SUFFICIENCY OF TOWNS WITH COUNTY RIGHTS IN POLAND – SYNTHETIC APPROACH

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JEL classification: H72, C490

Abstract:

The main objective of the article was to identify the diversity of the phenomenon of financial self-sufficiency of towns with county rights in Poland in 2015. In order to investigate the spatial diversification of their financial self-sufficiency a synthetic measure based on the positional formulation of the TOPSIS method was used. The analysis of the research problem was based on the data from the Central Statistical Office of Poland – Local Data Bank.

Introduction

Towns with county rights are a pillar of the system of local government in Poland. They are combination of commune and county administrations. Due to their dual character, they perform the functions assigned to commune, but also the tasks belonging to county. In effect towns with county rights perform wide range of tasks, both in the social and infrastructure sphere, which determine the level of life of a large part of the population and contribute to the socio-economic development of the region. Since 2013, 66 cities in Poland have had the status of towns with county rights. In this towns live nearly 13 million people, i.e. more than one-third of the total population in Poland. Twelve of them, i.e. Białystok, Bydgoszcz, Gdańsk, Katowice, Kraków, Lublin, Łódź, Poznań, Rzeszów, Szczecin, Warszawa and Wrocław are classified as metropolitan units. These metropolises produce more than one-third of GDP in Poland and their population is nearly 7 million or nearly one-fifth of the total population (Raport o polskich metropoliach – Poznań, 2015, s. 3).

As other administrative units, towns with county rights possess legal personality and shape their own financial policy (within the existing legal framework), an aspect that forms the foundation of their financial self-sufficiency. Hence, they decide on income collection, outlay proportions, budget execution and disposal of assets, described jointly as financial self-sufficiency, whose sound levels underpin sustainable local development and need satisfaction. Despite the fact, that towns with county rights

characterise the highest average level of financial self-sufficiency, however these entities are strongly diversified in this area.

The aim of the article was to identify the diversity of the phenomenon of financial self-sufficiency of towns with county rights in Poland in 2015. In order to investigate the spatial diversification of financial self-sufficiency of towns with county rights a synthetic measure based on the positional formulation of the TOPSIS method was used.

1. Materials and research methods

Due to the multi-aspect character of the research problem, in order to investigate the spatial diversification of financial self-sufficiency of towns with county rights in Poland, a synthetic measure based on the positional formulation of the TOPSIS method was used (Technique for Order Preference by Similarity to an Ideal Solution). The basis of information studies were data from the Central Statistical Office of Poland (Local Data Bank — Public Finances for 2015).

The procedure to create a synthetic measure is a multi-stage process with six distinctive steps (Wysocki 2010). The first stage (I) includes the selection (based on substantive and statistical criteria) of characteristics describing selected objects (towns with county rights), as well as determination of the direction of their preferences in relation to the investigated general criterion (financial self-sufficiency). In this stage of the evaluation of the financial self-sufficiency, based on substantive criteria 8 indicators were preliminarily selected: level of own income in PLN per capita (x_1), share of own income in total income (%) (x_2), level of transfer income (general and targeted subsidies from the state budget) in PLN per capita (x_3), share of transfer income in total income (%) (x_4), level of tax income (from income taxes constituting the revenue of the state budget) in PLN per capita (x_5), level of income from local taxes (sum of farm, forest, property, transportation, stamp, tax card and service charge duties) in PLN per capita (x_6), indicator of fiscal autonomy (share of income from local taxes in current income, %) (x_7) and indicator of self-financing (share of operating surplus and income from property in property expenditure) (x_8). As a result of conducted statistical verification, due to high correlation with the other indexes, three characteristics were rejected (x_1, x_6, x_8). Finally, in this study five indicators were adopted (x_2, x_3, x_4, x_5, x_7). Three of them were considered to be a stimulants (x_2, x_5, x_7) and two to be a destimulant of financial self-sufficiency of towns with county rights. Characteristics considered to be a destimulant may be transformed into stimulants using the following transformation:

$$x_{ik} = a - b \cdot x_{ik}^D \quad (1)$$

where:

x_{ik}^D – value of the k-th feature, a destimulant ($k \in I_D$) in the i-th object ($i = 1, \dots, N$),

x_{ik} – value of the k-th feature ($k = 1, \dots, K$) transformed into a stimulant,

a, b – arbitrary constants, here $a = 0$ and $b = 1$.

In step II the values of simple features were normalized with L1-median standardization (Młodak 2006, Wysocki 2010):

$$z_{ik} = \frac{x_{ik} - m\tilde{e}d_k}{1.4826 \cdot m\tilde{a}d_k}, \quad (2)$$

where:

x_{ik} – value of the k-th feature in the i-th object (towns with county rights),

$m\tilde{e}d_k$ – L1-median vector component corresponding to the k-th feature,

$m\tilde{a}d_k = med_i |x_{ik} - m\tilde{e}d_k|$ – median absolute deviation of k-th feature values from the median component of the k-th feature,

1.4826 – a constant scale factor corresponding to normally distributed data,

$\sigma \approx E(1.4826 \cdot m\tilde{a}d_k(X_1, X_2, \dots, X_K))$, σ – standard deviation.

In step III the coordinates of ideal (A^+) and negative ideals (A^-) were computed according to the following formulae:

$$A^+ = \left(\max_i (z_{i1}), \max_i (z_{i2}), \dots, \max_i (z_{iK}) \right) = (z_1^+, z_2^+, \dots, z_K^+) \quad (3)$$

$$A^- = \left(\min_i (z_{i1}), \min_i (z_{i2}), \dots, \min_i (z_{iK}) \right) = (z_1^-, z_2^-, \dots, z_K^-). \quad (4)$$

These coordinate values in step IV yielded the distance of each object (towns with county rights) to the ideal (A^+) and negative ideal (A^-) using the following formula:

$$d_i^+ = med_k \left(|z_{ik} - z_k^+| \right), \quad d_i^- = med_k \left(|z_{ik} - z_k^-| \right), \quad (i = 1, 2, \dots, N), \quad (5)$$

where: med_k – marginal median for the k-th feature.

The construction of the synthetic measure in Step V followed the TOPSIS method (Hwang, Yoon 1981):

$$S_i = \frac{d_i^-}{d_i^+ + d_i^-}, \quad (i = 1, 2, \dots, N), \quad (6)$$

where $0 \leq S_i \leq 1$ can be easily verified.

Established values of the synthetic measure are used in rank ordering of towns with county rights and on this basis – identification of their typological classes (step VI). Identification of classes for entire range of variation of a synthetic measure may be performed using statistical methods based on the mean and standard deviation from values of the synthetic measure or in arbitrary manner, assuming e.g. numerical ranges of values for measure S_i (Wysocki 2010): $S_i \in <0,80; 1,00>$ – class I (very high level of financial self-sufficiency), $S_i \in <0,60; 0,80>$ – class II (high level), $S_i \in <0,40; 0,60>$ –

class III (medium level), $S_i \in <0,20; 0,40>$ – class IV (low level), $S_i \in <0,00; 0,20>$ – class V (very low level of financial self-sufficiency).

2. Results of research – Synthetic assessment of the level of financial self-sufficiency in towns with county rights in Poland

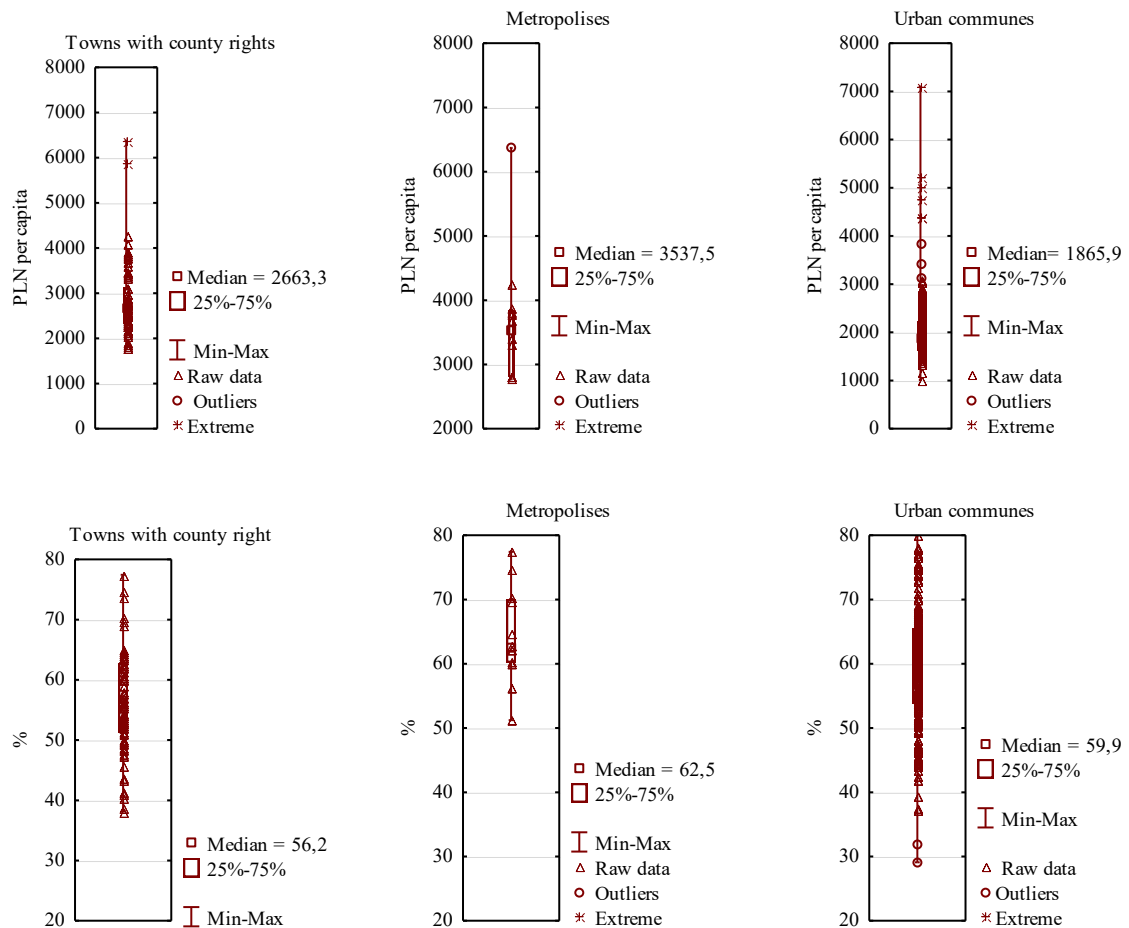
The financial self-sufficiency of local government units (LGU) belongs to the complex phenomena, which can be described by a wide range of partial indicators. The basis indicators of financial self-sufficiency of LGU are the level and share of own income in total income (Surówka, 2013, Kozera and Wysocki 2016, Łyszkiewicz 2016). High level of own income per capita and high shares of own income in total income are the self-sufficiency goals, that promote better satisfaction of the inhabitants needs and stable development of local government. Among LGU in Poland the highest level of own income per capita characterise towns with county rights, especially metropolises. In 2015 the level of own income in towns with county rights amounted 2 663,3 PLN, which was over 40% more than the average for the urban communes. The highest level of this indicator has been achieved by the metropolises – 3 537,5 PLN per capita. In effect metropolises characterised the highest share of own income in total income, which amounted 62,5% (figure 1).

It can be seen, that there is very large disparity between the towns with county status, inter alia due to the level of own income in PLN per capita (figure 1). In order to present the degree of differentiation of towns with county rights in Poland in terms of the level of their financial self-sufficiency synthetic measure was used. The positional formulation of the TOPSIS method was applied to calculate the values of synthetic measure, which enable us to make a linear order of the towns with county rights according to the level of financial self-sufficiency in 2015. The application of the positional approach, based on the Weber median and median absolute deviations from the positive and negative ideals of development is justified here. In the set of indicators we have some, which show a relatively strong asymmetry, high variation of their values and outliers. Next, taking arbitrary approach, five typological classes reflecting the level of financial self-sufficiency of towns with county rights were identified. The results of the typological classification of towns with county rights are presented in table 1 and 2.

Class I, comprised of 3 or 4,5% of all towns with county rights, showed the highest level of financial self-sufficiency (the values of synthetic measure in these towns were $\geq 0,80$) (table 1). This class formed three towns, this are Warszawa, Wrocław and Sopot. First two of them are classified as metropolitan units in Poland. In these towns all individual components of financial self-sufficiency rate reached the highest values (in the case of features considered to be a stimulant of financial self-sufficiency). Towns with county rights of class I stood out for the highest level of own income per capita (5855,0 PLN) and the highest share of own income in total income (74,6%). High financial self-sufficiency of such towns as Warszawa and Wrocław was a direct

consequence of the high level of socio-economic development. Warszawa and Wrocław are the cities with the highest demographic and economic potential (table 2). On the other hand, high financial self-sufficiency of such town with county rights as Sopot was a direct consequence of their tourist functional type.

FIG. 1: Box-plots for the level and the share of own income in total income of towns with county rights and urban communes in 2015 (in PLN per capita, %)



Source: Own calculations based on data from Central Statistical Office of Poland (Local Data Base, access: 10.11.2016).

Class II consisted of 8 or 12,1% of total towns with county rights (the values of synthetic measure in this cities ranged from 0,60 to 0,80) (table 1). These towns with county rights were characterised by high level of financial self-sufficiency. It should be noted that part of this towns, i.e. Gdańsk, Katowice, Kraków, Łódź and Poznań belongs to the metropolitan units. Towns with county rights of class II characterised high share of own income in total income – amounted about 65% and in results low level of transfer income per capita (including general and targeted subsidies from the state budget) – 1404,2 PLN. These towns characterized, in relation to the average town with county rights, high level of fiscal wealth, which is quantified by the level of collected

own income, both from local taxes and income taxes constituting the revenue of the state budget. High level of fiscal wealth of these cities was undoubtedly the result of their high demographic and economic potential. The average size of these cities amounted nearly 300 thousand, which is twice more than the average for the total towns with county rights in Poland. In this class we observed a high level of entrepreneurship development, quantified by the number of business entities per 10 thousand person in productive age, which in this class amounted 2 590,2 enterprises, while the average for the total towns with county rights was 1 852,2 enterprises.

TAB. 1: Intraclass values of the financial self-sufficiency indicators of towns with county rights in Poland in 2015 (median for average values)

Specification	Typological class of financial self-sufficiency ^{a)}					Total
	I very high	II high	III medium	IV low	V very low	
Number of towns	3	8	27	19	9	66
Percentage of towns (%)	4.5	12.1	40.9	28.8	13.6	100
Active features						
Share of own income in total income (%)	74.6	64.8	60.5	52.9	41.5	56.2
Level of transfer income in PLN per capita	1428.7	1404.2	1614.4	2069.0	2324.1	1814.2
Share of total transfer income in total income (%)	19.4	25.7	35.0	43.2	52.1	37.4
Level of tax income in PLN per capita	2076.6	1540.2	1195.4	1066.7	913.0	1161.6
Indicator of fiscal autonomy (%)	23.4	33.3	31.5	30.0	24.8	29.9
Passive features						
Level of own income in PLN per capita	5855.0	3565.2	2806.2	2401.9	2051.7	2663.3
Level of income from local taxes in PLN per capita	1522.6	1602.9	1314.8	1308.9	1058.1	1314.8

a) class I – Warszawa (1,000), Wrocław (0,908), Sopot (0,824), class II – Katowice (0,795), Kraków (0,733), Dąbrowa Górnicza (0,732), Gdynia (0,727), Gdańsk (0,700), Szczecin (0,627), Poznań (0,624), Łódź (0,610), class III – Sosnowiec (0,598), Tychy (0,592), Rybnik (0,590), Ruda Śląska (0,584), Płock (0,582), Jaworzno (0,568), Opole (0,566), Bydgoszcz (0,561), Bielsko-Biała (0,560), Siemianowice Śląskie (0,549), Mysłowice (0,521), Świnoujście (0,513), Zielona Góra (0,512), Wałbrzych (0,499), Zabrze (0,495), Gliwice (0,486), Białystok (0,472), Lublin (0,470), Żory (0,465), Piekary Śląskie (0,464), Koszalin (0,459), Legnica (0,416), Rzeszów (0,411), Olsztyn (0,410), Kielce (0,406) Częstochowa (0,405), Jastrzębie-Zdrój (0,404), class IV – Włocławek (0,399), Elbląg (0,398), Toruń (0,378), Gorzów Wielkopolski (0,377), Bytom (0,373), Chorzów (0,367), Konin (0,366), Skierniewice (0,364), Jelenia Góra (0,363), Siedlce (0,336), Ostrołęka (0,314), Kalisz (0,313), Świętochłowice (0,310), Piotrków Trybunalski (0,310), Leszno (0,307), Słupsk (0,305), Tarnów (0,246), Radom (0,226), Suwałki (0,224), class V – Krosno (0,189), Nowy Sącz (0,173), Tarnobrzeg (0,167), Łomża (0,149), Chełm (0,116), Biała Podlaska (0,094), Grudziądz (0,084), Przemyśl (0,014), Zamość (0,000).

Source: Own calculations based on data from Central Statistical Office (Local Data Base, access: 10.11.2016).

Class III of medium level of financial self-sufficiency was formed by 27 towns with county rights, which represented 40,9% of the total. Their financial self-sufficiency indicators were all close to average (table 1), and they were marked also close to average population density and below average level of economic activity (table 2).

TAB. 2: Intraclass values of socio-economic features describing typological classes of the level of financial self-sufficiency of towns with county rights in Poland in 2015

Specification	Typological class of financial self-sufficiency					Total
	I very high	II high	III medium	IV low	V very low	
Population (in thous. persons)	635.8	299.9	139.7	92.5	62.7	114.3
Population density	2 171.2	1 821.6	1 419.4	1 528.7	1 457.2	1 583.8
The balance of migration per thous. people (median 2012-2014)	2.2	-2.2	-3.1	-3.4	-4.1	-3.2
Economic entities on 10 thous. population in working age	3834.6	2590.2	1966.0	1749.4	1614.9	1852.0
Newly registered economic entities on 10 thous. population	159.6	144.2	102.1	86.0	84.6	90.8
The percentage of economic entities employing 50 people or more (%)	30.6	20.9	17.7	18.9	19.8	18.9

Source: Own calculations based on data from Central Statistical Office of Poland (Local Data Base, access: 10.11.2016).

Class IV consisted of 19 or 28,8% of total towns with county rights (the values of synthetic measure in this cities ranged from 0,40 to 0,60). These towns were characterised by low level of financial self-sufficiency. Towns with county rights of class IV distinguished relatively high level of transfer income – amounted about 2070 PLN per capita and high level of these income in total income – 43,2%.

Class V of financially least self-sufficiency group of 9 towns with county rights (13,6% of all) was characterized by the lowest, PLN 2051,7 levels of own income per capita (which was about 25% lower than the average). At the same time, these towns had the highest share of transfers in total income (52,1%). The lowest level of economic and population potential lead to the lowest levels of tax income (913,0 PLN per capita) and the lowest level of income from local taxes (1058,1 PLN per capita) (table 1, 2). It is necessary to stress, that most towns which formed class V are located in the south-eastern part of Poland, which still is characterised by significantly lower level of socio-economic development. These towns characterise the lowest demographic potential and economic activity. The average size of these towns was only 62,7 thousand people, which is about half less than the average for the total towns which county rights in Poland in 2015.

Own income of towns with county rights are the main source of their income and yet, for the last few years their share in total income has been observed to decline. These worrisome findings may be related to some demographic changes that take place within the towns. For example the negative balance of migration is observed in the case of most of the towns with county rights in Poland, and in particular in the cities which formed the classes III, IV and V. If these changes will be permanent, then this situation may hinder the financial management of the towns with county rights and impede their local social and economic development.

Conclusion

Due to the dual character of towns with county rights their outlay on the development of social and technical infrastructure is much higher. This situation results not only from the implementation of tasks assigned to communes and counties, but also from a different scale of needs, which is a consequence of the number of inhabitants. As a result, these entities, especially metropolises, are characterised by greater financial self-sufficiency than other entities of the local government sector in Poland. However, towns with county rights are strongly diversified in their demographic and economic potential and they vary in their influence on adjacent areas. In consequence, their financial self-sufficiency is strongly diversified, as can be seen in the results of the typological classification. In 2015 in Poland only one in nearly twenty towns with county rights was characterised by very high financial self-sufficiency and only one in ten towns was characterised by high financial self-sufficiency. This situation chiefly applied to metropolises, which were the biggest towns with county rights in Poland. These towns were also demographically and economically strong. On the other hand, more than four out of ten towns with county rights were characterised by low or very low financial self-sufficiency. This mostly applied to towns with a lower demographic potential and located in eastern Poland.

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DIFFERENTIATION OF EMPLOYMENT IN AGRICULTURE – CASE STUDY THE VISERAD GROUP COUNTRIES

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Abstract:

Agribusiness is a rapidly growing sector of business initiative in many countries around the world. In this paper, issues connected with the changes of the employment situation in agriculture, treated as a baseline sector of agribusiness and, at the same time, a sector with a significant level of inertia, were presented. Developments in this area in Visegrad Countries compared to the remaining members of the EU have been analyzed in details. The issues of the differentiated pace of changes in rural employment as its low effectiveness have been identified. Social-demographic characteristics of those engaged in agriculture have been addressed as well as the role of agricultural and social policy in creating conditions for sustainable rural development.

Introduction

Agribusiness (also called food economy or agri-food sector), is a sub-system of the national economy, strongly interconnected and linked with its other industries (Mrówczyńska-Kamińska 2013, pp. 79-100). The dynamic development of agribusiness is connected with different proportions of its individual departments and sectors (Woś, 1998, p.17), which themselves differ considerably in terms of pace and changing possibilities defined by development processes of the economy as a whole. From this point of view, agriculture is the least mobile sector in agribusiness, which is manifested in, among others, the continued high level of employment with a decreasing GDP share of agriculture. In many countries, however, agriculture sector remains an important jobs provider, but it concentrates workers with the relatively lowest level of education, despite the increasing knowledge intensity of this sector.

The purpose of this paper is to present changes in the agricultural employment in EU countries with a particular consideration of Visegrad Group (V4) countries, namely Poland, the Czech Republic, Slovakia and Hungary. Apart from a quantified presentation of the phenomenon, efforts were made to discuss the drivers for processes occurring and to indicate some of their implications for the future.

1. Methods, literature overview

The paper includes data and statistical announcements of Eurostat devoted to national accounts and the employment situation in particular sectors of the economy. For the purpose of their detailed examination, the desk research method has been used, by reviewing one's own papers and those of other authors, and, subsequently, carrying out an inventory of the information gathered. The results have been presented in a descriptive, tabular and graphical form.

Since the mid-20th century to date, much has been written about agribusiness, elaborating, among others, the very idea of its separation and its importance for less prosperous economies, while also emphasizing the role of man in its development (Davis & Goldberg 1957) Relationships inside the aggregate of food industry have been referred to as well (Mrówczyńska-Kamińska 2010), or the prospects of its transformation into bio-economy (Manningen, Neminen-Sundell et al. 2014, pp. 1-46). However, relatively most attention has been focused on agriculture as a baseline of agribusiness (Woś & Zegar 1983, Kapusta 2008, p. 310, Norberg-Hodg, Merrifield & Gorelick 2002).

For many European countries, traditionally referred as post-communist EU members and defined also by the period precedent to association, have initiated a chain of rapid social, economic and even cultural transformations (Svatoš, Smutka 2012m p. 222-238). They have also affected the acceleration of transformations in agriculture, a sector which reacted to the transformation processes in the relatively slowest way (Dangerfield 2008, p. 630-667, Zegar 2009, Kuś & Matyka 2014). Nevertheless, these processes, promoted by means of the tools of Common Agricultural Policy (CAP) have led to changes in the object structure of this sector, and to transformation of its agrarian structure, as well as to changes in the farming production means and resources. Work is a factor of a particular importance in agriculture, and, at the same time, relatively less mobile. After integration, for many persons living in rural areas, working for agriculture is not the only alternative. Apparently, this should have caused a rapid outflow of those employed in agriculture to other economy sectors, however, the pace has turned out to be much slower than expected (Toro-Dunay, Illés, Vinogradov 2012, p. 138-148).

Agribusiness, due to its complex structure and various interconnection with all sector across economy, generates an immense demand for workers, putting at their disposal a very interesting and diverse job offer (FIG. 1). At the same, it is quite demanding towards workers, no longer just due to the nature of production activities, but also due to the increasing knowledge intensity of the actors of this sector.

FIG. 1: Source of employment in agribusiness

Source: own study.

The transformation process as well as its factors related to the UE membership of Visegrad Group countries presented different characteristics in each country, however, many similarities can be found with regard to agriculture. Paradoxically, the application of the system of subsidies to agriculture has slowed down the outflow of employees from this sector and inhibited the growth of the efficiency of labour utilisation (Poczta, 2010). Other factors limiting the mobility of people living in rural areas, especially in the period directly after the integration and in the subsequent years, include also the quality of human capital – which is just sufficient to stay in the villages and work in agriculture, but too low to take up a job outside this sector (Miś 2015, Kozera 2011, 2013). In this paper, the main focus has been put on changes in employment, especially on the outflow of employees from agriculture to other sectors in the agribusiness, while insights of other authors have been used.

2. Results and Discussion

The so called (mainly) rural areas cover 52% of the EU territory and more than 23% of population live there. A variety of companies, constituting the agribusiness sector, perform their business activity in these areas, generating in total 21% of employment. The main actor in these areas continue to be agricultural holdings and enterprises, as basic units engaged in agricultural production. According to official European statistics this sector includes 12 million of farms and agricultural enterprises, 171-million-hectare agricultural land and 25 million persons regularly working in agriculture (EU 2013a, 2013b).

Despite many transformations, encouraged by the support of the Common Agricultural Policy, the agriculture is considered as a segment of agribusiness with the highest, and still the least effective employment. This view is still held, among others, with regard to the agriculture of the V4 countries, although reorganization processes of this sector can be observed also in these countries.

Analysis of available data showed, that nearly 70% of those employed in agriculture in the EU are cumulated in six countries (Romania, Poland, Italy, France, Spain and Bulgaria), of which two, i.e. Romania and Poland represent over 40% of the total value. In the case of V4 countries, those employed in agriculture represent more than 21% of all employed ones. In this group, Poland leads in terms of employment (78.1%), followed by Hungary (12.2%), which is explained, among others, by the size of these countries per se, as of their agricultural sector (TAB.1). It is worth pointing out, that employment in agriculture in the V4 countries is one of the highest in the EU, which applies especially to Poland and Hungary (respectively 12% and 7%). It is important to note, that agriculture is a crucial work place for those at the end of their working life or relatively low-skilled. This confirms the earlier insights on factors inhibiting the outflow of employment from agriculture to other sectors of economy.

TAB. 1: Employment in the agricultural sector – data from the National Accounts

Countries	2013			2010-2013
	1000 persons	% of total employment	Self-employment rate	Difference in 1000 persons
Belgium	58	1.3	65.5	-6.0
Bulgaria	656.2	19.2	86.7	-54.3
Czech Republic	163.4	3.2	29.7	1.6
Denmark	68	2.5	42.6	1.0
Germany	645	1.5	47.8	-10.0
Estonia	26.6	4.3	23.3	3.7
Ireland	107	5.7	77.7	21.5
Greece	504.2	12.9	85.2	-40.8
Spain	741.9	4.3	43.8	-48.5

DIFFERENTIATION OF EMPLOYMENT IN AGRICULTURE – CASE STUDY

France	749.3	2.8	57.4	-23.0
Croatia	:	:	:	:
Italy	901.3	3.7	44.7	-73.4
Cyprus	13.9	3.9	60.4	-3.8
Latvia	67.8	7.6	49.9	1.6
Lithuania	108.7	8.4	58.2	-1.3
Luxembourg	4.1	1.1	48.8	-0.1
Hungary	289.3	7.0	57.8	8.6
Malta	5.2	2.9	73.1	-0.2
Netherlands	220.1	2.6	55.2	-6.2
Austria	189.8	4.5	84.5	-13.3
Poland	1858.1	12.0	88.8	-145.8
Portugal	475.2	10.5	79.0	-58.2
Romania	2752.5	30.0	90.9	-143.7
Slovenia	77.1	8.4	92.3	-3.8
Slovakia	69.8	3.2	21.9	-3.3
Finland	113.4	4.6	63.0	-8.4
Sweden	105.1	2.2	47.0	7.9
United Kingdom	347.6	1.2	45.3	-37.9
EU-28	11380.9	5.1	71.7	-651.9
V4	2380.6	8.9	79.0	-138.9

Note: Croatia data not available

Source: Eurostat, National Accounts (online data codes: nama_nace10_e).

When asked to evaluate the changes in numbers of those engaged in agriculture, a decrease in this value has been found in the analyzed period, with regard to the vast majority of EU countries, although the value grew in seven countries from 1 to more than 20 thousand workers.

In the V4 group, the number of those employed in agriculture has increased in two countries (these were Hungary and Czech Republic), and decreased in two other countries (Slovakia and Poland). This is due to, inter alia, the diversified pace of development of economic activity in rural areas in these countries, including especially the development of agriculture-supporting services. It should be emphasized, that in Poland, a country characterized by highest (in percentage terms) employment in agriculture, the most significant among all 28 EU members reduction of the number of people employed in this sector has occurred. This confirms the restructuring process of Polish agriculture, substantially induced by CAP tools, including improvement of work efficiency i.e. through the increase of agricultural holdings, implementation of modern technologies and measures connected with improvement of human capital quality in rural areas.

The latter is one of the most important issues of the agriculture of all V4 countries. Modernization and production quality improvement is only possible, if the professional skills of the labor force in agricultural are constantly being enhanced. However, in Poland, Czech Republic, Hungary and Slovakia, low-skilled workers are still over-represented. As a result, restructuring processes and those aimed at improving competitiveness of agriculture and the agri-food sector are held back. This is a significant problem in the context of the obligation to implement the Common Agricultural Policy, especially with regard to quality requirement for food producers. Meeting these requirements entails the necessity to hire workers equipped with up-to-date knowledge and skills in agri-food processing. This poses a great challenge for education systems of V4 countries.

The employment analysis by age or gender groups of those engaged in agriculture provides valuable information about employment in agriculture in the context of the ability to acquire knowledge (TAB. 2). According to the data of the Labour Force Survey (LFS) men constitute the dominating group among those working in agriculture. It is related not only to the physical nature of most jobs in agriculture but also to the outflow of better educated women who want to work outside of this sector. UE countries, in which agriculture female employment continues to play a significant role, include Slovenia, Austria, Romania, Greece, Poland, Croatia, Latvia, Estonia and Lithuania (more than 40% in each of these countries). In Visegrad countries, the participation of women among those employed in agriculture is about 30%, with Poland having the highest percentage in this regard (41.5%).

TAB. 2: Employment in agriculture¹ – data from the LFS

Countries	2015			
	1000 persons	% of men	% of persons aged 15-39	% of persons aged 40-64
Czech Republic	114.2	72.9	34.1	63.1
Hungary	178.8	74.4	35.4	62.8
Poland	1768.6	58.5	33.1	63.8
Slovakia	57.9	77.7	29.9	69.1
EU-28	9227.3	63.8	31.7	59.0
V4	2119.5	61.1	33.3	63.8

Source: Eurostat, LFS (online data codes: lfsa_egan22d).

From the point of view of the agricultural growth prospects, it is important that the participation of young farmers in this sector be strengthened. Unfortunately, employment in agriculture is characterized by a low participation of young people and a higher share of older workers (aged 65 and more). The employment structure is dominated by persons between 40 to 64 years old, while young workers constitute on average one third. Countries characterized by the highest participation of young farmers, that is younger than 40 years, are Denmark (45.6%) and Luxembourg (41.7%), while those with the lowest are Portugal (12.2%) and Malta (16.7%). In the V4 countries, the participation of persons working in agriculture under 40 years of age fluctuates around 30%, which, in view of the dynamically changing economic reality, especially decreasing production profitability of many productions sectors of agricultural production, is by no means a binding value. A further reduction of the number of young people working in agriculture due to their outflow to non-agricultural professions in rural areas and outside of them, is to be expected. This trend shall apply to all Visegrad Group countries.

Conclusion

Whichever way you look at it, agriculture constitutes a baseline element of the agribusiness system, and the changes occurring in it substantially affect the capacity to

¹ The presented data relate only category A01 Crop and animal production, hunting and related service activities

adjust to market changes of the entire sector. One of the most important factors decisive in the notable inertia of agriculture is the relatively low efficiency of employment at the national level. This applies, in the first line, to countries, where the employment in agriculture remains at a high level, to which V4 countries belong. Agriculture continues to generate a large number of working positions. Despite the changes induced by the EU accession and the support in the framework of CAP, the employment in these countries is declining very slowly. Relatively negative trends of the outflow of the youngest and best-educated people can be seen, which may lead to an excessive commercialization of the agricultural sector in all V4 countries, in a longer term. The findings above reveal the field of operation for a well-implemented agricultural and social policy, whose common objective should be to create conditions for the sustainable development in rural areas, which means, not only in agriculture but also in its nearest surroundings.

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MODELLING OF SAVINGS IN DECENTRALISED CASH PROCESSING COSTS IN THE CZECH REPUBLIC

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Keywords:

banking – cash processing – simulation – optimization – costs

JEL classification: E47, G20

Abstract:

The aim of the paper is to outline a banking market situation with respect to cash processing in the Czech Republic and to propose ways of making the cash processing more efficient. Real data have been used to determine the amount of running costs of the current system and their structure based on the established objective function. Subsequently – using a multi-agent model to simulate cash processing transactions and operations conducted in one of the leading banking institutions in the Czech Republic – measures designed to reduce the costs associated with these services have been put forward. The potential savings generated by the adoption of the proposed measures are enumerated in conclusion.

Introduction

The goal of every business is to realize profit in a manner that meets the needs of both its owners and customers or clients. Due to the dynamic and highly competitive environment affecting the way in which any enterprise pursues its mission and attains its goals, it is imperative that all ongoing processes be continuously monitored and optimized to prevent precious and limited resources from being wasted.

The bank's profit is primarily made up of the difference between interest costs and interest yields and fees, with both of these items subjected to downward pressures generated by market forces. In order to minimize running costs, being a significant profit-affecting factor, the processes involved in the provision of services should be defined and, subsequently, any potential areas of improvement identified. In addition to correct utilization of available production capacities, resources pertaining to client services should also be utilized effectively.

One of the most basic activities of a bank is the receipt of client deposits, which, in addition to rented or owned brick-and-mortar bank branches (or deposit cash machines), requires a large number of bank tellers (cash handlers) and consumable supplies

(packaging), as well as involves substantial payments related to insurance policies and the transportation of surplus cash between individual branches. The objective of this article is to establish a structure of the most significant costs associated with ready money processing and to outline possibilities of streamlining these processes.

1. Literature overview, methods

1.1. Literature overview

Financial market oversight in the Czech Republic is provided by the Czech National Bank (CNB). Its principal aim is to maintain price stability, while its secondary objective is to support the government's economic policy with a view to achieving sustainable growth. Consequently, it must also maintain a stable monetary policy for which purposes it uses a number of direct (e.g. interest rates and required reserve ratios) and indirect (e.g. a mandatory deposit amount and liquidity rules) instruments (CNB, 2016). All of the aforementioned operations affect, to a lesser or greater degree, the amount of money in circulation. Despite the growing popularity of modern payment methods among the younger generation in purchasing common consumables (Runnemark, Hedman & Xiao, 2015), the volume of cash in circulation increases year over year both in the Czech Republic (CNB, 2016) and across the European Monetary Union (ECB, 2016).

From the CNB standpoint, several activities in relation to cash operations can be singled out. These include cash removal from circulation, cash reserve administration, used and/or damaged currency replacement and other activities pertaining to ready money (e.g. print orders or new banknote printing or coin minting) (Revenda, 2001).

Commercial banks ensure financial settlement (system of payment) via both cash and cashless transactions. With regard to cash payment transactions, which involve the essential administrative activities and physical processing of cash, it is also particularly important to ensure that the authenticity, validity and fitness for circulation of all banknotes and coins is examined, that an adequate amount of cash is kept at individual branch banks and that the surplus cash is transferred to the Czech National Bank. The generally accepted fact is that all of these activities are relatively costly.

According to Porter's model, there are two basic competitive advantages leading to profit in any business (banks included) – product distinction from competitors and cost reduction (Rais, 2007).

1.2. Methods

An objective (cost) function has been established for each bank branch in order to assess the effectiveness of the cash processing system in terms of costs:

$$z_{ij} = 0,035 \cdot x_1 + 0,085 \cdot x_2 + \frac{1,34 \cdot w}{30 \cdot 480 \cdot 10} \cdot x_3 + \frac{1,34 \cdot w}{30 \cdot 480 \cdot 10} \cdot x_4 + \frac{2Trepo}{360} \cdot x_5 + x_6 + x_7 + p_i \cdot (245 + 20 \cdot d_j) \quad (1)$$

where

x_1 – the number of sorted banknotes issued by the CNB (the deposit and immediate withdrawal of sorted banknotes with a fee of CZK 0.035),

x_2 – the number of such coins (fee of CZK 0.085);

x_3 – the cash dispensation time expenditure (employee gross wage – w and employer-paid insurance amounting to 34% of the gross wage),

x_4 – the time expenditure related to the processing of received cash (requirements identical to the preceding case),

x_5 – the amount of cash maintained at the branch, providing that the current 2T repo rate ($2T repo$) is 0.05% p.a.,

x_6 – daily insurance costs;

x_7 – daily costs of safe custody services, disposable coin bags and banknote bands,

p_i – the current frequency of surplus cash transportation between bank branches and the nearest Czech National Bank branch,

d_j – the minimum distance between a particular bank branch and the nearest Czech National Bank branch.

The total daily cash processing costs incurred by this bank institution are the sum of all costs of individual branches:

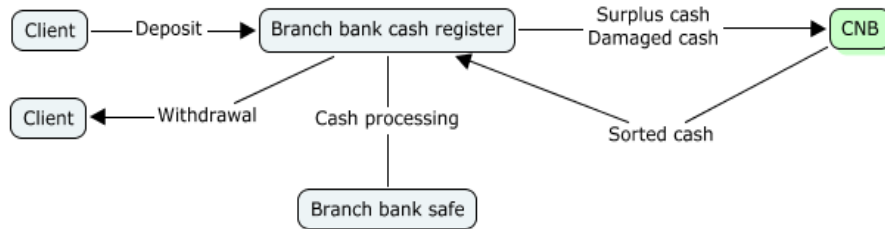
$$z_j = \sum_{i=1}^n z_{ij} \quad (2)$$

Operational research findings, especially with regard to the graph theory and the determination of the shortest route in the graph, the theory of reserves and the queuing theory (Jablonský, 2007), have been used to identify the amount and structure of costs associated with cash processes (different bank branch subsidies and/or payments made by these branches to the CNB in particular). A multi-agent model is established and different options for modifying the cash processing system are subsequently tested on the basis of the identified independent variables (costs) associated with cash processing. NetLogo, a programmable modeling environment and currently one of the most popular modeling softwares, has been used for simulation purposes (Kravari & Bassiliades, 2015).

2. Results

For cash processing details see Fig. 1:

FIG. 1: OPERATIONS INVOLVED IN CASH PROCESSING



Source: Own processing

Cash is being comprehensively processed at all branches staffed by a certain number of bank tellers in accordance with banking standards.

The following parameter values, in part provided by one of the leading banking institutions in the Czech Republic and in part obtained via own measurements (points h and i), were applied to the selected banking organization:

- bank teller's gross wage of CZK 18,000 / month (however, the bank's costs constitute the supergross wage – gross wage plus 25% social insurance and 9% health insurance);
- fixed costs of cash transportation – CZK 245;
- variable costs of cash transportation – CZK 20/km;
- interest costs (2T repo rate) – 0.05% p.a.;
- cash withdrawal limit (without notice) – CZK 100,000;
- CNB fees for deposit and immediate withdrawal of sorted banknotes – CZK 0.035/unit;
- CNB fees for deposit and immediate withdrawal of sorted coins – CZK 0.085/unit;
- cash deposit processing speed – 43 units/min.;
- cash withdrawal processing speed – 97 units/min.;
- number of cash transportation between bank branches and the nearest Czech National Bank branch per week (Tab. 1):

TAB. 1: Number of cash transports made to CNB

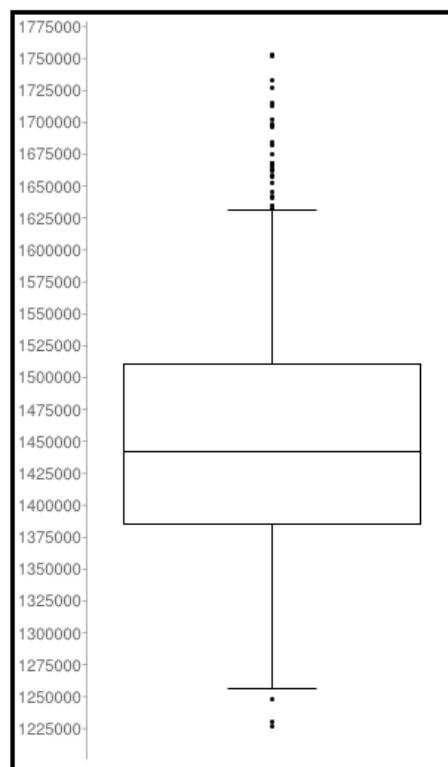
Cash amount		Number of transports to CNB (per 5 days)
Lower limit	Upper limit	
0	800	1
800,001	1,600,000	2
1,600,001	2,600,000	3
2,600,001	3,000,000	4
3,000,001+		5

Source: Own processing

To ensure the relevance of individual simulation results, the simulations using identical default settings were repeated 1000 times.

FIG. 2: DAILY CASH PROCESSING COSTS

Population size: 1000
 Median: 1442635.5
 Minimum: 1227099
 Maximum: 1752781
 First quartile: 1384839
 Third quartile: 1511151
 Interquartile Range: 126312



Source: Own processing

Based on simulation results, the total daily costs associated with cash processing ranged from CZK 1,227,099 to CZK 1,752,781, with the median value at CZK 1.44 million. The sporadic occurrence of costs exceeding CZK 1.65 million can be attributed to seasonal variations, which can also be expected (e.g. the pre-Christmas period). Conversely, very low costs approximating only CZK 1.2 million were less frequent and can, for example, represent the beginning of the new year in terms of seasonality.

Under the current circumstances, bank teller wages represent over three quarters of cash processing costs (CZK 1,200,000 daily). The next largest cost component is represented by Czech National Bank fees. In this case, 13% amounts to approximately CZK 170,000 per day, i.e. nearly CZK 3.5 million a month (with 20 business days).

These costs can be viewed as payments for outsourced services where the CNB provides cash sorting services so that the commercial bank is not required to operate certified technology and finance its operation, maintenance and additional specialized staff. Deposited cash interest costs paid to the Czech National Bank are, by contrary, almost zero thanks to very low interest rates.

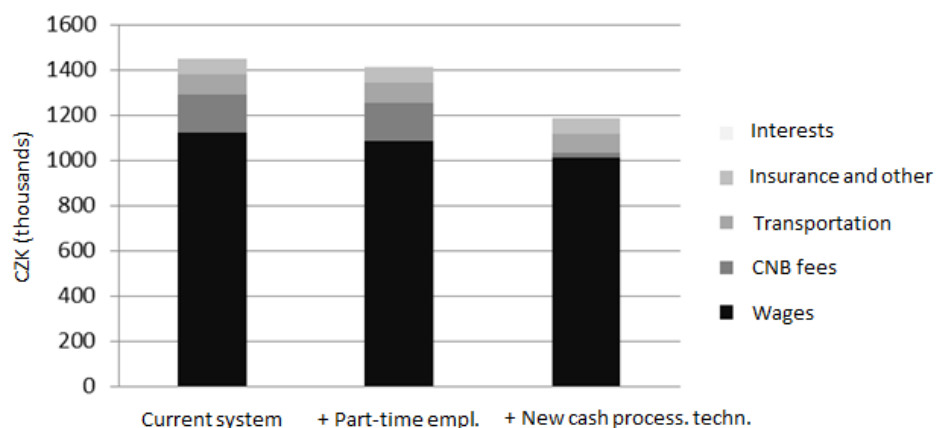
TAB. 2: CURRENT LEVEL AND STRUCTURE OF CASH PROCESSING COSTS

Cost item	Costs (CZK)	Proportion (%)
Wages	1,013,730	76
CNB fees	169,023	13
Transportation	87,876	6
Insurance and safe custody	66,727	5
Interest	106	0

Source: Own processing

In the first phase of the research, it was possible to streamline the work of bank tellers. Part-time employment was introduced to eliminate “lost times” or inefficient business processes when compared with bank advisors. By adopting this measure, employee “lost times” and wage costs were reduced by 4%, which amounts to approximately CZK 40,000 daily. This reduction applies on condition that the existing business hours of cash branches remain unchanged and the deposit/withdrawal frequency is not affected.

The next phase involved the testing of changes in the speed of cash processing. If investment is made in new processing technology, which would allow for speed increases in cash processing by 3 units/min with respect to deposits and by 5 units with respect to withdrawals, the wage costs would see an additional 6.5% reduction (CZK 70,000 daily) and the costs associated with CNB fees would be decreased by 89% (CZK 150,000 daily).

FIG. 3: DAILY CASH PROCESSING COSTS AND STRUCTURE COMPARISON

Source: Own processing

However, the amount of investment required for the new cash processing technology must also be given due consideration. Based on modeling results, approximately 1,150 to 1,170 teller stations would have to be equipped with said technology. With the

acquisition price of one banknote sorting machine (e.g. Glory USF 51) amounting to almost CZK 100,000, the total costs would equal CZK 115 million. The payback period would be within two years (taking no account of potential servicing costs).

3. Discussion

The compiled model indicates that approximately CZK 40,000 daily (nearly CZK 1.2 million monthly) is spent on inefficient business transactions and/or lost time, which make up 9% of the bank tellers' working hours on average. A reduction in jobs would help eliminate these working hours while maintaining the same level of teller station services.

An additional decrease in costs could be accomplished by investing in new processing technology. The maximum elimination of running costs could be achieved via the purchase of 1,150 to 1,170 units of the new equipment, which would amount to daily savings of up to CZK 220,000. The investment payback period would range between 17 to 18 months. The advantage of these propositions lies in their non-dependence on economic developments, or rather on the volume of cash. Inasmuch as the defined objective function is linear, a change in each parameter will only cause a constant increase or decrease in total costs, while the economic advantage of individual variations will remain intact with respect to running costs.

The simulation and the subsequent optimization were performed in cases where cash processing would be decentralized (i.e. each bank branch would handle cash transactions separately irrespective of other branches). The reason for dismissing a centralized approach in this case was the lack of space fit for these purposes, in addition to very high investment costs required for the acquisition thereof. Additional savings (wage costs – economies of scale), as well as an increase in cash transportation costs, can be considered with regard to the centralized approach.

Potential changes in legal regulations or the transition to a different currency (the euro in case of the Czech Republic) may at first seem to be a risk factor with respect to the investment in state-of-the-art cash processing technology. Considering that the process of transition to the euro takes at least 2 years (ECB, 2016) and the new processing equipment routinely enables the handling of selected foreign currencies, depending on the installed software, this type of investment should not be regarded as risky.

Conclusion

Full-time bank tellers are required to handle only very low workloads, which is especially the case at smaller branches. Operations related to cash processing play an increasingly substantial role in today's banking environment and their costliness is by no means negligible. Based on the simulation results, actions affecting the most significant parameter of the initial cash processing system – wages – were taken. The estimated

daily savings yielded by the presented measures would amount to CZK 260,000 on average. However, the manner in which cash processing is streamlined is, in view of the anticipated daily savings, very moderate – there is no reduction either in employee wages or in the level of client services.

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VIDEO RECORDINGS IN EDUCATION

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Keywords:

education – video record

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Abstract:

Today, employers, employees and students all recognize the importance of education. We can increase the effectiveness of the educational process with the use of modern technology. The main requirement is to achieve the established effect with minimal financial and time costs. In this case, videos can be a suitable option. We evaluate three types of video records.

Introduction

In recent years, companies in the Czech Republic are beginning to understand the importance of educating their employees, and they are willing to invest in it. As Hulák (DůmFinanci.cz, 2015) says, „successful companies are investing tens of millions of crowns in their own education centers, internal trainers and coaches“. Informal education of employees comes in various forms: courses, workshops and seminars, private lessons and training in the workplace. The Ministry of Education defines informal education as follows: „Informal education takes place outside a formal education system, and it does not lead to a comprehensive school education.“ (MŠMT, 2016)

„Surveys show that information enters our brains as follows: 87 % through the eyes, 9 % through the ears, 4 % through other senses.“ (Petty, 2008) This is why the full-time form of the courses is very effective. In the following survey conducted in October 2016, 67% of respondents stated that they consider personal attendance to be most beneficial. However, not every employee can take time off to attend the course when it is held. Another disadvantage is the impossibility to revisit the presented information. This is where a video recording of the course or prepared video tutorials would be beneficial. Such video recordings can be made available internally, only for employees of the company, or published freely on the Internet. Learning and acquiring new knowledge through the Internet has recently experienced a big boom. (Kratochvíl, 2016) We can monitor the growth in the selection of webinars, online courses or MOOC. For

example, Fryč states that many European Union countries attach great significance to the MOOC phenomenon. (Fryč, 2014)

A webinar is a web-based seminar in which the participant logs in to the specified website address at the appointed time, joining the seminar. The advantage of a webinar is its simplicity; the participant usually doesn't have to install anything; he can communicate directly with the tutor. An online course is available on the Internet; it is a video recording or purpose-built video. The participant can study the course at any time, but he cannot communicate directly with the tutor in real time; he can often add comments and use offline forms of communication. MOOC – Massive Open Online Course – are online courses available to the general public. They are offered by specialized portals. (for example Coursera, edX or Seduo in Czech Republic).

1. Online education

In my research, I focus on education in the effective use of computer technology. Relevant data is provided by the Adult Education Survey conducted by the Czech Statistical Office in 2011. (ČSÚ, 2016) The results of the survey show that the use of computers is in fifth place in the area of workplace education. The main motivation for education is to increase efficiency and improve career prospects. (ČSÚ, 2016) Employers contribute to funding informal education – either directly or by freeing employees during working hours. (Böhm, 2013) The option to draw contributions from the European Structural Funds may have its role in motivating employers.

Preparing videos is not trivial. It is necessary to identify the target group, prepare an appropriate script and structure, and select the means for recording. It requires technical equipment and the ability to work with recording technology, editing and publishing options. The more sophisticated the technical equipment we use, the more demanding the recording will be financially and knowledge-wise. It will require the cooperation of a number of professionals, making the entire process more time consuming.

A number of authors deal with comparing different approaches and evaluating their demandingness, pitfalls and benefits. For example, Garcia provides a comparison of live recordings of lectures through the computer with edited recordings. He indicates that in edited recordings we will usually get 35 to 40 minutes of edited content after the final cut of a 50-minute lecture. (Garcia, Ball, & Parikh, 2014) We can compare this with the following real times of individual approaches. Zounek and Sudický state that screencasting is a suitable option. They see pitfalls in data archiving and searching for videos, and they also address the issue of copyright. (Zounek & Sudický, 2012) Husa (in Chapter 7) emphasizes the need to organize the videos and provide corresponding metadata. (Slavík, 2012)

The aim of the research is to specify possible approaches, assess the financial and time costs of the solution, and identify which types of recordings and what uses the given approaches are suitable for.

With regard to the objectives given above, three types of recordings were prepared (based on my own experience - I am the author of the first and second options, and a team member in the third option):

- a) Purpose-built video tutorials
 - I. For students and the public - freely available
 - II. For corporate clients - available after logging in to the system
- b) Video recording of lectures, unedited
- c) MOOC course

1.1. Freely available video tutorials

For students and interested members of the public, I have prepared purpose-built video courses for working with Microsoft PowerPoint. This topic is beneficial for a wide range of users.

The emphasis was on low costs. The recordings were made using Skype for Business, which can record audio and video on the computer screen. Regarding technical equipment, a regular laptop or computer and a good microphone are sufficient. For editing we used the free program Movie Maker, which is easy to control (learning to work with the program takes 1 to 2 hours).

From June to September 2016, 65 videos with a total length of 164 minutes and 2 seconds were recorded. Initial consultations resulted in the requirement for shorter videos (up to 5 minutes). The shortest video is 40 seconds long, and the longest video is 7:34 minutes long (this is one comprehensive topic); the median length is 1:57 min., and the average length of the videos is 2:31 min. The recorded footage was approximately three times as long as the final edited footage. The preparation for each recording took 5-15 minutes. The editing took twice as long as the length of the unedited recording. The videos are available on YouTube (where an account was set up for this purpose). This widely used video platform is suitable for videos that can be used by the general public. They are also freely available on the team website (along with instructional text and keywords) at <http://sp.vse.cz/sites/fak2/min/powerpoint/>.

YouTube provides clear statistics. The website with the videos was officially made public on September 22, 2016. Video statistics (from September 26, 2016 till October 29, 2016): Number of views: 265, Total duration of viewing: 389 minutes, Average duration of viewing 1 minute 28 seconds, Most watched videos: introduction, template image, hyperlink.

1.2. Video tutorials for corporate clients

I have prepared video tutorials on how to effectively use Office 365 for an international company operating in the field of technology services and software portfolio management services. These videos are available to the company's clients on a video portal after they login to the intranet. The topics were selected by the company's management according to their clients' requirements.

The emphasis was on the simplicity of the video, because the Office 365 options are updated frequently and the videos will need to be updated according to each new version. It is also important to create the videos quickly. Because the video tutorials are aimed at Office 365, we've appropriately chosen Skype for Business, which is part of Microsoft Office and therefore also enables clients to see the options of this program. There is no need for complex technical equipment, a regular laptop or computer and a good microphone are sufficient; Movie Maker is used for editing.

After our initial consultation in May 2016, we created a pilot video. It was tested and the requirements for the next videos were specified according to it - requirements for formulation, content and the length of the video. 8 topics were recorded from early June till late October 2016. A 1-2-minute video teaser was created for each topic, which is freely available for current and potential clients. A full 9 to 15-minute video tutorial was recorded. Each topic also includes a PDF tutorial. The preparation and creation of the video teaser, video tutorial and PDF tutorial took 15 to 16 hours - due to the demandingness of preparing the environment for the example, and the demandingness of the accuracy of formulations and proper intonation. The video tutorial and text are only available to clients of the company on the Office 365 portal under the Video channel; it does not create extra costs.

The precise usage statistics were not disclosed; according to information from the clients, the video tutorials are widely used and are popular for their practicality and for increasing learning efficiency. The high interest in the videos is also demonstrated by the fact that more topics have been selected, and other language versions of the video tutorials are being considered.

1.3. Lecture video recordings

Selected lectures and exercises are recorded for university students. I will address the videos of informatics lectures and exercises that I provide. Requirements for the video: the ability to broadcast the video online, the ability to publish the video in a prepared catalog, the ability to specify the right of access to the videos for groups of users, the ability to view the videos on computers, tables and smartphones.

Given these requirements, the Mediasite recording device (firm SonicFoundry) was purchased, which contains a catalog that allows the specification of rights. MediaSite

records four components - video, 2 computer desktop recordings and audio. This solution is financially and technically demanding. The purchase price was approximately 600,000 CZK, and the annual fee for support amounts to 30,000 CZK. It also requires a video camera, a lavalier microphone, cables and hubs. The cooperation of a trained technical department employee is necessary. The videos are available at mediasite.vse.cz (some can only be accessed after logging in to the system).

The preparation of the video is not time consuming. Before we start recording, it is necessary to establish a video in the catalog; we then need 10 minutes to install the recorder, and after the recording is finished, we need to wait 5 minutes to publish the recording. The disassembly of the recorder takes about 5 minutes.

The system also provides statistics. Let's look at the statistics of the informatics subject for September and October, which is studied by 260 students. The OneDrive for Business lecture (length 1 hour and 26 minutes) has the highest ratings, from September 7, 2016 – 310 views. The total viewing time of the video was 42 hours and 10 minutes. The exercise video on creating graphs in Excel (length 1 hour and 23 minutes) has the highest ratings, from September 26, 2016 – 260 views. The total viewing time of this video is 47 hours and 51 minutes.

1.4. MOOC course

In August and September 2015, I helped create a pilot MOOC course in cooperation with Seduo. The topic of the course is SharePoint in Office 365. The course is available free of charge. Emphasis was placed on the quality of the video. The instructor was shot along with demo images on the topic.

For this type of video, high-quality recording equipment and a good team of people is necessary. The script must be prepared in great detail; the instructor prepares an example, writes the text for each lesson and prepares targeted demo images that will be added to the video. During the actual recording, the instructor reads the prepared text from a reading device. The video is then edited; the recorded montage is cut, and demo images and the opening and ending theme song is added.

The course is divided into 80 parts; it contains 78 videos (with a total length of 3 hours and 55 minutes), educational materials and a final test. The preparation of the example and text took about one month. The video was recorded over the course of two days. On the first day we shot the instructor, and on the second day we shot the examples and their description. The length of the videos varies significantly according to the described subject - from 29 seconds to 32 minutes. The recording ending on September 7, 2015. Cutting and further editing the footage was time consuming; the course was published on December 16, 2015. Because the course is available free of charge, its preparation

was paid for. Aside from the instructor's wage, the total costs for the course amounted to 40,000 CZK.

The entire course was completed by 17 participants, due to the complexity of the subject and the length of the course - other courses on this portal are usually much shorter. Participants can rate the course after completing it - the course has an 88% rating.

2. Questionnaire survey: Using information sources

In order to find out what materials are most widely used for studying and how the videos are rated, we conducted a questionnaire survey. We addressed informatics students that use print textbooks, freely available PDF materials, educational presentations, tutorial videos made with Mediasite and purpose-built videos available on the team website or directly on YouTube, as ancillary educational materials.

The survey took place on October 24 - 29, 2016, and the answers of 159 respondents were evaluated. The survey revealed interesting information. Respondents prefer personal attendance at a lecture or exercise (the average rating on the scale from 1 to 5, where five is the highest beneficialness, was 4.29); they also widely use textbook PDF files (average beneficialness 3.52) and full videos (average beneficialness 3.13). This interesting data provides answers to the question of what is the most beneficial source of information, where the results confirm the importance of video recordings. 62% of respondents ranked instructional video recordings among the most important sources of information. 16% of respondents named video tutorials.

73% of respondents search for additional information on the Internet, and 16% of respondents search for video tutorials. If a video of a class is available, 66% of respondents will use it. If a purpose-built video tutorial is made, 56% respondents will use it. For studying from electronic devices, the respondents most often use a laptop (78% of respondents), followed by a table PC (9% of respondents), tablet (9% of respondents) and phone (3% of respondents).

3. Discussion

The options for creating videos and using various types of recordings were discussed with the head of the department of the aforementioned international company, with the manager of the education agency, with the head of the technical department of the multinational company and with the representative of the university creating the videos.

Our conversations yielded the following conclusions: Videos are clearly beneficial for increasing the effectiveness of education in companies and schools. If videos are available, students will use them as one of the most effective options - in terms of time spent studying. For any type of video, it is important to prepare a detailed script with regard to the target group. It is advisable to create a detailed written text document of

the presented subject. The more thorough the preparation, the less time it will take to record the video. The technical equipment corresponds with the selected type of video. The higher the demands for the quality of the video, the higher the financial demands and demands for trained operators of the equipment will be. The time necessary for processing the video, cuts and other editing, will generally also correspond with these demands. For the final video - the shorter, the better. The appropriate length of a video is under 5 minutes; if the subject cannot be contained in this time, it is recommended to divide it into multiple parts. Saving the videos is space-consuming; if the videos are only available inside the company, it is necessary to have sufficient disk array capacity. If the videos are published freely, such as on YouTube, it is recommended to set the parameters for the video - at least keywords, tags, licensing, category and comments. The videos can be effectively used in companies as a training supplement, or on their own within e-learning courses. Companies usually don't record their internal training. If a company prepares educational videos, it is appropriate to promote them with a campaign that brings the offered educational opportunities to the staff's attention - e.g. sending informational emails or publishing them in the corporate information system.

Conclusion

Today, employers, employees and students all recognize the importance of education. We can increase the effectiveness of the educational process with the use of modern technology. The main requirement is to achieve the established effect with minimal financial and time costs. In this case, videos can be a suitable alternative. The given approaches showed us which videos a specific approach is suitable for, what the technological demands are, what the financial and time costs are for preparing and editing the videos, and what the presented videos were specifically used for.

Based on these findings, I present the following conclusions and recommendations:

- a) It is the least time-consuming to create a video of a lecture or training. We present such a video as a record of reality; the student can skip the unnecessary parts of the video. The issue here is the costliness for securing staff to operate the technical equipment, which corresponds with the sophistication of the solution. Due to the purchasing costs, this solution is suitable for frequent recording.
- b) For regular tutorials, a simple desktop recording is an adequate solution, where regular video and audio quality is sufficient. This solution is not demanding in terms of equipment, finances or staffing. A laptop, good microphone, software for recording and simple editing are sufficient.
- c) If we want to create a complete MOOC course, we have to expect time-consuming preparation; it is usually necessary to use the services of a specialized company. The financial and time costs are high. This solution is not suitable for topics that need to be updated frequently.

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BANKRUPTCY MODEL CONSTRUCTION AND ITS LIMITATION IN INPUT DATA QUALITY

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Abstract:

The aim of the research project solved at the University of Finance and administration is to construct a new bankruptcy model. The intention is to use data of the firms that have to cease their activities due to bankruptcy. The most common method for bankruptcy model construction is multivariate discriminant analyses (MDA). It allows to derive the indicators most sensitive to the future companies' failure as a part of the bankruptcy model. One of the assumptions for using the MDA method and for reassuring the reliable results is the normal distribution and independence of the input data. The results of verification of this assumption as the third stage of the project are presented in this article. We have revealed that this assumption is met only in a few selected indicators. Better results were achieved in the indicators in the set of prosperous companies and a year prior the failure. The selected indicators intended for the bankruptcy model construction thus cannot be considered as suitable for using the MDA method.

Introduction

The prediction of the future development of a company and the early detection of the possible failure is still a very important information for all stakeholders and their decision-making. The attention is aimed on existing models and their reliability and also on the construction of new models based on the actual time and local condition. The research revealed that the prediction ability and accuracy of the bankruptcy models decrease being used in different environment and different time than they were originally compiled for. It has become an incentive for research projects to be focused on developing new models with defined time and environment in which they have to be used.

The aim of the research project supported of internal grant agency on VSFS Prague is to construct a new prediction model for the Czech SMEs. The base is the set of accounting

data of 50 companies which real went to the bankruptcy in the year of 2013 and of 50 companies from the same period which were in stable good financial condition. We suppose to use multivariate discriminant analyses (MDA), which is a part of the SPSS software.

In the first stage we have specified the indicators which could be sensitive to the future financial failure. Based on the comparison of the indicators included in the bankruptcy models constructed for the conditions of the CEE countries we set out 39 indicators for the next testing. The results of this stage were presented in the HED conference last year (Kubíčková, Nulíček, 2015).

In the next stage we intend to define the indicators in which the two sets of companies (failure and prosperous) differed in the greatest extent. Application of the MDA used for this purpose is conditioned by several assumptions which determine the sensitivity and the reliability of the resulting model. Thus the first step in using the MDA method became to verify these assumptions. The results of the verification whether or not the suggested indicators met the main assumptions of MDA, are presented in this paper.

The structure of the paper is as follows: in the next chapter the MDA method and its assumptions are characterised. In the third part the two sets of firms and data are characterised. In the fourth part we present an overview of the indicators, the distribution and mutual relation we have verified. In the fifth part we present the result of the verification with the commentary. In the last part the conclusions are presented and the questions and suggestions for the next stage and further research are formulated.

1. Literature review

In response to the experience with the elder models and their lower reliability when applied in conditions and time different from those in which they were developed, the researches aimed to construct new versions of the older models (Altman, 2000) as well as the new models based on the wider scale of variables (Altman et al., 2010). Special models were created for a specific location, branch or type of companies: the Altman model has been adapted for conditions of the UK SMEs (Altman et al., 2010), specific model for the Polish, Slovak, Lithuanian and Czech environment has been created (Chrastinová 1998, Prušak, 2004, Neumaier & Neumaierová, 2005, Gurčík, 2002, Hálek, 2013, Andrzejewski & Maślanka, 2015). Ohlson's model has been transformed for the conditions of Iran or China (Zhang et al., 2010). Special model for bankruptcy prediction for Russian trade companies has been created (Davydová, Belikov, 2013), Altman model was adapted for the trade and non-production companies etc.

The experiences in models construction turned attention of researchers both to the accounting data quality and reliability (Altman et al., 2010, Režňáková, Karas, 2014) as well as to the method used to identify the indicators sufficiently sensitive to future

financial distress. In this context, the researchers attention turned to the method used to derive the indicators, i. e. mainly MDA method, and its assumptions. The impact of the methodology used for model building on its predicting accuracy has been discussed (Režňáková, Karas, 2013, 2014, Sánchez-Lasheras et al., 2012 and others).

2. Data and method

The data sets used in our research project were obtained from the annual reports and financial statements of companies presented in the insolvency register and the business register. The examined sample includes 100 companies operating in the Czech Republic. 50 of these companies have actually ceased operations due to financial difficulties and insolvency, the other 50 companies are viable and prosperous, in good financial condition. The year of failure of all the 50 companies was 2013. The structure of both subsets was similar concerning size, legal form and sector. The data were collected from the period of five years before the 2013, i.e. 2009-2013, both for the failed and the prosperous companies. Only for the last year prior to insolvency we have obtained data only of 35 failed companies.

In the previous stage of research 39 indicators were defined for the verification in the next stage. As a base for this definition we used the list of signs of future failure in the literature (Schönfeld, 2011) and the comparison of the indicators included in the bankruptcy models created mainly in the CEE countries. Based on this analyses 39 indicators describing various aspects of the company's financial situation were specified (Kubíčková, Nulíček, 2015). For this stage of the model building 15 indicators have been selected – see the table 1.

TAB. 1: The indicators in the examination

No	Indicator	Abbrev.	Area
1.	Assets / Liabilities;	A / L	Indebtedness - Modified financial leverage
2.	EBIT / Interests	EBIT / I	Indebtedness - Interests coverage
3.	EBIT / Assets	EBIT / A	Profitability - ROA
4.	Revenues / Assets	R/A	Activity - Turnover rate of assets
5.	Current assets/ ST liabilities	CA/STL	Liquidity - Current liquidity
6.	Inventories / Assets	INV/A	Activity - Share of inventory in assets
7.	ST Liabilities / Sales	STL/S	Activity - Turnover of current (short-term) liabilities
8.	Receivables / Revenues	C / R	Activity - Turnover of the receivables
9.	Receivables/Current Assets	C /CA	Activity - Share of receivables on current assets
10.	ST Liabilities / Assets	STL / A	Indebtedness - Debt ratio
11.	EBT / Sales	EBT / S	Profitability - ROS

No	Indicator	Abbrev.	Area
12.	EAT / Equity	EAT / E	Profitability - ROE
13.	Retained Earnings / Assets	RE / A	Profitability - long term ROA
14.	Equity / Liabilities;	E / L	Indebtedness -Debt coverage of equity
15.	Cash flow / Liabilities;	CF / L	Indebtedness - Debt coverage of CF

Source: own processing

Note: Sales = sales of goods and own products; Revenues = sales + all other incomes; Retained earnings = funds from profits + earning of the previous years + profit of the current period; Cash flow = EBT + depreciation and amortization.

As the signs of the financial failure the financial ratios were used. A set of indicators includes only those that are computed as a ratio of items from the financial statements. No other indicators, absolute or dichotomous, were included. The indicators were calculated based on the financial statements data one and two years prior to the year of bankruptcy, i. e. the period t-2 and t-3.

For the creation of a bankruptcy model the MDA method is intended to be used. This method allows to identify those indicators whose values in both groups of companies, i. e. failed and prosperous, are the most different. The MDA is a method based on linear regression, which assumes certain characteristics of the input data. The assumption of the MDA method are summarised in the next chapter.

The verification of the assumptions, namely the one of the normal distribution of input data (selected indicators) is the aim of this paper.

3. Assumptions for MDA

Multivariate discriminant analysis (MDA) is a statistical method determining which variables discriminate between two or more naturally occurring groups. This method was described in more details in our previous research paper (Kubíčková, Nulíček, 2016).

Multivariate discriminant function analysis is computationally very similar to MANOVA. To use this method, there are several assumptions to be fulfilled. In general, one can say, that all assumptions for MANOVA apply also for MDA. A wide range of diagnostics and statistical tests of assumption are available to examine whether or not the data are suitable for the discriminant analysis.

3.1. Normal distribution

It is assumed that the data for the variables represent a sample from a multivariate normal distribution. It is preferable that normality be assessed both visually using histograms of frequency distribution, and through some normality tests. There is a wide range of normality tests available, e.g. Shapiro-Wilk test, Kolmogorov-Smirnov test,

Anderson-Darling test, D'Agostino skewness test, Cramer-von Mises test and many others. Some researchers recommended the Shapiro-Wilk test as a most powerful tool for normality testing (Razali, 2011). This test is implemented in the SPSS software (Pallant, 2007).

When the normality assumption is violated, interpretation and inferences may not be reliable or fully valid. But some researchers claim, that small violations of the normality assumption are usually not fatal, the resultant significance tests etc. are still trustworthy (Hebák, 2015).

3.2. Homogeneity of variances/covariances.

The other assumption for using MDA is that the variance/covariance matrices of variables are homogeneous across groups. As above, minor deviations from this assumption are not that important, especially, when the sample sizes in all the considered groups are equal. However, before accepting final conclusions for an important study, it is a good idea to review the within-groups variances and correlation matrices. For this purpose a scatterplot matrix can be produced. One may also use the numerous tests available whether or not this assumption is violated in the data which are subject to your research. One of the suitable tests is the Box's test, which is an extension of the Barlett's test. This test is also implemented in SPSS (Pallant, 2007)

3.3. Correlations between means and variances.

The validity of significance tests is most threatened when the means for variables across groups are correlated with the variances (or standard deviations). If there is a large variability in a group with particularly high means on some variables, then those high means are not reliable. The overall significance tests are based on the average variance across all groups. Thus, the significance tests of the relatively larger means (with the large variances) would be based on the relatively smaller pooled variances, resulting erroneously in statistical significance. This pattern occurs if one group in the study contains a few extreme outliers. These extremes impact the means significantly, and also increase the variability. To explore this correlation between the means and variances or standard deviations, one must use some methods of the descriptive statistics (Zhang, 2007).

3.4. Redundancy of the variables

Another strong assumption of MDA is that the variables that are used to discriminate between groups are not completely redundant. To check up this redundancy, invert the variance/covariance matrix of the variables in the model. If any one of the variables is completely redundant with the other variables then the variance/covariance matrix is „ill-conditioned“, and it cannot be inverted.

To guard against matrix ill-conditioning, it is suitable to constantly check the *tolerance value* for each variable. In multiple regression, tolerance is used as an indicator of multicollinearity. The tolerance is estimated by $1 - R^2$, where R^2 is calculated by regressing the independent variable of interest onto the remaining independent variables included in the multiple regression analysis (Tabachnick, 2001). The test of the tolerance value is available in SPSS, as well.

When a variable is almost completely redundant and the matrix ill-conditioning problem is likely to occur, the tolerance value for that variable will approach zero.

3.5. Shapiro-Wilk test

To test the normal distribution of the defined indicators values we used Shapiro-Wilk test (Shapiro, Wilk, 1965). The Shapiro–Wilk test utilizes the null hypothesis principle to check whether a sample x_1, \dots, x_n came from a normally distributed population. The test statistic is

$$W = \frac{(\sum_{i=1}^n a_i x_i)^2}{\sum_{i=1}^n (x_i - \bar{x})^2}$$

where x_i = the i -th order statistic, i.e. the i -th smallest number in the sample,
 \bar{x} = mean of the sample

$$a_i = \text{constant, which is given by : } (a_1, \dots, a_n) = \frac{m^T V^{-1}}{(m^T V^{-1} V^{-1} m)^{1/2}},$$

where $m = (m_1, \dots, m_n)^T$ are the expected values of the order statistic of independent and identically distributed random variables sampled from the standard normal distribution,

V = the covariance matrix of those order statistics.

Interpretation of the resulting values:

If the p-value is less than the chosen alpha level, there is evidence that the data tested are not from a normally distributed population (the null hypothesis is rejected); in other words, the data are not normal distributed. On the contrary, if the p-value is greater than the chosen alpha level, then the data came from a normally distributed population (the null hypothesis cannot be rejected). However, since the test is biased by sample size, the test may be statistically significant from a normal distribution in any large samples. Thus a Q–Q plot is required for verification in addition to the test.

The Q–Q plot is a graphical method to compare if two variables have approximately the same distribution of probability. If we construct a Q–Q plot for theoretical normal distribution on one axis and for the compared variable on the other axis, we can decide from the shape of the plot, if the compared variable is (approximately) normally distributed or not. When the variable is close to the normal distribution the points in their Q–Q plot are close to the line with 45 degrees slope. If the variables are not close

to the normal distribution, the slope of line will differ. In that case the slope of the line, and spacing values around it reveal the influence of extreme values.

In first step we have tested the normal distribution in case of 15 selected indicators presented in the Table 1. The results of the Shapiro-Wilk test of the normal distribution are presented in the next chapter.

4. Results and discussion

The results of the Shapiro-Wilk test of the normal distribution in the set of 15 selected indicators are presented in Table 2 and Table 3 (in Table 2 the W-values for the time t-2, in Table 3 the W-values for the time t-3). For the set of n=50 elements the limit W-value on the level $p=0.01$ is 0.93, on the level $p=0.05$ is 0.947. If the W-value of the indicator is lower than these limit values, the analysed indicator is not normally distributed. In the set of 15 selected indicators only a few indicators reached the limit of the W-values confirming the normal distribution.

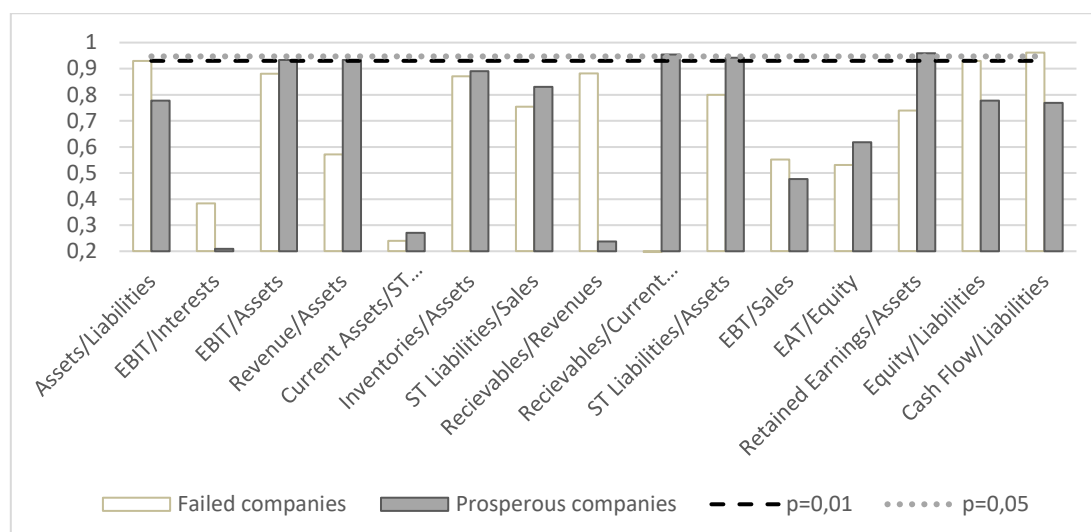
TAB. 2: Results of the normal distribution test in the year t-2

Indicator	Year t-2									
	Failed companies					Prosperous companies				
	Average	Median	Variance	Skewness	W	Average	Median	Variance	Skewness	W
1	1,058	1,037	0,164	1,064	0,930	2,849	2,474	3,493	2,386	0,777
2	-8,102	0,120	243077,073	-2,871	0,383	2143,454	13,208	125671048,474	6,531	0,209
3	-0,045	0,002	0,051	-0,261	0,880	0,075	0,065	0,005	0,615	0,933
4	2,420	1,613	7,709	4,437	0,571	1,854	1,723	1,071	1,028	0,933
5	1,286	0,809	10,190	6,884	0,240	3,358	1,551	64,863	6,708	0,270
6	0,181	0,134	0,032	1,003	0,871	0,157	0,104	0,019	0,808	0,890
7	0,715	0,556	0,365	2,383	0,754	0,237	0,171	0,029	1,836	0,830
8	0,301	0,220	0,070	1,397	0,882	0,315	0,148	0,889	6,890	0,237
9	-0,045	0,664	24,855	-7,007	0,197	0,493	0,480	0,052	-0,055	0,954
10	1,016	0,872	0,437	2,433	0,800	0,344	0,286	0,042	0,723	0,942
11	-0,080	-0,005	0,144	-3,557	0,552	0,060	0,036	0,015	5,404	0,477
12	-0,215	0,105	10,151	-4,019	0,531	0,177	0,095	0,100	3,587	0,618
13	-0,242	-0,021	0,417	-2,646	0,740	0,440	0,409	0,053	0,090	0,959
14	0,058	0,037	0,164	1,064	0,930	1,849	1,474	3,493	2,386	0,777
15	-0,015	0,010	0,023	-0,266	0,961	0,291	0,197	0,096	2,283	0,769

Source: own calculation

In the year t-2 in sum 8 indicators reached or exceeded the level $p=0.01$ of the limit value: three indicators in the set of failed companies (A/L, RA/A, CF/L) and five indicators (EBIT/A, R/A, P/CA, STL/A, E/L) in the set of prosperous companies. On the level $p=0.05$ there were three indicators (CF/L, P/CA, E/L) that proved the normal distribution, from which only one was in the set of failed companies. None of the indicators was confirmed as normally distributed both in the set of failed and prosperous companies. Thanks to these facts we concluded that no indicator in the 15 analysed indicators is suitable for the MDA method application.

The W-values reached in the 15 analysed indicators in the year t-2 in comparison of the value limits are presented in Figure 1.

FIG. 1: Results of normal distribution testing in the year t-2

Source: own elaboration

In the year t-3, i. e. two years before the bankruptcy of companies (see Table 3), in sum only six out of fifteen indicators has reached the limit level: three in the set of failed companies (P/CA, A/L, RE/A - the last two were slightly below the limit) and three in the set of prosperous companies (P/CA, E/L, STL/A - the last one was slightly below the limit). In case of $p=0,05$ there was not detected any indicator with the normal distribution of its value. In this year one indicator (P/CA) with proved normal distribution of both in the set of failed companies and at the same time in the set of prosperous companies was identified.

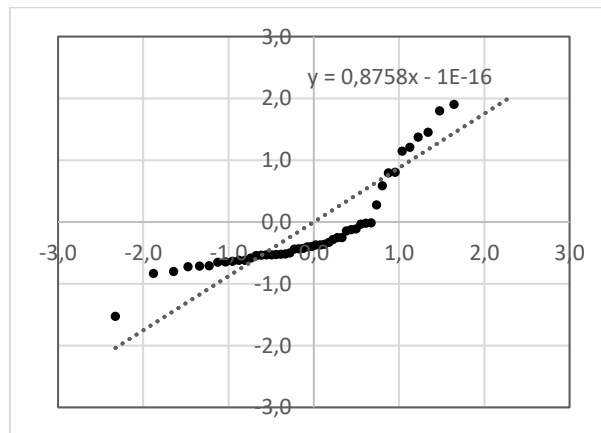
The values of descriptive statistics (Table 2, Table 3) illustrate the uneven distribution of the indicators values in both sets of companies and in both years. They also indicate the influence of extreme values. The new calculation of the W-values with the exclusion of extreme values as well as using the other methods for testing will be the aim of the next stage of verification.

TAB. 3: Results of the normal distribution test in the year t-3

Ukazatel	Year t-3									
	Failed companies					Prosperous companies				
	Average	Median	Variance	Skewness	W	Average	Median	Variance	Skewness	W
1	1,137	1,090	0,174	1,095	0,928	3,429	2,375	20,014	5,624	0,438
2	15,482	1,208	1019368,570	3,865	0,330	2535,485	15,930	112597563,242	5,281	0,277
3	-0,094	0,011	0,090	-2,187	0,777	0,096	0,065	0,015	1,256	0,867
4	2,451	1,910	4,985	3,786	0,640	1,995	1,711	1,651	1,673	0,873
5	1,143	0,860	2,574	6,092	0,383	2,214	1,759	2,133	1,826	0,755
6	0,178	0,143	0,027	0,896	0,884	0,168	0,103	0,030	2,436	0,786
7	1,480	1,163	1,265	2,246	0,725	0,303	0,190	0,190	4,545	0,467
8	0,272	0,219	0,044	1,508	0,873	0,212	0,141	0,046	3,492	0,673
9	0,672	0,701	0,100	0,709	0,942	0,512	0,563	0,060	-0,156	0,937
10	0,904	0,860	0,239	1,422	0,889	0,371	0,319	0,045	0,582	0,924
11	-0,143	0,002	0,182	-3,916	0,484	0,063	0,038	0,010	2,658	0,751
12	0,047	0,054	8,032	-0,126	0,718	0,164	0,098	0,063	2,300	0,807
13	-0,146	0,002	0,243	-1,737	0,826	0,454	0,424	0,079	1,013	0,941
14	0,137	0,090	0,174	1,095	0,928	2,429	1,375	20,014	5,624	0,438
15	-0,055	0,006	0,092	-2,156	0,799	0,419	0,207	0,299	1,878	0,771

Source: own elaboration

The influence of the extreme values was confirmed in the Q-Q test. The test and the figure were run for each of 15 indicators – the one of CF/L indicators (Cash-flow/Liabilities) is presented on Figure 2. In the year t-3 in the set of prosperous companies the result of the Shapiro-Wilk test for this indicator reached 0771 and thus the normally distribution was not confirmed. The shape of the plot in the Q-Q test confirmed this conclusion: the values are not on the line with 45% degree slope and are considerably scattered from the regress line of its distribution ($y=0.8758x-1E^{-16}$). By using the Q-Q test we proved the influence of extreme values especially for five indicators: EBIT/I, R/A, CA/STL, C/CA, EAT/E. These findings indicate a need of recalculation of this test excluding the outliers. That will be focused on in the next stage of our research.

FIG. 2: Q-Q test of the CF/L indicator value in the set of prosperous firms in the year t-3 (W-value is 0.771)

Source: own elaboration

Note: The line in the plot is a regression line for the values – the equation of it is in the figure.

5. Conclusions and questions for the further research

The reliability of the results obtained by using the MDA method in bankruptcy model construction depends, among other things, on certain characteristics of the input data. One of them is the normal distribution of the values. The verification of the normal distribution of the selected indicators, as a base for constructing a new bankruptcy model, brought some useful findings. For verification 15 indicators from the 39 indicators, which we have proposed as potential indicators of bankruptcy in previous phases, were selected. They have been selected so that each of the areas signalling the future failure was represented by at least one indicator. We were verifying if the values of these indicators are normally distributed. For testing the Shaphiro-Wilk test and then the Q-Q test was used.

The normal distribution was confirmed only for a small number of indicators. More indicators of normal distribution were found in the period t-2 compared to the period t-3. The number of indicators with the normal distribution differed in the set of failed and prosperous companies. Normally distributed indicators were identified as normal only in one of the sets of companies, not in both at the same time. The only exception was the indicator C/CA in the year t-3.

Based on these result it can be concluded, that none of the selected 15 indicators is fully suitable for the MDA method and consequently for the creation of a bankruptcy model. These findings also confirmed that it is very important to pay attention to the quality of input data.

Based on these findings and experiences, two main directions of our next research can be formulated. The first one is focused on verification whether or at what extent the results, that we have achieved, are affected by the extreme values. The second one is focused on verification whether or not the other indicators in the set fulfil the assumption of the normal distribution. Only based on this verification, further assumptions for using MDA method can be examined.

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THE ANALYSIS OF THE POLISH "FAMILY 500+" PROGRAMME EFFECTS USING EUROMOD MICROSIMULATION MODEL

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Keywords:

risk of poverty – income inequality – family policy – simulation

JEL classification: I320, D310, J320

Abstract:

The aim of this analysis is to show how the financial situation of Polish households will change following the introduction of the "Family 500+" programme. Making use of the European tax-benefit microsimulation model EUROMOD, this paper assesses the consequences of the recent reform in Poland. The effects of the programme were measured as the difference between the values of the disposable income of households before and after its implementation. Suitable measures allowed to assess redistributive effects of the programme as its impact on the risk of poverty and income inequalities for different types of households.

Introduction

The demographic situation of Poland is alarming. The size of the Polish population has fallen systematically in the past years. The birth rate does not guarantee simple replacement of generations. The total fertility rate is only 1.3 (Eurostat, 2016). If the current trends maintain, in 2060 the population of Poland will go down from 39 million to about 32 million (NIK, 2015). The guarantee of the increase of the birth rate is the most urgent task for the Polish state. Almost all the EU countries have their own "family allowance" programmes with different rules and approaches. Poland still lacked a pro-family solution that would improve the situation.

In order to boost natality, the Poland's current ruling party Law and Justice implemented the subsidy programme named "Family 500+" in April 2016. The reform introduced a monthly allowance of 500 PLN – equivalent to €110 – for all second and subsequent child in the family up to the age of 18. Low-income families, with net income up to 800 PLN per person per month (or up to 1200 PLN if there is a disabled child in the family), are additionally eligible to 500 PLN per month for the first child in the family aged up to 18. The income considered for eligibility to payments for the first child is the average monthly post-tax per capita family income from the most recent income tax calculation,

with special rules defining eligibility of farmer families (Myck, 2016). In the case of payments for the second child onwards the programme does not provide for the upper income threshold, hence also wealthy people will benefit from it.

The aim of our research is to simulate the amount of parental benefits resulting from the "Family 500+" programme using the microsimulation model EUROMOD. The "Family 500+" programme may affect poverty and income levels among the working age population and those with children, therefore we will analyse the impact of the programme on the distribution of household disposable incomes and find how the programme will change the poverty risk and income inequality in Poland.

1. Methods of the analysis

To our knowledge, only a few analyses of the (potential) impact of the "Family 500+" programme have been carried out so far. Goraus and Inchauste (2016) claimed that the programme will improve the material situation of families with children and will have a major influence on the level of child poverty and income inequality. The effect of the policy on the labour market activity among parents was examined by Myck (2016). Its findings suggest that the reform will limit labour supply by about 240 thousand individuals. The employment effects should be concentrated among women, in families with one or two children and among those living in small towns and villages (Myck, 2016). It is worth mentioning that the alternative tax-benefit strategies to support children in Poland were analysed earlier by Levy, Morawski and Myck (2008).

As the EUROMOD can be used to answer the questions related to the effects of family policy in terms of poverty or inequality, we use this tool for the analysis. EUROMOD is the European Union tax-benefit microsimulation model. It calculates individual and household tax liabilities and benefit entitlements according to the policy rules in the EU member states (Sutherland & Figari, 2013). Using EUROMOD, it is possible to simulate not only current but also hypothetical tax-benefit rules, with particular emphasis on such issues as distributive analysis or budgetary effects. This tool provides the capacity for exploring the implications of alternative reform strategies for income redistribution. It can be used "to examine the effects of actual changes in policy over time, for example to show the extent to which changes in public policies have contributed to reducing (or increasing) income poverty or inequality" (Sutherland & Figari, 2013).

EUROMOD was developed as part of the European Commission funded research projects, starting in 1996. It is maintained, developed and managed by the Institute for Social and Economic Research (ISER) at the University of Essex, in collaboration with national teams from the EU member states. Currently EUROMOD simulates the policy systems for 28 EU member states. It combines information on relevant policy rules with detailed and representative micro-data on individual and household circumstances. Most

of input data are derived from the European Union Statistics on Income and Living Conditions (EU-SILC) data (De Agostini, Myck & Kundera, 2015). In order to conduct the present analysis, we used the database, which is the UDB EU-SILC for Poland from the year of 2012, for the microsimulation. The sample size is 13,116 households.

In our analysis, we will show the extent to which changes in family policy caused by the "Family 500+" programme have contributed to reducing income poverty or inequality. The EUROMOD aims to simulate various tax and benefit components of household disposable income. We implemented the rules of the "Family 500+" subsidy and simulated it as one part of the household disposable income (assuming that other components will not change, i.e. *ceteris paribus*). The disposable income corresponds to market income (among other earnings, income from capital and property) and public pensions after taxes and social insurance contributions are deducted and cash benefits added. The income distribution effects of "Family 500+" programme were computed for households according to their disposable income equivalised by the modified OECD-equivalence scale (the weights for household members are: first adult = 1, additional people aged 14+ = 0.5, additional people aged under 14 = 0.3).

There are numerous measures of poverty known from the literature (Atkinson, 1987; Foster, Greer & Thorbecke, 1984). Summary statistics tool provided by EUROMOD computes a range of commonly used indicators: poverty rates for the overall population and for selected groups, the Gini coefficient, distribution of household income, demographic information on households by income group and other. The most widely-used headcount poverty ratio (or headcount index, poverty risk) measures the proportion of the population that is poor. It is the percentage of people in households whose equivalised disposable income lies below a given threshold referred to as poverty line (poverty threshold). In our analysis the poverty line is set at 60% of the median equivalised household disposable income (Panek, Podgórski & Szulc, 1999). Headcount poverty ratio is popular because it is easy to measure and understand. However, it does not indicate how poor the poor are, and does not change if people below the poverty line become poorer (Dalton, 1920). Therefore, we use the Gini coefficient of equivalised disposable income. The Gini coefficient is a measure of inequality of a distribution (Gini, 1912) and is often used to measure income inequality. It is defined as a ratio of the area that lies between the uniform distribution line and the Lorenz curve over the total area under the uniform distribution line. It takes values between 0 and 1 (0 corresponds to perfect income equality, i.e. everyone has the same income, and 1 corresponds to perfect income inequality, i.e. one person has all the income).

2. Results and discussion

Suitable measures allowed assessing redistributive effects of the programme as its impact on the risk of poverty and income inequalities for different types of households. The calculated poverty rates are included in Table 1. The poverty line was set at 60% of

the median equivalised household disposable income and will increase after the implementation of the "Family 500+" programme from the level of 1,176.17 PLN to the level of 1,236.71 PLN. The simulated percentage of households below the poverty line will decline from 17.75% before the reform to 13.69% after its implementation. The simulated share of the poor households with children (aged 18 or younger) will decrease significantly from 22.88% to 10.18%. The headcount poverty ratio will grow only for the families without children (up to 19.1%). For the families with children, the largest decrease will be recorded among those with 4 and more children (from 37.23% to 5.84%). The poverty risk will decrease among working aged people (between 19 and 64) and will slightly increase for the elderly (persons aged 65 or older).

TAB. 1: Basic poverty indices

Poverty indices	Before 500+	After 500+
Poverty line	1,176.17	1,236.71
Headcount poverty ratio for all households	17.75%	13.69%
Headcount poverty ratio for households without children	16.92%	19.10%
Headcount poverty ratio for households with children	22.88%	10.18%
with 1 child	17.35%	14.36%
with 2 children	23.26%	9.00%
with 3 children	32.27%	6.40%
with 4 and more children	37.23%	5.84%
Headcount poverty ratio for working aged	17.16%	14.53%
Headcount poverty ratio for elderly	13.37%	14.60%

Source: own research

TAB. 2: Mean and share of household's income per decile group

Decile group	Mean disposable income before 500+	Mean disposable income after 500+	Difference between mean incomes	Share of disposable income before 500+	Share of disposable income after 500+
1	1,219.16	1,295.63	76.47 (6.27%)	2.85%	3.54%
2	2,018.73	2,263.27	244.54 (12.11%)	4.72%	5.47%
3	2,509.59	2,795.22	285.63 (11.38%)	5.86%	6.38%
4	2,899.85	3,236.81	336.96 (11.62%)	7.02%	7.26%
5	3,360.21	3,770.57	410.36 (12.21%)	8.08%	7.94%
6	3,891.03	4,175.87	284.84 (7.32%)	9.21%	9.04%
7	4,531.73	4,763.88	232.15 (5.12%)	10.44%	10.19%
8	5,067.56	5,282.51	214.95 (4.24%)	12.33%	11.94%
9	6,239.78	6,412.93	173.15 (2.77%)	14.81%	14.43%
10	9,449.90	9,620.29	170.39 (1.80%)	24.68%	23.80%
All	4,180.04	4,333.85	153.81 (3.68%)	100%	100%
Poor	1,537.68	1,486.88	-50.80 (-3.30%)	6.38%	5.43%

Source: own research

In Table 2 income distribution indicators such as mean equivalised incomes and decile shares for households are presented. Decile groups are formed by ranking individuals according to equivalised household disposable income. The average amounts in the table are monthly and non-equivalised. As a result of the "Family 500+" programme, the mean income of all households will increase, but the income of the poorest (households at risk of being in poverty) will decline. It should be noted, however, that the share of poor households will become smaller. The new family support will affect households in all income decile groups with highest gains among households from the 2nd to 6th income decile (average increase of disposable income by 10,93%). The gains among households from the 7th up to 10th decile are much lower (average increase by 3,49%).

The Table 3 shows that due to the "Family 500+" programme, the household average number of persons and children among particular decile group will also change. After the implementation of the reform, the number of persons and children in the poorest households (in 1st, 2nd and 3th decile group) is lower. The 5th decile group is the group with the most of kids (before the start of the programme it was the 2nd group).

TAB. 3: Household average number of persons and children per decile group

Decile group	Persons before 500+	Persons after 500+	Children before 500+	Children after 500+
1	2.89	2.37	0.72	0.31
2	2.88	2.69	0.73	0.54
3	2.88	2.84	0.69	0.65
4	2.78	2.89	0.57	0.67
5	2.80	3.08	0.53	0.73
6	2.85	3.00	0.50	0.62
7	2.92	3.03	0.48	0.59
8	2.77	2.87	0.44	0.51
9	2.83	2.88	0.48	0.51
10	2.57	2.62	0.42	0.47
All	2.81	2.81	0.55	0.55
Poor	2.88	2.43	0.73	0.36

Source: own research

In Table 4 inequality indicators for income distribution of different household types (Gini coefficients) are presented. The values are calculated for equivalised household disposable income (negative incomes have been recoded to zero). After the introduction of the programme, the Gini coefficient values decline for all analysed household types, except those without children. The incomes among families with three and more children will be equalized to the most extent.

TAB. 4: Gini coefficients for equivalised household disposable income

Gini coefficient	Before 500+	After 500+
for all households	0.3108	0.2873
for households without children	0.3065	0.3065
for households with 1 child	0.3011	0.2788
for households with 2 children	0.3056	0.2527
for households with 3 children	0.3286	0.2507
for households with 4 and more children	0.2311	0.1481

Source: own research

The results of our analysis show that the "Family 500+" programme may lead to an important decline in poverty and may help to reduce inequality in Poland. The similar results were obtained by Goraus and Inchauste (2016). This kind of direct financial support may improve the quality of life of poor families with many kids. Since low-income households have more children, most of the gains will go to the bottom of the income distribution. Despite this, 13 percent of payments are expected to benefit the top 40 percent of the distribution, suggesting that the programme could be better targeted (Goraus & Inchauste, 2016).

Conclusion

The government estimates that thanks to "Family 500+" more than 3.7 million children may receive benefits and 2.7 million Polish families will be entitled to the payment (about 63% of families with children in the relevant age group). The estimated cost of the reform is up to 23-25 billion PLN (€5 billion) per year (i.e. 1,5% GDP).

Our analysis confirms that the poverty and income inequality in Poland are expected to fall after the introduction of the "Family 500+" programme. Beyond the goal of the child poverty reduction the programme has got another formal objective: to encourage fertility. The birth rate may grow, but experts are quite divided over this. Another possible impact of the programme is the increase of the market demand. Households are expected to increase their spendings, but as for today, it cannot be estimated to what extent. For some people this payment may be an incentive to leave the labour market (Myck, 2016). It seems, it will not be so in the case of single mothers with little income, because the support for a single parent is difficult to obtain. However, all conjectures described above can be verified after the next few years of the programme functioning.

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MANAGEMENT OF GENERATION Y

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Keywords:

management – generation y – motivation – retention – leadership

JEL classification: I25, J40

Abstract:

This article deals with the challenges in leadership based on expectation of the Generation Y. In the framework of the research provided in 2015, Generation Y was pointed as a challenge for 46 % of top managers involved in the research. This factor is the third most significant challenge, after the development of new technologies and the constant change. Additional research was dedicated to the motivational factors and expectations of the Generation Y employees. The expectations were figured out by research among 319 students of high schools and universities. The study confirmed that sense of the work, lower loyalty to the employer and flexibility would play important roles in the motivation of Generation Y. It will bring necessary changes also into management behaviour towards Generation Y employees.

Introduction

The topic of a different approach towards Generation Y employees is an issue with high priority within the companies. Managers from 149 entrepreneurship indicated that a new approach toward a new generation of employees is necessary. People of Generation Y have different expectations, and the companies look for different motivational tools to get and retain employees. Based on the research among students there were confirmed the main motivation tools of young employees. Flexibility, sense of work, career development and further learning were mentioned by respondents as the main motivation factors. The change of behaviour could cause difficulties especially for managers of previous generations, where the working approach differs significantly.

1. Methods, literature overview

1.1. Methods

The paper is based on two qualitative types of research. First research was oriented to the managers and their expected challenges for the next five years. A structured questionnaire was distributed to the top managers of companies from different sectors. The response rate was 35 %; a total number of respondents was 149.

The second research was conducted among students of high schools and universities. A structured questionnaire was answered by 391 respondents.

1.2. Literature overview

As Generation Y we call the generation born between 1981 and 2000. This generation is very close to the technologies and their use. Some authors called Generation Y as Facebook or the Millennium generation. Generation Y prefers a participative style of leadership, personal communication through email or social networks, meaningful work, self-development and balanced work and personal life.

For managers of the previous generations represents the leadership of Generation Y a great challenge. They differ in access to work, communication style and emphasis on the balance between personal and work life. Unlike Baby Boomers, that is the current generation of managers who prefers hard work and asks the awards and success, generation Y prefers the satisfaction of creative and meaningful work and wants to have fun. They expect the personal approach, continuous development, flexibility and the possibility of self-realization. These expectations introduce new requirements for the leadership competencies, which we summarize in the following points: keeping space, diversity, self-management and self-development, and the promotion of a learning organization.

In the context of research in 2015 Generation Y was pointed out as a challenge for the top managers to the year 2020. 46% of respondents from a total of 146 chose leading the Generation Y as an issue. Managing Generation Y is the third most important factor, after the development of technology and the constant change.

Generation Y, its characteristics, and possibilities of leadership are in the available sources recently described quite often; its popularity is increasing from year to year. In the full-text search has been marked by more than 5 million articles in which was mentioned the generation Y. For the most relevant to the topic of this section is the work of the following authors Meier (2010), Eisner (2005), Viswanathan (2013), Lim (2012), Lowe's (2008). Strauss and Howe (2000) described the major world events that have formed the generation Y. Some of these events were pointed out as crucial moment that will be never forget; the year 1995 and the bomb attack in Oklahoma City, the death of Princess Diana and the massacre at a school in Columbine (Howe and Strauss, 2000). In addition to the death of Princess Diana, these events have influenced more the American youth. Events of the later years already, however, had more significant impact on members Generation Y around the world; these events include a quantum of natural disasters such as the tsunami in Thailand in 2004 and Hurricane Katrina in 2005, which caused enormous damages.

In the Czech environment is undoubtedly considered as the most significant the year 1989 and the fall of the Communist regime. The majority of individuals belonging to the Generation Y experienced this year in very early childhood, and thus it's practically not in their memories. Probably the most significant were the turning point, which came in the form of attack on the World Business Centre in September 2001. Until this time the Generation Y grew up in relative peace and sense of security. It was probably the beginning of the global fear of terrorism and related security measures.

Very similar characteristics we can find by other authors. Karchem and Templinem (2013) agreed on the fact that the representatives of the Generation Y have a tremendous ability to cooperation. Love working in a team and thus creates a link and partnerships with other team members. At the same time, they are used to join forces with others and take advantage of the different ideas to create strategies. On the other hand they do not realize the problems associated with excessive reliance on group decision-making. Those are for example the suppression of the individual skills of decision making, and creativity and ability. The next the problem is that group meetings are time-consuming, and some decisions therefore still have to be done separately, without prior consultation with the whole team (Myers and Sadaghiani, 2010). Another important characteristic is the ability to work with technology. Generation Y is called "digital natives," a generation, which is quite natural to deal with different technologies. These have evolved along with them and are deeply rooted in their lives. Therefore it is quite natural for them to bring these technologies to work environment. The older generation is then referred to as "digital immigrants" and it is harder for them to acquire new technologies. Generation Y is the first generation that is born into homes equipped with the computer and grew up surrounded by digital media. It is for these young people, unlike the older generation, much easier to work with interactive media. They spend also much more time watching the media in various forms. Therefore, they can bring to the workplace potentially beneficial properties relating to the use of information and communication technologies. (Mayers and Sadaghiani, 2010). This also refers to the openness to change. Generation Y is accustomed to the frequent changes and the ability to adapt has become a kind of symbol of this generation. Grew up in a world where and a half-year-old phone becomes obsolete. Due to the speed of development in the individual technologies, this ability has become a necessity. Thanks to the action of all these changes, some of them become very adaptable employees and executives; with an unusual ability to learn new things.

Generation Y has a more difficult position on the labour market with comparison with the previous generation. The consequences of the recent financial and economic crisis (2008) reached mostly the young generation, and in particular the graduates. High unemployment rate of this group continues in a number of European countries (Paliskova, 2014).

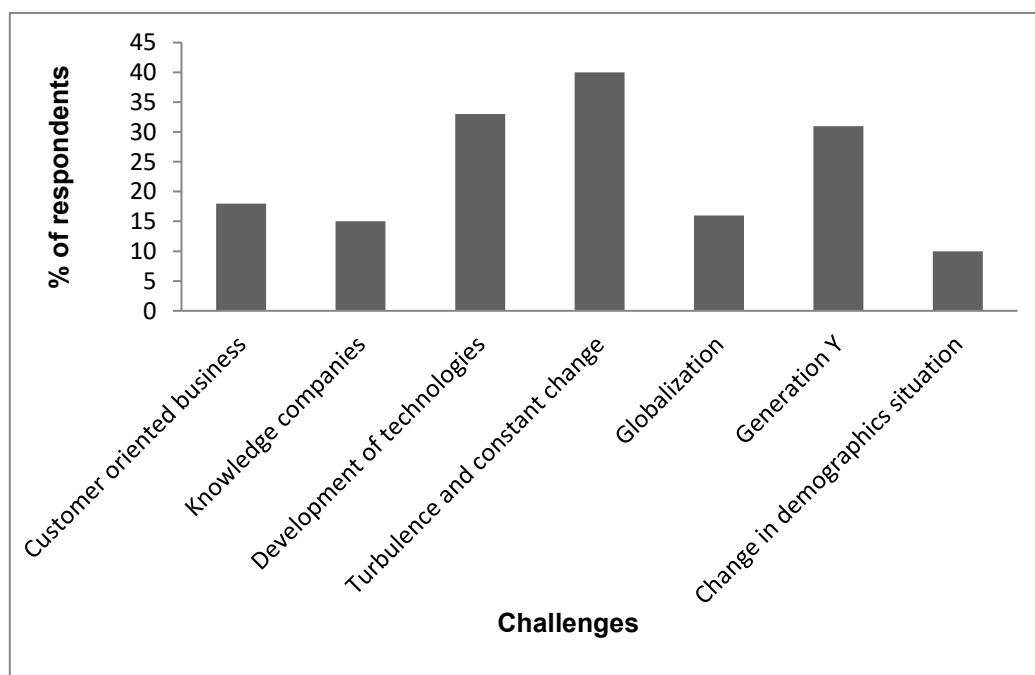
Other characteristics include a higher number of the future employers. Unlike the previous generations is not necessary for Generation Y to find one of the company, in which they will work for the rest of their life. On the contrary, most of them desire to obtain diverse experience. The PwC study shows that most of them assume that in their working lives they will work for 2-5 companies and a quarter of them expected even 6 and more employers. The PwC study also states that workers from Generation Y expect that loyalty to the company bear special rewards and benefits or even long-term financial security in the current economic environment.

2. Results

2.1. The first survey

A quantitative research among managers was conducted in 2015. 149 respondents from companies within different sectors participated in the research. One of the questions in the questionnaire aimed to identify the most significant challenges, which managers expect by the year 2020. The result shows the Fig. 1.

FIG. 1: Management Challenges



Source: own research

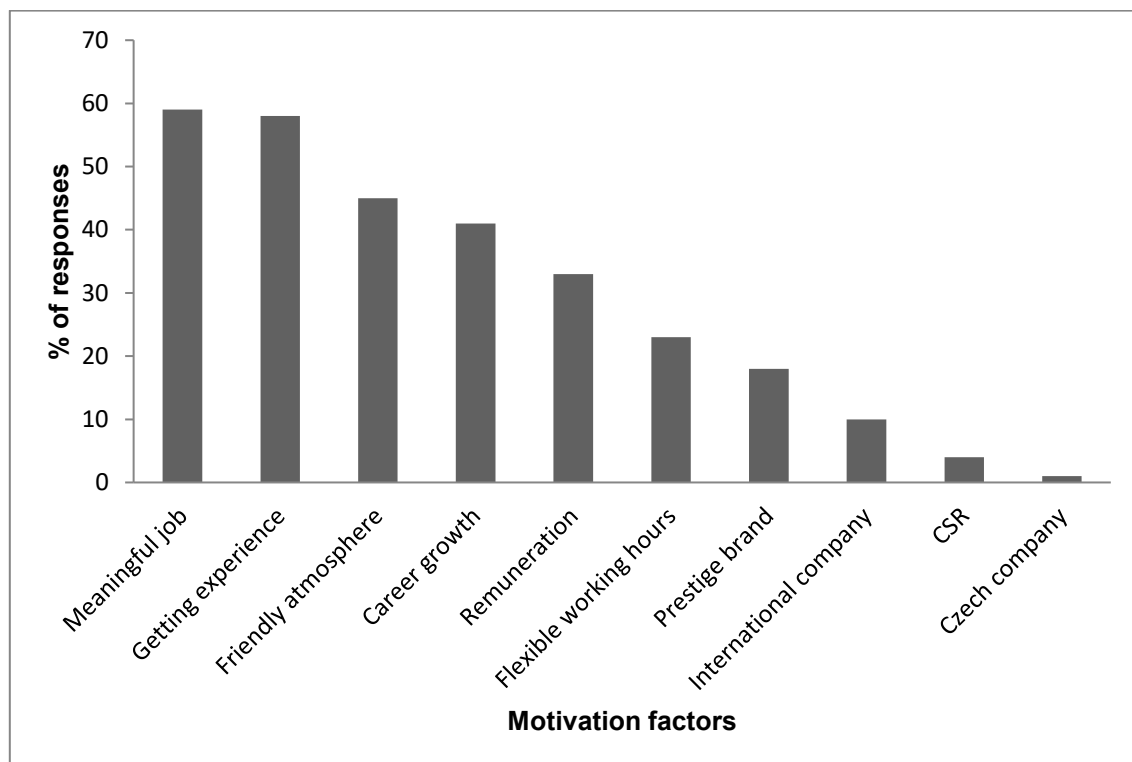
2.1. The second survey

The second survey was carried out among students. Quantitative research attended 319 respondents from middle and high schools. The study focused on the factors, which are

for students and graduates a priority when they are choosing their first job and employer.

In this area, it is noticeable that the highest priority is the meaningful job. This option marked more than half of all respondents (59 %). This research confirms the assumption that the job description and its attractiveness and the meaning of work are for young generation extremely significant. For 45 % respondents is also very important the friendly atmosphere in the working group. For more than 40 % is an outstanding opportunity the career growth. These above mentioned factors are for students and graduates even more important than salary. Financial remuneration is an important factor for 33 % of respondents. By contrast, it is clear that in deciding on the first employer almost does not matter, whether it is a foreign company or a purely Czech company. Among the most important factors respondents do not pointed out the social responsibility of the enterprise. Although the company PwC in its research shows the prestige of employer as one of the top priorities of the generation Y, our research did not confirm this conclusion. This option chose only 20 % of respondents. Figure 2 shows the motivation factors of Generation Y.

FIG. 2: Motivation factors for employees of Generation Y



Source: own research

3. Discussion

The research confirmed the fact that the representatives of the Generation Y have a tremendous ability to cooperation (Karchem and Templinem, 2013). They love working in a team and thus creates a link and partnerships with other team members. It was also confirmed that young employees expect to work for 2-5 companies and a quarter of them expected even 6 and more employers.

They expect from the job the sense of the work, possibility to gain more experience and friendly working environment. These expectations differ from the expectations of previous generations that are more oriented towards the results and hard work.

The topic represents wide possibilities for further research. The comparison of real behaviour at work and the fulfilment of expectations of Generation Y can bring a new view to this issue. Long term research of changes in leadership styles based on behaviour of Generation Y employees can bring new insights on leadership methods.

Conclusion

This article deals with the generation Y and its expectations from future employers. Generation Y is, unlike previous generations, different in their approach to work. They expect a meaningful work and an opportunity to gain new experience. An important role also plays the possibility of career development. They expect a creative and flexible working environment with the option to apply their suggestions and ideas and put them to work. They excel in the use of the latest communication and information technologies.

These expectations will have great significance for the management methods by leading generation Y. It is clear that current managers will have to adapt their leadership style to motivate and retain the Generation Y employees as long as possible.

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ELECTRONIC RECORDS OF SALES – BUREAUCRACY OR A TOOL OF TRANSPARENT ENTREPRENEURIAL ENVIRONMENT

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Keywords:

electronic records of sales – inspection reports – income tax – cash revenue

JEL classification: G2, K2

Abstract:

In recent days a vivid discussion about the necessity of electronic records of sales implementation has been taking place. The defence of the system is based on a demand of a better collection of taxes. That is an essential argumentation of the government, primarily of the Ministry of Finance that is responsible for tax collection. The defence of this requirement lies in the fact that a number of entrepreneurs en-cash for their services and products, however, they do not include the income into the income tax base fully. Entrepreneurs face ever more intensive bureaucracy because this entrepreneurial environment is generally considered to be suspicious. The necessity of more inspections is conditioned by the fact that governmental authorities do not trust them and primarily consider them to be dishonest.

Introduction

This year entrepreneurs are burdened with new compulsory registration duties and namely with VAT inspection report and they are expected to launch the electronic records of sales system (further only as ERS). The ERS constitutes another duty for entrepreneurs. According to the DOING BUSINESS ratings and from the point of global benchmarking the Czech Republic occurs on the 81st position as for the difficulty of starting a business. This system has become an issue of numerous discussions and negative opinions. Entrepreneurs hold the view that the bureaucracy hinders their entrepreneurial activities and waste their time. The Ministry of Finance, however, claims that the ERS implementation will help to minimize opportunities for so called shadow economy. This point of view is based on statistical data of the countries that have already implemented this system and it resulted in a better tax collection (see more at <http://www.oecd.org/ctp/crime/ElectronicSalesSuppression.pdf>.) On the other hand there are entrepreneurs who are affected by a huge “paperwork” – reports for financial authorities, social security and health administration offices, statistical offices and others. The only reason for this work is to prevent entrepreneurial activities from unfair practices. All reports are due to ensure a better tax collection, transparency of

entrepreneurial activities, to create equal conditions for all entrepreneurs. The ESR is perceived as a “fight” against dishonest entrepreneurs. According to international comparison systems the share of shadow economy of the Gross domestic product of the Czech Republic accounts for about 15%. In Croatia it is about 27% and in Sweden 13%. The Prime Minister of Slovakia declared that shadow economy of their Gross domestic product makes about 10% (in more detail see *Hospodářské noviny*, 22 November, 2016). The most evasion to the exchequer leaks from the fields of services, trade and the construction industry. Whatever goal is stipulated, it will always comprise bureaucratic burden that is not relevant for development of better entrepreneurial ethics, either for public finance. Such an activity hinders “the business”, it means the essence of business activities. We can agree with the demand that tax duties have to be fulfilled, however, there occurs the question, and namely, can more and more inspections guarantee it?

1. Methodology, research

The ERS system is to be launched in four stages from the beginning of December 2016 and should be completed by June 2018. The field of entrepreneurial activities is a crucial factor. From December 2016 all the businesses classified by the code CZ-NACE 55, 56 that concerns hotels, boarding houses and restaurants. About 40 thousand businesses will join the project system immediately (see more at <http://www.etrzby.cz/assets/cs/prilohy/>). There exists a number of companies that do not face serious problems from the technical point of view because they have already joined the system before and it helps them to even follow the data that they can effectively utilize in their managerial practice. This matter concerns interconnection of storehouses, monitoring of revenues of individual company centres, or employees. These data are primarily used within the company due to managerial decision-making processes. On the other hand there exists a number of small family-run businesses that observe the ERS system as an obstacle, be it in a form of necessary investments, or as a form of hindering from their work, as well as possible ‘peeping’ into their entrepreneurial activities.

The paper is aimed at the principles of ERS system implementation, at what is necessary to be done in order the system can be operated by entrepreneurs. It also focuses on possible negative features of the system, as well as on the practices that can reduce entrepreneurs’ possible problems. At the beginning of this year companies had to fill out inspectional VAT reports. Entrepreneurs thus face “high red tape” pressure, although it is not yet clear whether the ERS system will work after its launching. Due to the fact that ERS system is at the beginning of its launching, in our paper, we use the form of description of available sources and we try to analyze essential problems that the entrepreneurs can face when launching the ERS system, and what contradictions they might face.

2. Results

The aim of the ERS system is to review all cash or card sales, sales paid by cheques or by bills of exchange, we also consider payments by vouchers or meal coupons. We do not exclude payments in a form of virtual type of bit-com, payments sent through payment gateway as PayPal or PayU. We attempt to description of all money flows and points where a company receives payments in cash or by credit cards. The ERS system launching requires particular preparatory steps.

TAB. 1: Stages of ERS system arrangements

Step 1	Authentic data acquisition	Entry to tax portal
Step 2	ERS certification process	Certificates are obligatory for all business premises
Step 3	Certificate transfer into cash register system	USB discs download online
Step 4	Certificate activation + report obligation	Certificate activation in cash register, ERS labelling of premises

Source: authors' own (in more detail see: <http://www.eet>)

The ERS system anticipates that a company has its own technical equipment and facilities, as well as particular professional know-how of the system. It is a pre-condition for its successful implementation and practical use. The following table shows the essential orientation in required technical equipment and facilities. They vary according to the size of the premises and the number of handed out receipts.

TAB. 2: Equipment and facilities for the ERS system

Type of equipment	Type of premises	Average acquisition cost	Monthly rate	Offer contents
Smartphone/tablet and copier	Very little premises	5 000	300	Tablet, copier, software
Compact portable facilities and terminals	Smaller restaurants	8 000	200	Cash terminal with touch display, software
Cash register „all-in-one“	Restaurants Smaller premises	9 000	0	Cash register with integrated copier
PC cash register	Medium-sized restaurants, hotels, higher No of receipts	15 000	0	Touch cash register, copier, bar code reader, software
Cash register systems	Large restaurants, restaurants chains	40 000	0	Touch cash terminal with inbuilt copier, customers' display

Source: authors' own, (in more detail see: Ekonom)

Herein the ERS defenders face disagreement of small businesses that do not want to invest into necessary cash registers which can ensure required records. At the same time they do not want to change something what is convenient for them and what they are accustomed to. A small business can manage with a smart mobile phone or tablet with software for communication with the finance office. Mobile operators, certainly, exploit such a situation and want to make money. Entrepreneurs, however, obtain a discount of 5 thousand Czech crowns from their income tax as a compensation for higher expenditure invested into the equipment and facilities. Bigger premises will have to take into consideration higher costs, at minimum 10 thousand Czech crowns and more. In case a company operates a cash register system, it is necessary to interconnect it with the ERS system. As soon as an entrepreneur meets all necessary steps, they obtain the certification data for all their premises and entry codes for the ERS. Then they can print receipts and through XML message send information about each payment into the tax portal.

The ERS system is just before its launching. Nobody knows how it will operate as soon as all messages are sent. There will be 40 thousand subjects connected to the ERS system by December 1, 2016. An essential pre-condition for the system functioning is its on-line internet connection. In case of the server failure an entrepreneur can send the sales data at the latest within 48 hours. It is required that the server sends immediately the fiscal identification code in return to the cash register. For a number of entrepreneurs, however, even a short delay can cause a significant problem. As an example we can mention sales of beverages at stalls during mass events. A two-second delay of a return fiscal code sending might cause a problem. Financial authorities with the help of customs authorities will inspect the ERS system observance in order to prevent companies from tax evasion. So called mystery shopping will be the most common form of the inspection. After a particular period of time the financial authority will obtain a huge quantity of data about an entrepreneur that will help it to register changes in the sales, to compare the level of sales in the past, as well as to compare them with other subjects in the location. The financial authority wants to support entrepreneurs' interest in the receipts issuing through participation of a so called receipts lottery that is supposed to be opened in the middle of next year. If an authority reveals offence against the system, it can charge a company a fine up to 500 thousand Czech crowns. The final sum will depend on the scale of the offence and an authorized clerk will set it. There arises the question of an equal assessment of the "punishment setting".

Hospitality businesses will become the first ones that are due to launch the ERS system. There occur opinions that it might be better to close the business or find solutions how to avoid the system. Elimination of cash payments might be a solution, however, it is difficult to imagine a Czech pub with its regulars who will pay their spending by bank account transfers. The introduction of sales through automated cashiers only cannot

result in guests' satisfaction either. One of a possible fake can be running of "clubs and fellowships" instead of a pub because the ERS system does not apply to them. However, it may be complicated to defend this "solution" before the financial authority and prove that the establishment is no more a pub either a restaurant while it offers the same beverages to its clients as before. The effort to cut sales is a clear violation of the law and requires quite a "high level of courage". An excuse that there occur frequent internet failures apparently might cause more inspections, and it will be difficult to defend such an excuse that it was the only company whose server did not work. An entrepreneur, instead of 48-hour interval on-line registration, occasionally forgets to register the receipt. Possible installed manipulations into the cash register might enable them to change more expensive sums for cheaper ones, however, clients can get confused because they will not know what they really spent their money on. Moreover participation in the receipt lottery will become the prime inspection of the company honesty by clients themselves.

Small entrepreneurs who run pubs and whose turnover is based on beer or other alcohol sales fear most. If their daily revenues reach from about 10 to 20 thousand Czech crowns it is possible to assume that such businesses will soon closedown with a negative result of their entrepreneurship. The reason is a decreased price of beer, rental price and a level of payments for company employees. Large restaurants with several tens of thousands crowns turnovers, that besides beverages sell food, will survive and prosperously continue their work. The following table shows rough estimate of savings of a pub provider with tax evasion of 5,000,- Czech crowns. Operating costs are not mentioned in order to understand the matter of savings. Annual savings might range in hundreds of thousands of crowns.

TAB. 3: Tax savings with tax evasion

Daily sales	VAT/ITNP 21%/15% payments	Difference	Cut sales	Savings from tax evasion	Gross income	Difference
10 000	1 735/1 240	7 025	5 000	867/620	12 025	+ 1488
15 000	2 603/1 860	10 537	0	0	10 537	0

Source: authors' own, 2016 (VAT = value added tax, ITNP = income taxes of natural persons)

Unfortunately restaurant and pub services are observed as a dishonest entrepreneurship connected with sales cuts which was many times proved in the past too. Employees' wages are at a minimum amount and additional payments are covered from non-reported sales. This will not be possible as soon as the ERS system is launched. A possible solution how to not pay fines for not observance of the ERS system duties and have enough sources for payments of rents and not cutting profits will culminate in the rise of prices. The price of beer is currently being discussed. It should reach the level comparable to the European amounts that mean roughly by one quarter. This development may cause a completely negative trend, customers will not be willing to

respect it. Beer consumption will then be transferred on households, however, it will not ensure sales of restaurants either pubs. The Ministry of Finance, in support of the ERS system, is considering the VAT decrease of restaurant services from 21% to 15%, however, this decrease is related only to food and non-alcoholic beverages (see more <http://www.vfcr.dph.cz>). To sum up if a restaurant, e.g. makes a monthly sales amount of 100 thousand Czech crowns it will save 6 thousand crowns on tax, and yearly 60 thousand Czech crowns of savings. The Ministry of Finance uses this amount when opposing restaurants and pubs providers. However, it is an advantage for large restaurants only, not for common pubs that in small towns and villages prevail. Among entrepreneurs in hospitality there exist opinions that an interest in hiding their sales and not fulfilling their tax duties or pay minimum will still continue. In case an entrepreneur will be willing to fulfil all their duties, it is highly possible that they will not avoid rise in prices.

3. Discussion

The launching of the ERS system in the Czech Republic is based on the experience of Croatia. It was introduced at the beginning of 2013 and the first stage concerned small and medium sized companies, hoteliers and restaurant providers. Open market sellers who ignored this duty in large numbers faced most problems. At the end around 10 to 15 per cent sellers left the markets, although estimations speculated about 50 per cent. In spite of that in 2013 compared to 2012 there occurred a rise in tax duty implementation of small legal subjects running their activities in restaurants or accommodation establishments by almost 18% and in subsequent year by 15%. In 2013 the Croatian financial authority registered 2.3 billion tax bills with their total turnover of 155 billion kunas, including 28 billion kunas from VAT. In 2015 the collection reached 43 billion kunas. Problems in tax collection, however, remain. Frequent inspections try to find out entrepreneurs' attempts how to avoid their tax duties. About one of three traders does not follow tax laws. In 2013 the Croatian authority charged market traders 1.7 billion fines, which is 3.6 billion Czech crowns (in more detail see *Hospodářské noviny*, 10 October, 2016). The difference between the Croatian and Czech ERS model, for example, is the salesperson's name on the receipt. To avoid illegal employment their customers, unlike in the Czech Republic, receive only one receipt. The "fight" against shadow economy has been proclaimed by Slovenia, Croatia, the Czech Republic, as well as by Poland, Sweden, Hungary. In Belgium they record incomes of restaurant services only. In Austria they anticipate, thanks to this system, a tax increase of 900 million EUR (24.3 million Czech crowns). In Slovenia, this legal arrangement does not concern farmers (in more detail see *Hospodářské noviny*, 21 November, 2016)

Entrepreneurs have to react at changes that come out from legislation arrangements. Managerial position executive skills assume the knowledge of financial position because through the matters of finance an entrepreneur can manage the company and lead it to its prosperity. It is inevitable that sales records have to be reported and tax

declarations have to be completed. It is not an exception that there exist opinions that cast doubt this duty and refer to dishonest practices of some unfair entrepreneurs and in principle their non-punishment. They point at the fact that large companies can face new changes in a better way and that their inspection is not so efficient as that one of smaller businesses whose turnover is lower and easily spotted. It is necessary to defend advantages of consistent sales records with the help of professional impact and factual argumentation. Companies are given a chance to continuously follow their solvency and that is what the ERS system should enable them to do as well. The ERS system launching should result in simplification of communication with tax authorities.

Since January 1, 2016 VAT payers have had a legal duty to submit so called inspectional report. The aim of this unification is its fulfilment by the provider as well as by the receiver that also helps to prevent them from tax evasion. As it is evident 2016 has become a year of entrepreneurs' administration duties demanding test.

Conclusion

There arises the question – will the promoted ERS system bring its expectations? Will it not negatively affect those small companies that offer and provide their services well and in good quality and which after fulfilling all their tax duties will only be able to keep decent level of undertaking, however not a luxurious lifestyle? And how about large companies – will they try to find ways how to fulfil their duties and at the same time secure sufficient sources so that their position does not weaken because of their higher share on the market and thus stronger bargaining advantage? The discussion concerning the ERS system launching reflects the current time. Several times it has been proved that only little fish get captured in the net while the big ones sail through.

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THE INFLUENCE OF ALLOWANCE ALLOCATION METHODS ON CO₂ EMISSION REDUCTION: EXPERIENCES FROM THE SEVEN CHINA PILOTS

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Keywords:

allowance allocation – carbon trading system – CO₂ emission cut – constraint – pilot markets

JEL: Q54

Abstract:

One of the key elements influencing the performance of a carbon trading system, are the methods of allocating the initial CO₂ allowances. We try to analyze the influence of the different allocation methods on the level of CO₂ emissions based of the seven pilot trading markets in China. The results show that different methods bring about various degree of impact, through hard and soft constraint mechanism, influence the CO₂ emission decrease. Although due to the complexity of the hard and soft constraint mechanism, attempting to compare the effects of different allocation methods difficult by using the data of carbon emission cut from seven pilot markets in China, the authors show that the allowance allocation methods, through the constraints imposed on enterprises, significantly reduce regional carbon emissions.

Introduction

China, as the largest developing country, has been committed to environmental governance; and pollution reduction, and has approved seven pilot markets to establish a carbon trading system to cut carbon emissions. Seven pilot markets were officially launched and operated in 2013 and 2014 and continue to operate. Based on the study on the pilot markets, this paper investigates the influence of different allowance allocations on the CO₂ emission cut-down. The purpose of this study is to explore the differences among allowance allocation methods in order to contribute to possibly implementing better model or methods mixes for the distribution of initial allowances for the coming national emission trading system (ETS). For the upcoming establishment of a unified national carbon market, this research can serve to provide as a reference.

1. Literature overview

Regarding the theory of the distribution of carbon emission rights or allowance in the emission trading system, Chinese scholars focus on analysis of the initial allowance allocation model and the prediction of future development. Among them, Lin and Liu (2015) compared China's carbon market construction program and market performance (mainly including carbon price and trading volume), and made a forecast of future development. Based on this, Xuan and Zhang (2013) and Sun and Ma (2013) described the theoretical international allocation of carbon emission allowance, focusing on the proposed policy recommendations, including free distribution, auction and fixed price sales supplementary for the pilot markets in China. From the viewpoint of primary emissions reduction market fairness and the cost of emissions reduction, Ding and Feng (2013) analyzed free and market based distribution methods and came to the conclusion that the best path is to start with free allocation and have a gradual transition to auctions and other market based allocation methods.

2. Different carbon allowance allocation methods in China

In the face of increasingly severe climate and environmental problems, the Chinese government selected seven markets as the pilots to establish a trading system in 2011. The first pilots started operating in 2013. As in the case of the EU ETS there is a question of which level of power that shapes which aspects of the ETS. Using the theory of “multi-level governance” (MLG) in a similar manner as of (Skjaerseth & Wettestad, 2010) we think that most probably the National Development and Reform Commission (NDRC) decided the number of pilots and selected the regions to become pilots, but that the regional (R)DRCs had considerable influence on the actual implementation. In the Chinese case we have more of a “two-level governance” model as opposed to the EU where the European Commission really was the “epistemic entrepreneur” (ibid.). There is surprisingly little discussion of the question if there was a master plan behind the selection and implementation of the regional ETSs. Zhang (2015b) writes:

“These pilot regions were deliberately selected to be at varying stages of development and are given considerable leeway to design their own schemes. These schemes have features in common, but vary considerably in their approach to issues such as the coverage of sectors, allocation of allowances, price uncertainty and market stabilization, potential market power of dominated players, use of offsets, and enforcement and compliance.”

Zhang does not give any reference for this assumption and one could argue that the pilots are not very spread when it comes to level of development, five of them are big cities. That makes sense if one wants to test different systems in the big cities who clearly are the biggest and fastest growing emitters, but not if a regions representing the different levels of development. As Wang et al. expresses it *“China has a tremendous*

regional imbalance in both economic and social development” (Wang, Yang & Zhang, 2015). A detailed discussion of the question of governance is beyond the scope of this article, but we find Zhang’s point of view reasonable as there are clear indications that the regions have power to “obstruct” in various ways the “central” line. An example is the electric car policy (Wan, Sperling & Wang, 2015). In any case one should keep in mind that most probably the fact that the pilot markets have carried out different allocation methods was not part of a very detailed top-down test strategy by the NDRC. The fact that the implementation, most probably including the allocation methods were mainly decided on by each pilot that does not mean that there is no possibility to compare and draw some lessons from the development in the emissions in the various pilots – and compared to non-pilot regions.

Carbon trading is used in all pilots, but given the free allocations, it is not the main mechanism of the Chinese pilots. Direct constraints are carbon emissions standards imposed on enterprises, while the indirect constraints consist of the voluntary self-restraint of the enterprise itself but first and for most of the constraints imposed from other companies via auction strategies and by being actors in the game of setting baselines. For society as a whole the number of constrained enterprises directly affects the reduction of carbon emissions and this number directly depends on the inclusion standard that is the level of emissions. That means that a company will be part of the pilot regulations. The distribution of carbon emission allowance in China is mainly based on three different methods and combinations thereof:

- a) the grandfathering method
- b) the baseline method
- c) the competitive game method

In pilot markets the allocation methods have been formulated according to their own development needs, forming one or a mix of methods in each market. The specific analysis is as follows:

The grandfather method refers to allocating the allowance according to the history emissions of the enterprise. It totally depends on self-restraint, thus the constraining force depends. Enterprises in the process of self-restraint do not need to take into account the carbon emissions of other companies, the primary hard constraint for these enterprises is their own emissions history.

The baseline method is based on certain criteria where the emissions for a specific company are based on the industry-wide carbon emissions standards. Information asymmetry means that the enterprise which will be selected as the future standard is unknown, so wise companies will continue with a process of self-restraint to avoid any possibility of exceeding the standard. In addition, enterprises should also take into account the self-restraint of other companies in their industry, because they affect each

other' s rankings, and jointly affect the choice of the baseline. The indirect constraint is therefore a kind of double constraint.

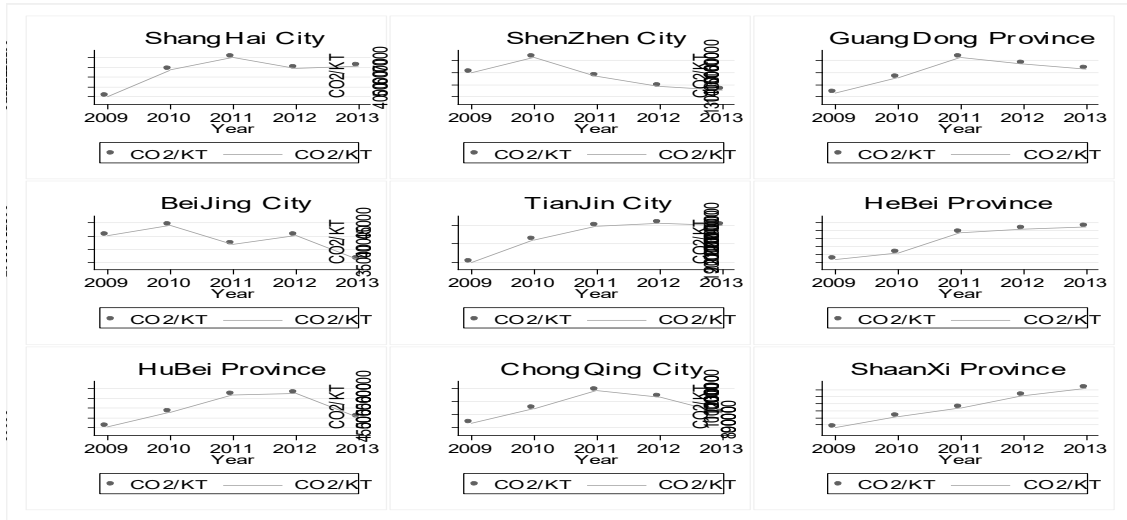
The competitive game method is complicated. Specifically, after the government has recorded history emissions for the enterprises, they are grouped according to their industry categories and their size with fixed carbon allowances allocated to each group. The group is then established as a unit, and each enterprise will simultaneously login to a government system to apply for allowance as they see fit. The government system based on certain predetermined standards, automatically distributes the allowances. Enterprises that accept the allocations can leave with these allowances and those that do not accept will play a game to allocate the remaining total group allowance, the distribution of which is mainly determined through pricing mechanism. The highest bidder will get the carbon allowance that the enterprise wants, thus, no matter how many allowance exist in the overall market, enterprises pay more since the bidding mechanism raise the cost

To sum up, the different carbon allowance allocation methods mainly impose influence to enterprise, through hard and soft constraints. It can be seen that, in terms of the soft constraints to enterprises, the least strong is history method, followed by baseline method, and the strongest is the competitive game models. However, in terms of hard constraints, three methods do not follow a linear trend.

3. Data Test

3.1. Carbon Market Comparison

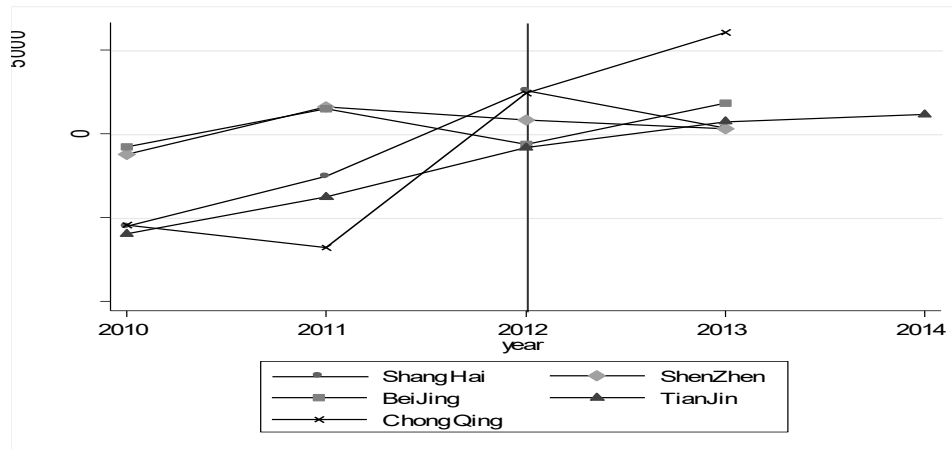
Figure 1 compares the carbon emissions of the seven existing carbon trading pilot markets in China, and the two neighbouring non-pilot provinces (Shaanxi and Hebei). Shaanxi is close to Hubei and Chongqing, and Hebei is near Beijing and Tianjin. It can be seen that companies are subject to constraints because the pilot markets are engaged in carbon trading, so carbon emissions in these region are reduced to some extent. However, due to the specific binding forces, there are differences in the extent of regional carbon emissions reductions. Compared with the pilot markets, enterprises in non-pilot cities are not subject to any constraints and the CO₂ emission in these regions increases. Therefore, carbon trading system is effective in constraining enterprises and reducing carbon emissions. However, there are obvious differences in inter-regional carbon emissions due to different constraint forces.

FIG. 1: Comparison of carbon emissions between pilot markets and non - pilot provinces

Source: China Statistical Yearbook

3.2. Carbon Market Comparison

Among the seven pilot markets, another difference lies in the criteria following which enterprises are selected. The analysis shows that the choice of inclusion criteria plays a decisive role in the number of firms in the society. Figure 2 selects five pilot markets to compare the different impacts of inclusion criteria on emissions reductions. It can be seen that compared with the other four markets, carbon emissions reductions in Chongqing after the implementation of carbon rights trading have increased significantly, by an amount that is far higher than in other cities. The reason is that the inclusion of corporate standards in Chongqing mainly considers the carbon emissions of enterprises from 2008 to 2012, which is longer than that of other pilot markets. Of course, the reduction of carbon emissions is not determined by a single factor, there must be other factors, such as the number of enterprises and emissions standards.

FIG. 2: Comparison of inclusion criteria

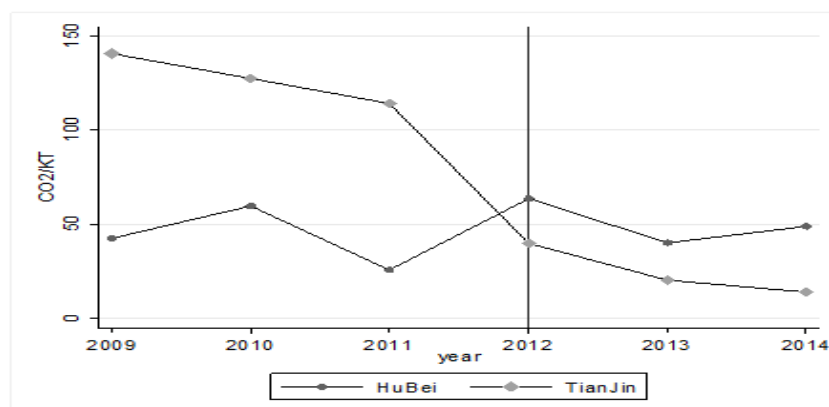
Source: China Statistical Yearbook

3.3. An Internal Comparison of the Carbon Assignment

The preceding analysis discusses the implementation of the three carbon distribution methods in the pilot markets. Due to data constraints, this paper explores the influence of the historical approach and baseline methods; Tianjin and Hubei are selected as the comparison regions. The history approach takes the petrochemical industry as the object of study, while the baseline method examines the electric power and heat industries. The industry carbon emissions calculated here are only approximations, but it is good enough to show the trend.

d) Internal Comparison of the History Approach

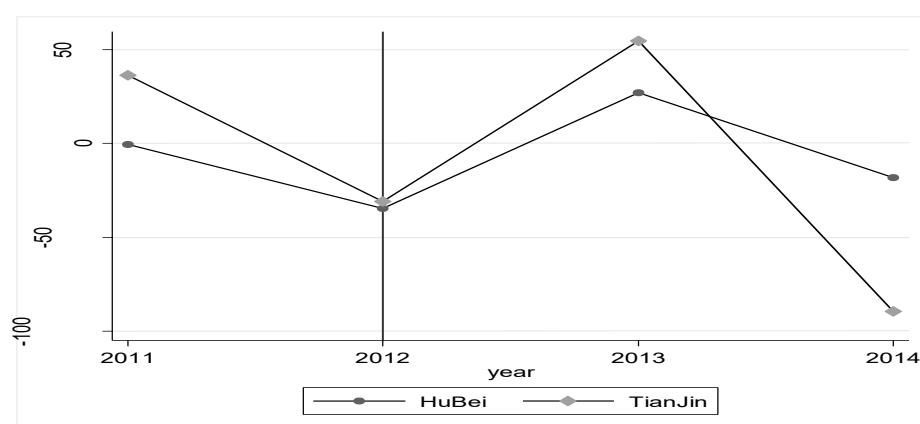
Since both Tianjin and Hubei use the history approach for carbon allocation methods, they are selected as the comparative target to analyse carbon emissions trends for the petrochemical industry from 2009 to 2014, as shown in Figure 3. It can be seen that industry carbon emissions for the petrochemical industry in Tianjin showed a significant downward trend, while Hubei shows an uncertain trend with increasing and decreasing fluctuations. The chart shows that in the petrochemical industry, the effect of implementation of history approach is better in Tianjin than in Hubei in terms of enterprise restraint. The reason is that Tianjin takes the advanced carbon reduction efficiency and technological level into consideration when allocating allowances according to history approach while Hubei does not.

FIG. 3: Internal comparison of the history method

Source: China Statistical Yearbook

e) Internal Comparison of the Baseline Method

In order to compare the effects of the baseline method the thermal power industry in Tianjin and Hubei from 2009 to 2014 was selected for the research, and the change of carbon emissions growth rate was used to reflect the status of the reduction of carbon emissions, as shown in Figure 4. As can be seen, from 2010 to 2014, there are 3 among the 4 years, in which the carbon emission cut have realized in Hubei Province, indicated by the dots below 0; while there are only 2 in Tianjin. The comparison can show that the baseline method in Hubei Province is more strict or binding. To be exact, for the thermal power enterprises, the first 50% of the amount of carbon emissions for business units is used as the benchmark value in Hubei Province, but in Tianjin only the average carbon dioxide emissions per unit of output from 2009 to 2012 is used to determine the baseline level.

FIG. 4: Internal comparison of the baseline method

Source: China Statistical Yearbook

Conclusion

In order to explain the framework of emission trading system influencing emission cut, this paper explores the influence of allowance allocation methods to the goal. Combined with the data from pilot markets in China, the analysis shows that the initial allowance allocation methods have a significant effect in reducing emissions. In order to illustrate the effect of other factors on the constraint to enterprises' behaviour and other effects, further evidence must be examined, but this research provides a new perspective for the accurate analysis of the differences and effects of different carbon emission allowance allocation methods.

Acknowledgement:

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ANALYZING THE INCOME EFFECT OF THE RCEP ON CHINA WITHIN A CGE FRAMEWORK

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Keywords:

ACEP – income – CGE – firm heterogeneity

JEL classification: F15 F17

Abstract:

The Regional Comprehensive Economic Partnership (RCEP) is a proposed sixteen-country Asia-Pacific free trade arrangement being negotiated among ASEAN and its free trade agreement (FTA) partners, including China. This paper adopts a Computable General Equilibrium (CGE) model to estimate the income effect of the RCEP on China. Simulation results show that the Chinese will increase income after the formation of the RCEP. The increased income is partly attributed to rising investment income in the domestic market and partners' markets. Increased income, combined with reduction in commodity prices, results in higher consumption. The income results demonstrate that our pursuit of the RCEP is correct, but we need to be cautious about the step in services liberalization.

Introduction (style HED - heading without numbering)

The Regional Comprehensive Economic Partnership (RCEP) is a proposed sixteen-country Asia-Pacific free trade arrangement being negotiated among ASEAN and its six free trade agreement (FTA) partners, China, Japan, Korea, India, Australia, and New Zealand. The RCEP negotiations were launched in November 2012. Fourteen rounds of negotiations have been finished until August 2016. The guiding principles and objectives for negotiating RCEP point out that it will tackle both tariff barriers and Non-tariff barriers (NTBs), liberalizing trade in goods and services based on members' commitments under WTO and ASEAN+1 FTAs. The aim is to achieve a modern, comprehensive, high-quality and mutually beneficial economic partnership agreement.

Computable General Equilibrium (CGE) analyses show that the RCEP will bring gains to the world economy, and all members are projected to achieve gains (Petri, Plummer, & Zhai, 2012; Wignaraja, 2014). Based on these positive findings, this paper further explores the detailed income effect of the RCEP, including its effect on investment income from different regions and its effect on consumption and expenditure, with a focus on China.

To study the income effect of the RCEP on China, we developed a CGE model based on the firm heterogeneity theory of Melitz (2003) and its extension to foreign direct investment (FDI) by Helpman, Melitz, and Yeaple (2004). Calibrating the model to the GTAP 8.0 database, we get simulation results. The next section describes the CGE model. Section 3 presents our simulation scenarios and results. Section 4 concludes.

1. The model

The CGE model distinguishes three regions, three factors, and five sectors. The three regions are China, its RCEP partners (PTN), and the rest of the world (ROW). The three factors are land, labor, and capital. Within the three factors, land is a specific factor for agriculture. Labor and capital are used in all sectors and fully employed. Labor can move freely across sectors but cannot move across borders, which implies that in equilibrium, wage is equalized in all sector of a region. Capital can move across sectors and borders, but less freely. Thus, returns to capital can be different across sectors and regions. The five sectors consist of an agriculture sector (a), two manufacturing sectors (m1, m2), and two services sectors (s1, s2). The agriculture sector is the sector with homogeneous firms, while all other sectors are with heterogeneous firms.

The CGE model is developed from a firm heterogeneity CGE framework of Zhai (2008), which is grounded in the theory of Melitz (2003). The firm heterogeneity framework enables the model to capture both of the extensive and intensive margin of trade increase along with trade liberalization, while the traditional Armington model can only capture the intensive margin of trade. Thus, the firm heterogeneity model can explain more welfare effects of trade liberalization too. The main feature of the firm heterogeneity model is to differentiate firms by productivity, that is, exporters are more productive than non-exporters. Following this theory, Helpman et al. (2004) explain the selection of firms between FDI and export in supplying foreign markets. The main finding is that among firms supplying foreign markets, the most productive ones choose FDI and the less productive ones choose export, because firms choosing FDI face higher fixed costs than firms choosing export.

The main innovation of our model is to introduce FDI to the firm heterogeneity CGE framework. We allow capital owners to invest in all regions with an aim to chase the highest return to capital. When they invest abroad, it forms FDI that is used as capital input in the production of foreign invested firms and joint ventures. Therefore, our CGE model differentiates domestic firms and foreign invested firms, meanwhile, treats joint ventures as domestic firms. Foreign invested firms, or foreign firms, are 100% owned by foreigners and source capital from their home region. Compared with domestic firms, foreign firms are more productive.

According to the explanation of the firm heterogeneity theory, the reason that foreign firms are more productive than exporters and non-exporters is because foreign firms

face the highest fixed trading costs. The fixed trading costs comprise the costs faced by exporters, including the costs of customizing products, building distribution channels, and becoming familiar with foreign regulations, as well as the costs of financing and managing foreign branches, avoiding risks, adapting to investment restrictions, etc. Fixed trading cost is a critical factor determining the selection of firms in entering each market. In the model, fixed trading costs are composed of labor, capital and intermediate input costs.

Following the Zhai model, our model assumes the total mass of potential firms is fixed and no fixed entry costs. The assumption of fixed number of potential firms indicates that the model does not allow free entry and exit to an industry, and thus, there could be non-zero profits in equilibrium. The assumption of no fixed entry costs means that all potential firms can produce. But, since there are fixed trading costs in supplying each market, not all potential firms are active in a certain market.

In each region, the representative consumer receives income from the supply of production factors to and profit dividends from firms. Except for income from factors, households receive transferred profits from firms. Domestic firms transfer all profits to the local households, while foreign firms split profits between home and host households. The split of profits for foreign firms' is based on an assumption that foreign firms distribute part of firm equity to employees (labor) who are citizens of the host region, and thus, part of foreign firms' profits are allocated to households of the host region. The split of profits between host and home households is done according to the shares of labor and capital in total factor inputs. Hence, households collect domestic firms' profits, profits of inward foreign firms attributed to local labor and profits of outward foreign firms attributed to capital inputs.

Consumers allocate their disposable income among the consumer goods and saving using the extended linear expenditure system (ELES), which is derived from maximizing a Stone-Geary utility function. The consumption/saving decision is completely static. Following the Zhai model, saving enters the utility function as a "good" and its price is set to be equal to the average price of consumer goods. Investment demand and government consumption are exogenous, the values of which are fixed to their initial values in the Social Accounting Matrix (SAM) table. In each sector a composite good is used for household consumption, investment, government consumption and intermediate input. In sector $s1$, the transport sector, there is an additional demand from an international transportation pool (International transportation pool is a term from the GTAP model, which represents a sector that supplies). The demand from the international transportation pool is exogenous in this model.

The model is a comparative static model, and like most comparative static models, it includes no treatment of time. The model is calibrated to a SAM table built on the

GTAP 8 database and two FDI databases. The two FDI databases include a global FDI stock database and a global foreign affiliate sales database. The base year of the global foreign affiliate sales database is 2007, the same as that of the GTAP 8 database, which makes the 8th version of GTAP database the most suitable. The FDI databases are the latest developments in FDI data collection and computation (Fukui & Lakatos, 2012; Lakatos, Walmsley, & Chappuis, 2011).

2. Simulation results

Based on the objectives of the RCEP and the fact that ASEAN has FTAs with all other countries, we assume the RCEP will tackle both tariff barriers and non-tariff barriers (NTBs), and probably will reduce fixed trading costs for exporters and foreign firms by tackling behind-the-border barriers. Accordingly, we have four scenarios to simulate regarding the potential achievements of the RCEP:

- Scenario 1. No services liberalization. Tariff barriers on all goods are reduced by 95% by all RCEP members. NTBs on goods are reduced to the average level of Japan and Korea.
- Scenario 2. Small step services liberalization. Scenario 1 plus a small step reduction in services barriers for China. PTN reduces services barriers to the average level of Japan and Korea.
- Scenario 3. Big step services liberalization. Scenario 1 plus a big step reduction in services barriers for China. Both China and PTN reduce services barriers to the average level of Japan and Korea.
- Scenario 4. Fixed trading costs reduction. Scenario 3 plus a 50% reduction in fixed trading costs for firms operating on the China-PTN link.

From Scenario 1 to 4, the degree of liberalization under the RCEP increases gradually. Scenario 1 simulates liberalization on goods trade only. Scenarios 2 and 3 experiment with small and big steps in services liberalization of China, and Scenario 4 shocks fixed trading costs to simulate FDI liberalization as well as a reduction in behind-border barriers on trade.

TAB. 1 shows the initial and simulated tariff and tariff equivalence of NTBs in China and its RCEP partners (PTN). A 95% tariff reduction will almost eliminate tariffs in the free trade area. NTBs are evidently higher than tariff barriers. We choose the average of Japan and Korea as a potential target for NTBs reduction is because it represents the middle level of NTBs among RCEP member countries. With this target, the NTB reductions in most sectors of China and PTN are less than 20%, which seems to be achievable (TAB. 1). However, given that the initial NTBs in services sectors of China, or services barriers, are at a relatively high level, it would be difficult for China to reduce services barriers to the same level as PTN. Therefore, we experiment with two scenarios about China's services barriers, a big step and a small step reduction. In the

small step scenario, China is assumed to reduce services barriers by the same margin as its partners.

TAB. 1: Simulated reductions of tariffs and NTBs in China and PTN under RCEP (%)

			Tariff Barrier			Non-tariff Barrier				
Exporter	Importer		a	m1	m2	a	m1	m2	s1	s2
CN	PTN	Initial	29.6	2.1	6.7	40.4	15.5	15.5	36.3	37.6
		Simulated	1.5	0.1	0.3	25	3.2	3.2	16.9	18.1
PTN	CN	Initial	5.5	3.9	19	33.4	16.7	16.7	74.7	76.6
		Big Step	0.3	0.2	1	25	3.2	3.2	16.9	18.1
		Small Step	0.3	0.2	1	25	3.2	3.2	55.3	57.1

Data source: Calculation from GTAP Database and estimation of Petri et al. (2012)

Simulation results show that the income of China will increase after the formation of the RCEP. Under Scenario 1, when China and its partners in the RCEP liberalize trade in goods, the income of China will increase by 0.7%. When the RCEP tackles services barriers, the increase in income will drop to 0.4% and 0.2% in Scenario 2 and 3 respectively. The smaller increase in income with services liberalization may associate with the fact that China is relatively uncompetitive in services compared with its RCEP partners. Although trade liberalization would increase income by improving the efficiency of resource allocation and lowering production costs, the competition from imports to services could pull down the income increase. Our estimation for income increase is lower than the 1.3% increase of Kawai and Wignaraja (Wignaraja, 2014). Under Scenario 4, however, when the RCEP members not only liberalize border barriers such as tariffs and NTBs, but also liberalize behind-the-border barriers via reducing fixed trading costs, the income of China will increase by 2.5%, the largest among the four scenarios. This probably means that behind-the-border barriers on trade and investment have restrained the economy to a greater extent than border barriers.

When we turn to decomposed income of China, we find that domestic investment income and foreign investment income from the RCEP partners will rise, but foreign investment income from ROW will decrease (

TAB. 2). This corresponds to the booming of the China and PTN markets, and the losing of attractiveness of the ROW market as a result of the RCEP. The booming of the China market has increased domestic investment income in most sectors except sector s2. The drop of investment income in sector s2 might correlate with increased competition from foreign capital since sector s2 has absorbed large amounts of FDI according to the SAM table. The formation of RCEP will attract foreign capital to China, and then increased capital pulls down rents. The total income from domestic investment grows with the depth of trade liberalization as shown in

TAB. 2.

China will gain from the foreign investment in PTN, but lose from the investment in ROW, and the loss is greater than the gain. Thus, the total foreign investment income of China will drop after the RCEP. Comparing with the loss from foreign market and the gain from domestic market, we find that Chinese capital owners will increase total income as a result of the RCEP. Therefore, we could draw a conclusion that the RCEP benefits Chinese capital owners.

TAB. 2: Percentage change in investment income relative to labor income (%)

Sector	SN1	SN2	SN3	SN4
Domestic investment				
a	6.9	7.4	9.2	14.8
m1	6.7	7.5	10.9	17.2
m2	0.3	1.1	4.5	10.6
s1	0.5	1.4	2.2	4.0
s2	-2.0	-1.8	-1.5	-1.4
Total domestic investment income	2.7	3.3	5.5	10.1
Foreign investment				
Investment in PTN				
a	1.3	2.0	1.8	1.8
m1	5.0	6.0	5.1	4.6
m2	7.1	8.6	7.9	8.0
s1	1.4	1.6	1.3	16.0
s2	1.7	2.3	2.4	2.8
Investment in ROW				
a	-3.2	-3.4	-4.6	0.6
m1	-4.0	-4.6	-4.8	-7.2
m2	-2.9	-3.3	-3.4	-4.7
s1	0.7	-1.0	-1.4	-1.6
s2	-0.6	-0.7	-0.6	-0.8
Total foreign investment income	-0.3	-0.4	-0.3	-0.3
Total investment income	2.4	3.0	4.9	9.1

Source: own research

TAB. 3 shows that Chinese consumers will increase consumption after the formation of RCEP. This is a result of increased income and decreased price (TAB. 3). People can buy more commodities than before. The expenditure on commodities drops in all sectors except agriculture. The increase in expenditure on agriculture should be caused by a relatively small decrease in agriculture price and increased income. Increased income enables Chinese to consume more agriculture goods, but the relatively small drop in price cannot lead to a decrease in expenditure on agriculture. The difference between agriculture and other sectors arises from our model assumption that agriculture is the sectors with homogeneous firms. Different from the other sectors with heterogeneous firms that trade liberalization can reduce prices through both lowering trade costs and increasing the number of competing firms, the agriculture price will be reduced only through lowering trade costs. Along with increased consumption, saving will increase too.

TAB. 3: Percentage changes in consumption, price, expenditure and saving (%)

Sector	SN1	SN2	SN3	SN4
Consumption				
a	3.9	4.1	4.6	7.9
m1	4.0	4.3	4.9	8.7
m2	4.2	4.5	5.1	8.9
s1	4.5	4.8	5.5	9.6
s2	5.8	6.2	7.2	12.6
Price				
a	-2.0	-2.3	-2.6	-3.0
m1	-8.2	-8.8	-9.6	-14.0
m2	-7.5	-8.2	-9.0	-12.2
s1	-5.5	-6.3	-7.1	-9.4
s2	-5.7	-7.1	-10.0	-11.4
Expenditure				
a	1.8	1.7	1.9	4.7
m1	-4.4	-4.9	-5.2	-6.5
m2	-3.6	-4.1	-4.4	-4.3
s1	-1.2	-1.8	-2.0	-0.8
s2	-0.2	-1.4	-3.5	-0.3
Saving				
	4.7	4.9	5.6	9.6

Source: own research

3. Conclusions

Adopting a firm heterogeneity CGE-FDI model, we estimate the income effect of the RCEP on China. Simulation results show that the Chinese will increase income due to the formation of the RCEP. In the relatively conservative liberalization scenarios, the income will increase by less than 1%. But in an ambitious scenario that the RCEP tackles both border barriers and behind-the-border barriers, the income of China will increase by 2.5%. The increased income is partly attributed to rising investment income. Chinese capital owners will earn more from investment in the domestic market and the RCEP partner's market. Increased income, combined with reduction in commodity prices, results in higher consumption of Chinese consumers.

Drawn from the income results, we could conclude with a caution that the RCEP can benefit the Chinese overall. This demonstrates that our pursuit of the RCEP is correct. In addition, China should be cautious about services liberalization. In the current state when services have not developed international competitiveness, China may need a slow step of services liberalization. Different from services liberalization, if the RCEP can help to reduce behind-the-border barriers such as smoothing regulations for foreign exporters or foreign firms, China can gain more from the RCEP.

Comment and compare your results to other authors. You can outline a further research.

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A BRIEF ANALYSIS OF THE VCG MECHANISM

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Keywords:

the VCG mechanism – market clearing – auction – advertisement mechanism

JEL classification: Z00, D44, D79

Abstract:

Based on the auction theory and game theory, this paper mainly talks about the Vickrey-Clarke-Groves (VCG) mechanism, which demonstrates that each participant in the auction shall pay the amount that is equal to the value of the negative externality that she or he exerts on other participants because of her or his presence. Furthermore, this paper illustrates that the outcome that VCG mechanism causes is equilibrium and all participants will be honest on their real valuation when they bid. In addition, this paper then focuses on the pros and cons of the VCG mechanism in the real application; put simply, this mechanism will lead to the total welfare maximization, but the case in reality is often that it is not computationally feasible to get the optimal solution, and hence the VCG mechanism will not be realized. In the end of the paper, we give an example of the VCG mechanism application in the real life.

Introduction

Instead of going to the library to find the resources we need from a large amount of books, people turn to the search engine for help, such as *Google*, *Baidu*, *Yahoo* and so on. At the time of science and technology, this is no doubt the fastest and most convenient way to find the information and resources we need. Combining with the Search function, those search engines also include the advertising function into their sets. People talked different advertisement mechanisms of certain search engines and the like-search engines. It is reasonable that search engines use different procedures when they know buyers' valuations and when they have no clue of buyers' valuations. But how do these search engines determine which advertisement to show on different slots? How much the clients should pay for each slot? Promoted by this questions, this paper mainly talks about market clearing model and the VCG mechanism based on a single model, and further more discusses the pros and cons of the VCG mechanism. In the third part, this paper also talks about the application of this procedure in Facebook.

1. Methods, basic explanation

When we think of the principle we can use to set the price for the slots, we may use a cost-per-click model, which charges you certain fee only the following situation happens- “suppose you create an advertisement on the search engine, whenever someone searches “health” on the search engine, the link that directly guide the searcher to your company’s website will appear, you will be charged if and only if the searcher click your ad (Easley and Kleinberg, 2010)”, so it is obviously that the ad which is clicked by the public most often will be charged the highest price, and the slot which is least clicked by the public will be charged the lowest price or even zero price. To be more specific, we can set the price for each advertisement via an auction. The auction can be separated into two groups: “the search engine knows all potential advertisers’ valuations for clicks (Easley and Kleinberg, 2010); the search engine has no idea about each advertiser’s valuation” (Varian, Harris, 2014).

Under the first condition, the case can be easily transferred into a “matching market” situation. Before explaining the first case, we clarify some definitions in advance:

According to David Easley and Jon Kleinberg’s definition in the “*Networks, Crowds, and Markets: Reasoning about a Highly Connected World*”, in a bipartite graph, when the numbers of nodes on the right and left side are equal, there exists a “*perfect matching*” if and only if “every node is linked by an edge to the node it is assigned to, and secondly, no two nodes on the one side are connected to exactly the same node on the other side” (Easley, Kleinberg, 2010). If we construct an edge between each buyer and his or her preferred sellers or seller, if the resulting preferred-seller graph contains a perfect marching, this collection of price can be described to be *market-clearing*.

a) The seller knows exactly the buyers’ valuation

After clarifying the definitions above, we build a market-clearing model based on the condition that the seller (the search engine in this case, because the search engine will sell the slot) knows the potential clients (the buyers in this model)’ valuation per click.

The assumptions we make for this model are the following:

- I. The clients are aware of the click rate;
- II. “The click rate is independent from the characteristics of the ad put on that slot, that is to say, the click rate is only related to the slot itself;
- III. The click rate has nothing to do with the ads put on other slots” (Easley, Kleinberg, 2010).

There are three slots to be sold, i.e. X, Y and Z, and every slot has a rate (Rate) that measures the frequency of people clicking the advertisement that is put on that slot during certain time period, say, one hour, or one day. Each slot has a price (Price). At the same time, there are three people (Clients) who plan to buy the slot so as to advertise their products or services, they are represented by a , b , and c . Every client can

get different amount of revenue from every slot per clicking (Rev). And the Net payoff (NP) the client will get is equal to:

$$\text{Net payoff} = \text{Revenue per click} - \text{the price of the corresponding slot}$$

We use the following graph 1 to demonstrate this case:

FIG. 1: Chart caption

Price\$	Rate	Slots	Clients	Rev	Valuation	NP
14	10	X	a	4	40,24,16	26,20,16
4	6	Y	b	3	30,18,12	16,14,12
0	4	Z	c	2	20,12,8	6,8,8

Source: own processing

The click rate for the three slots X, Y, and Z are 10, 6, and 4 respectively; the per click revenue (Rev) for the three clients are 4, 3, and 2 respectively.

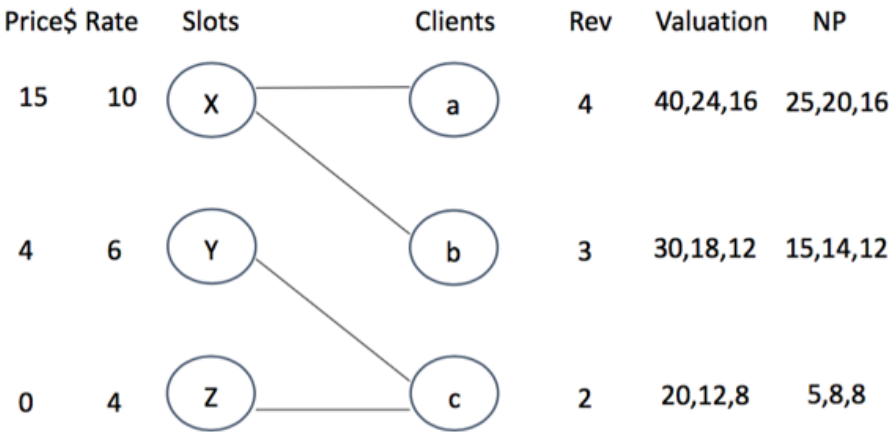
Suppose the initial price for the three slots are \$14, \$4, and \$0 respectively; and then it is very easy to get the Net payoff for each client by using each slot and the net payoffs are listed below:

For *a*: using X: 16, using Y: 20, using Z: 16. Similarly, for *b*: 16, 14, 12; and for *c*: 6, 8, 8.

So, as we depict in the figure 1, client *a* and *b* will choose slot X, and client *c* will choose either slot Y or Z.

It is easy to find that slot X is in a high demand, so the search engine raises the price for slot X, say, raises the price from 14 to 15. We show the situation in Figure 2.

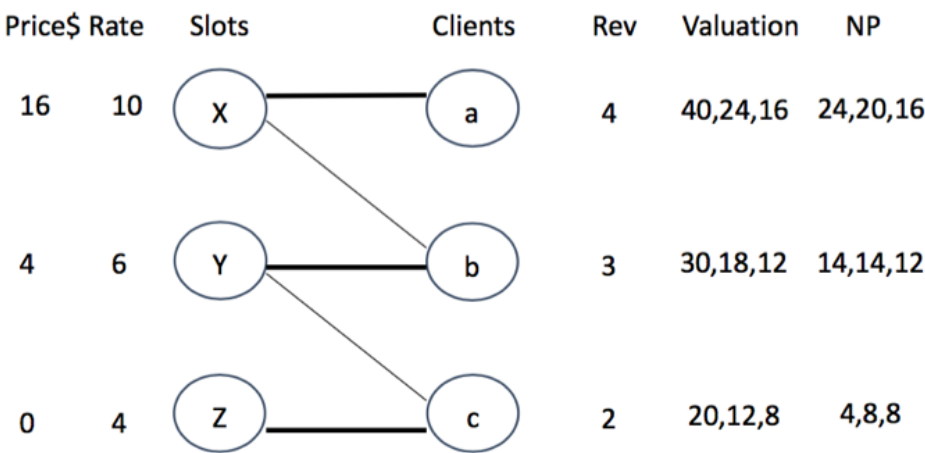
FIG. 2: Chart caption (style HED - object caption)



Source: own processing

The slot X is still in a high demand, so the search engine raises the price for slot X again to \$16. Then the situation becomes what is shown in the Figure 3:

FIG. 3: Chart caption (style HED - object caption)



Source: own processing

When the Price of slot X becomes 16, the client *a* still chooses X, *b* chooses either X or Y, and client *c* is indifferent from choosing Y or Z. Here we get the market-clearing price, X-16, Y-4, and Z-0. Client *a* gets X, *b* gets Y, and *c* gets Z, this matching is shown by the thick line. It is also a Nash Equilibrium, the social welfare is maximized and no one wants to deviate from this result.

b) The seller does not know the buyers' valuation

I. The basic explanation of the VCG principle.

If the seller knows nothing about the potential clients' revenue per click, and hence knows nothing about the clients' valuations (the net payoff, NP), there is no way to find

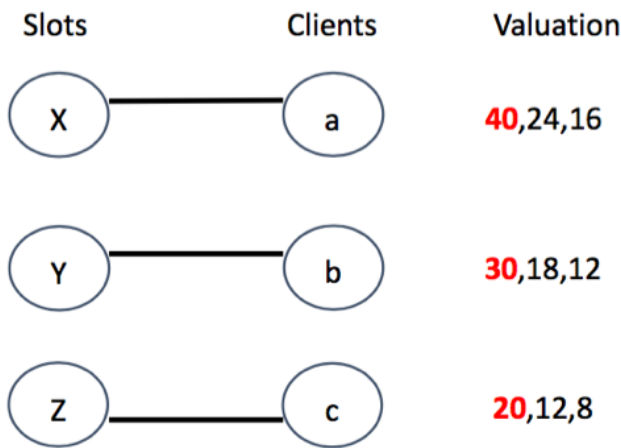
the market clearing price by the model we used in the situation above. Being a rational person, the client (buyer) will report a valuation that is lower than their real valuation so as to maximize their net payoff. Then the search engine will not be happy to see that. Here we talk about a mechanism that can promote the buyers to be honest on their valuations, i.e. *Vickrey-Clarke-Groves (VCG)* principle. This principle demonstrates the situation that “each bidder (buyer, i.e the client in the above case) should pay the cost which equals the externalities or harms that he or she exerts on others because of his or her presence” (Varian, Harris, 2014). That is, in general, one person’s existence will take over the chance that others can get a better choice and get a higher payoff, then this person needs to be in charge of this sort of harm.

As Easley and Kleinberg (2010) said , “To use the VCG principle, in the first place, we assign each item to each buyer to get the total valuation maximization”. Then the buyers B need to pay each item S the cost that is equal to the harm he or she exerts to other buyers.

II. The Application of VCG in the Model

Now we use the example above to illustrate the VCG principle.
All the assumptions and situations are the same except that the seller (search engine) does not know the buyers’ valuation, but the buyers know their own Net payoffs (valuation).
Also, each buyer only pays attention to and cares about his or her own valuation.

FIG. 4: Chart caption (style HED - object caption)

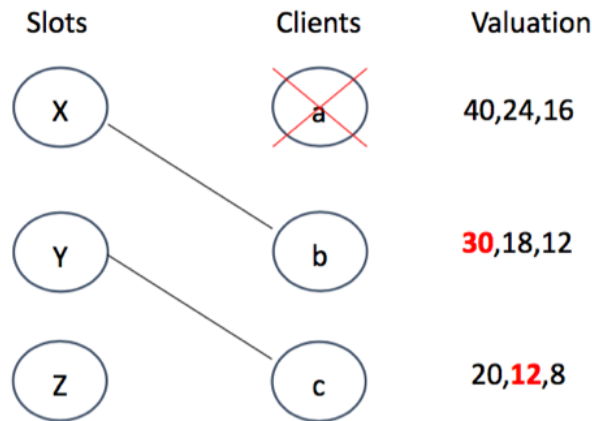


Source: own processing

We know from the analysis before, the situation that a gets X , b gets Y and c gets Z would maximize the total valuation. Under this situation, the valuations for client a , b , and c are 40, 18, and 8 respectively.
The price each client should pay are the following:

If client *a* does not exist, client *b* would get slot X and the valuation for client *b* would increase by $30-18=12$; client *c* would get slot Y and the valuation for client *c* would increase by $12-8=4$. Because of *a*'s existence, the total loss from *b* and *c* is $12+4=16$. So according to the VCG principle, client *a* should pay 16. The process is shown in the Figure 5.

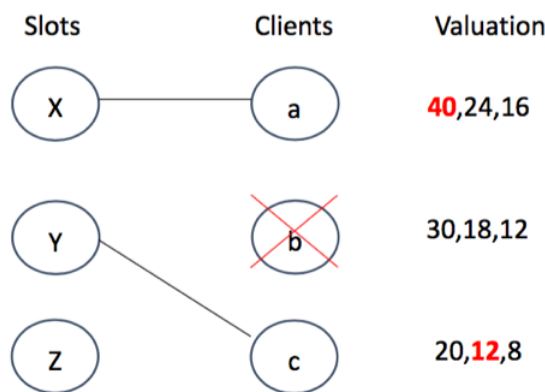
FIG. 5: the price client *a* should pay under the VCG mechanism



Source: own processing

If client *b* does not exist, the valuation for *a* is still 40; *b* gets nothing; and *c* will get slot Y rather than slot Z, and the corresponding valuation for *c* will increase by $12-8=4$. So client *b* should pay 4. The process is shown in the Figure 6.

FIG. 6: The price client *b* should pay under the VCG mechanism



Source: own processing

For the client *c*, it is easy to find that, she or he will does not exert any “harm” to other clients, because even if *c* does not exist, client *a* and *b*'s valuations will not be affected yet. So *c* pays 0.

In a word, according to the VCG principle, client *a*, *b*, and *c* should pay 16, 4, and 0 respectively.

III. The Advantages and Limitations of VCG Principle

Advantages:

The VCG principle will maximize the total welfare.

The VCG principle incentives “buyers to be honest on their own valuations, and each buyer will announce his or her valuation honestly, because it is a dominate strategy for each buyer” (Easley, Kleinberg, 2010).

Before we prove this pro, we here clarify the definition of *dominant strategy* in the game theory.

“A strategy $x_i \in X_i$ is a (weakly) dominant strategy for player i on the condition that for all $x'_i \neq x_i$, the following inequality is true for all $x_{-i} \in X_{-i}$ & $\theta_{-i} \in \Theta_{-i}$ ” (Zhu, 2005):

$$u_i(x_i(\theta_i), x_{-i}(\theta_{-i}), \theta_i) \geq u_i(x'_i(\theta_i), x_{-i}(\theta_{-i}), \theta_i)$$

Put simply, dominant strategy for a player is a strategy that is a best response no matter what strategy the other player chooses.

Now we come back to the model above, suppose buyer a is going to lie about his valuation, say, he claims his valuation is not 40, 24, 26 for slot X, Y, and Z, if he still gets slot X, then his valuation and net payoff is not affected at all, because the price he needs to pay is determined by the negative externalities he poses on buyer b and c. So there is no need for buyer a to lie in this case.

What if buyer a lie on his valuation and then get another slot rather than slot X? In this case, say, buyer a gets slot Y, the valuation for him is 24. The net payoff for buyer a is then $24 - P_{Ya}$

Only under the case that “a-X, b-Y, c-Z” can the total valuation be maximized. When buyer a does not lie about his valuation 40, the net payoff for him is $40 - 16 = 24$.

$$40 - 16 = 40 - (V_{B-a}^S - V_{B-a}^{S-X}) = (40 + V_{B-a}^{S-X}) - V_{B-a}^S = V_B^S - V_{B-a}^S$$

$\geq (24 + V_{B-a}^{S-X}) - V_{B-a}^S = 24 - (V_{B-a}^S - V_{B-a}^{S-X}) = V_{Ya} - P_{Ya}$ (V_{B-a}^S means the total valuation when the buyer a does not exist, all the slots are then distributed to buyer b and c. V_{B-a}^{S-X} measures the total valuation other buyers get when the slot X is assigned to client a . V_B^S is the total valuation under VCG principle and each buyer is truth-telling).

The above analysis indicates that the net payoff for buyer a when he announces the real valuation is bigger than the net payoff he can get when he lies about his valuation.

Symmetrically, if buyer a lies about his valuation and then gets slot Z, we can also prove that the net payoff for buyer a will be reduced. Altogether, as a rational person, buyer a will tell the truth on his valuation no matter what strategies other buyers choose. As a matter of fact, in the book of “Networks, Crowds, and Markets: Reasoning about a

highly Connected World”, the author David Easley and Jon Kleinberg (2010) have given a solid proof on the fact that “if the items are assigned and prices calculated based on the VCG procedure, then for each buyer, announcing valuations truthfully is a dominant procedure.”

So it is reasonable and rational that all buyers (clients) will report their valuations for each slot honestly. No one wants to deviate from this situation. Here we get the equilibrium.

Limitations:

The VCG procedure requires us to “find the optimal solution, but back to the real life, in many cases, it is really difficult to find the optimal solution, or even sometimes it is not computationally feasible to get the optimal solution.” (Dobzinki, Nisan, 2011)

Compared with other mechanism, such as the Generalized Second Price Auction (GSP), the VCG procedure is harder to understand under the multiple goods auction.

c) The application of VCG mechanism in reality

The advertisement system of Facebook is based on the VCG mechanism, “which is now optimizing the advertisement people can see from the Facebook” (Levy, 2015).

In the Facebook for business, Facebook gives three properties of their ad system:

“what you pay only depends on the bids of ‘the people below you’; even if you bid more, on the condition that you get the same position eventually, your cost will not be affected; there is no possibility for you to get a better deal in an auction in the way of lowering your bidding price (Facebook for business, 2016). This describes exactly what is stressed in the VCG mechanism.

Facebook pays more attention to the efficiency, say, “the total welfare rather than it’s own revenue” (Xu, 2012).

Facebook analyses all content in a person’s News feed, and then based on the degree of relevancy to the stuff they get, “Facebook creates a quality score. Combining the bid price and the quality, Facebook then sets a new price for a bidder, then they just follow this way to run the auction” (Cornell University, 2015).

Conclusion

With the progress of the internet and the information and science technology, the mechanism used for advertisement online is being modified and improved to cater to the need of different groups of people. For now, those search engines adopt different methods, i.e. “Some major search engines (Varian, 2009), such as Google and Twitter, adopt the *Generalized Second Price Auction* (GSP)”, while Facebook adopts the VCG principle. From the analysis above, we find that when search engines know the valuation of prospective advertisers (clients), it is similar to the situation of a matching markets, we will finally get to the market clearing prices. But if search engines do not know the clients’ valuations, it is not feasible to find the market clearing price as before.

Faced with this condition, the search engine may take different mechanisms, among which VCG principle can induce the clients to bid using their truthful valuation since it is a dominant strategy for them, and at the meantime, under VCG principle, each bidder pays exactly the negative externalities (measured by the loss of other bidders' valuation) he or she causes to other bidders – as Easley and Kleinberg (2010, p449) stated, “this will result to the maximized total valuation when the slots and clients get the perfect matching”. The VCG mechanism has those obvious advantages, but we also admit that there are many aspects needed to be improved in the application of this principle in practice. With the development of the science and the artificial intelligence, it is feasible to believe that in the long run, people will come up with methods to overcome those limitations so that the VCG mechanism can be used more properly and broadly.

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ACCESSIBLE TOURISM PRODUCT AS A POSSIBILITY FOR DESTINATION

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Keywords:

accessibility – competitiveness – disability – requirements

JEL classification: Z32

Abstract:

Accessible and tourism are the most discussed topics in the European Union. Orientation on accessible tourism brings some benefits for tourism destination. To those benefits belong e.g. generation of employment opportunities or increasing revenues from tourism. Accessible tourism products represent a competitive advantage for destination. The aim of the paper is to outline accessible tourism product background.

Introduction

Tourism is nowadays an important part of national and regional economy. It brings some finance to regional budget, it supports employment and it creates additional value in economic transformation process. Tourism is a key driver of socio-economic progress through the creation of jobs and enterprises, export revenues, and infrastructure development (UNWTO, 2016).

Accessible and sustainable tourism are discussed topics around the world. Orientation on both of them presents modern destination.

1. Methods and literature overview

The aim of the paper is to outline accessible tourism product background. Secondary data were used. From the scientific methods were used analysis of literature and previously realised surveys.

Competitiveness of tourism destinations belongs to the core topics of tourism policy (Mazurek, 2014). The concept of competitiveness has been applied to different destination settings and types as well as expanded into the sustainability of destinations. Thus, certain marketing plans and promotional strategies such as price, quality, image, and sustainable tourism have been discussed. The success of integrated quality management of tourism destinations and price-based promotions as a value increasing strategy has been considered for destination competitiveness (Mohammadi & al., 2010).

One of the main aims of tourism planning and development is to create more valuable tourism products and services for potential or current visitors so that destinations and their communities receive social and economic benefits.

Competitiveness in tourism is defined as the ability of a country to create added value and thus increases national wealth by managing assets and processes, attractiveness, and aggressiveness, and proximity, and by integrating these relationship into an economic and social model (Ritchie & Crouch 2000, In Mohammadi & al., 2010). Competitiveness has often incorporated the concept of marketing planning and competitive development strategies (Bordas, 1994; Poon, 1994; In Mohammadi & al., 2010).

Tourism destinations competitiveness can be defined as a general concept that encompasses price differentials coupled with exchange rate movements, productivity levels of various components of the tourist industry and qualitative factors affecting the attractiveness of otherwise of destinations. The sources used in destination's tourism development create comparative and competitive advantage in tourism (Mazurek, 2014). Comparative advantage would relate to such items as the tourism infrastructure (hotels, events, attractions, transportation network), the quality management, skills of workers, government policy, etc. (Kim & Dwyer, In Mazurek, 2014).

A number of studies point out that tourism destination competitiveness can be enhanced through certain development strategies, including marketing efforts (image, quality, positioning, branding and services), destination management efforts, and sustainable tourism (Mohammadi & al., 2010).

More complex approach to the competitiveness of destinations defined Buhalis (2010, In Mazurek, 2014), who included into the definition of competitiveness the concept of sustainability of the local resources. Destination competitiveness is a synergy of economic, social and sustainability concepts.

Ritchie, Crouch and Hudson (2001, In Darcy & Dickson, 2009) propose that the measure of a tourism destinations competitiveness and sustainability is a blend of two dimensions: (1) the actual success of the destination as measured by the contribution which tourism makes to enhancing the sustainable wellbeing of destination residents, (2) the extent to which the foregoing level of success has been achieved through an effective deployment of destination resources.

Thus, a destination that is accessible for tourists will also be accessible for residents, with commensurate benefits in social engagement, health outcomes and economic benefits (Darcy & Dickson, 2009). Ritchie, Crouch and Hudson (2001, In Darcy & Dickson, 2009) set out five sets of factors that contribute to destination's competitiveness and sustainability: (1) the core resources and attractors: factors

motivating tourists to visit, (2) supporting factors and resources: those characteristics that support the development of the tourist industry, (3) destination management: activities carried out to support and maximise outcomes for the four other factors of the model, (4) destination policy, planning and development: creation of an environment where sustainable tourism can flourish, (5) qualifying and amplifying determinants: defining of the scale, limit or potential of the destinations competitive capacity, which are beyond the control of the tourism sector.

Accessible tourism essentially replicates ‘core resources and attractors’ and the extent to which the factors incorporate the principles of independence, equity and dignity within destination management approaches will impact on the realisation of accessible destination experiences (Darcy & Dickson, 2009).

However, only a very small percentage of the industry addresses the market for accessible tourism. From a survey of Member States of the European Union it has been estimated that only a very limited proportion of facilities are accessible for people who use wheelchairs: 1.5% of restaurants & catering facilities, 6.5% of accommodation establishments and 11.3% of attractions. It appears that while the market potential is very high, the tourism industry as a whole is lagging far behind in terms of matching its services to customers’ access demands (ENAT, 2008).

Today, the majority of hotels, transportation facilities and tourist sites are not physically accessible for many people with disabilities and older persons. In addition, accurate (and accessible) information about the access characteristics of destinations and venues is lacking. In general, it is also rare for personnel at tourist venues to be trained in how to “meet and greet” people with a disability (ENAT, 2008).

The lack of governmental policies and strategies for the promotion of accessible tourism in some countries might be partly the reason for some of the private sector’s lack of progress in this area. For example, few of the national tourist boards in EU Member States have well developed information, tools or incentives that can help tourism businesses to leverage the accessible tourism market (ENAT, 2008).

2. Results

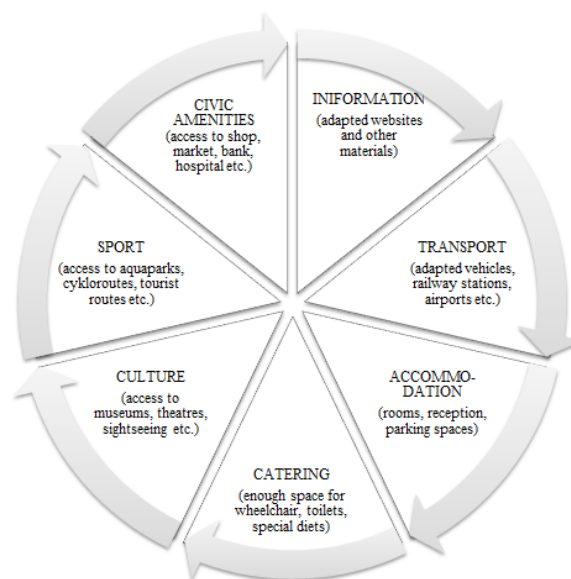
The potential accessible tourism and travel market create more than 143 million people, (or 27% of the EU population), with expected tourism revenues upwards of 83 billion Euros for European travellers alone. Taking into account people with disabilities, older people, pregnant women, families with young children and those who have other functional, health or mobility limitations, it is clear that some 30 to 40% of all Europeans would benefit greatly from improved accessibility in tourist facilities and services (ENAT, 2008).

Accessibility refers not only to the built environment and physical barriers. Physical access is of course a basic condition for giving access to people with severe mobility impairments but accessibility is also about the accessibility of websites and written documents, signage, communication, transportation, and even disability awareness on the part of personnel in the tourism sector: in short, the provision of accessible services. Accessible services are a key concept in achieving user-friendly tourism for everyone (ENAT, 2008). Accessibility also means financial accessibility for low-income families, seniors and social disadvantaged people.

Orientation on accessible tourism brings some benefits for destination, e. g. generation of employment opportunities. Accessible tourism promotes a hub by economic activities and it leads to balance regional development. It is also possibility for less-known, small or emergine destination and possibility for local producers. Other accessible tourism benefits are ecouraging the extension of the tourist season, increasing revenues from tourism, cooperation among stakeholders (enterprises, local initiatives) and increasing quality of life for local inhabitants.

Accessibility is often described as a chain, made up of many links. For example, to access a building requires an accessible parking space and entrance, reception hall, meeting rooms, toilets, signage, information, etc. As in all chains, the access chain is only as strong as the weakest link. Accessibility is highly interdependent on different stages of processes. Thus, a fully accessible city-house is not usable for wheelchair users if it is not possible for them to get there, an attraction park is not accessible if the public toilets do not include an accessible facility, a museum is not interesting for blind people if they can not touch objects or have an audio-description, etc. (ENAT, 2008).

FIG. 1: Accessible tourism product



Source: own elaboration, 2016.

Like accessibility, tourism can also be viewed as a chain-like phenomenon. Tourism consists of a complex system of activities and services, which have numerous inter-relationships. These activities are to a large extent linked to the journey a tourist makes. Before travelling people look for information, go through a decision process and book their trip or holiday. Next they take a plane, car, train or bus to go to their destination, they arrive at their accommodation (a hotel, a camping, a holiday flat, a B&B, etc.). At their destination they go out to have a drink or a meal, they visit attractions, they go out shopping, etc. At the end of their holiday they travel back home and they share their experiences with others. So accessible tourism takes into account this complexity. This implies that accessibility should be integrated within the whole chain; in booking, information provision, transport, the accommodation itself, attractions, staff attitudes, excursions, meals, etc. (ENAT, 2008).

TAB. 1: Accessible tourism services

Type of services	Charakteristics
information	– the provision of (accurate and detailed) travel and tourism information, including information about accessibility as well as the provision of this information in accessible formats such as the world wide web and digital or large print versions or brochures
assistance	– staff or volunteer assistance in specific places or for certain activities, e.g. shopping, beach access, porter service for baggage
special diets	– e.g. providing meals for people with allergies
hire or loan of equipment	– tourism services like car hire can include adapted vehicles or additional service such as a transportable electric scooter – beach wheelchairs, walking aids, etc. can also be hired out or lent to customers
activity packages	– tourism packages that are accessible for all customers

Source: ENAT, 2008

The lack of appropriate accessibility measures in one link of the chain could have an enormous impact on the whole chain: e.g. a wheelchair user that has booked a fully accessible room in a hotel, but isn't able to get to his room because of steps at the entrance of the hotel, or a person with a gluten allergy, who is not able to find a restaurant at the destination that serves gluten-free meals, and so on (ENAT, 2008).

The situation at accessible tourism market comes better. It is possible to find also some good practices.

TAB. 2: Accessible tourism good practices

Good practice		Characteristics
Organizations	ENAT, Belgium	European network for accessible tourism, it enable tourism enterprises, public authorities, NGOs and other actors and stakeholders in the tourism sector to share experiences and promote good policies and practices in accessible tourism
	ISTO, Belgium	International social tourism organization
	Imerso, Spain	Institut for older persons and social services, it offers holidays and stays for seniors
	ANCV, France	Holiday voucher agency, it carries on voucher system
	FHA, United Kingdom	Family holiday association, it offers holiday for low income families
Websites	wheelmap.org	
	wheelchairtraveling.org	
	mapybezbarier.cz	
	Accessible Vienna, Austria	information portal also for blind visitors
	Accessible Britain, UK	information platform
Quality	Turisme per a tothom	information about accessibility in Catalonia
	Turisme et handicap	label for accessible tourism services
Greenways	La voie verte des Gaves, France	Lourdes – Pierrefitte Néstalas, length: 18 km (adapted surface, Braille information pannels)
	Vies verdes de Girona, Spain	Catalonia, length: 150 km (adapted surface, Braille information pannels)
	Sumava for all	10 barrier-free routes
Accommodation	Paradores, Spain	hotel chain with accessible services manual and recommendations
	Westin Dragonara Resort, Malta	the most accessible hotel award 2014 (1 st place)
	eduCARE Hotel Restaurant Traffen, Austria	the most accessible hotel award 2014 (2 nd place)
Culture	Prado museum, Spain	3-D copies of works of art
	Volkswagen museum, Munich	guided tours for wheelchair users and blind visitors

Source: own research, 2016.

Conclusion

Customers, visitors and guests are very important elements of tourism market. Tourism destinations always try to find new ways, how to get more visitors, revenues etc. One from the possibilities for domestic tourism increase is orientation on accessible tourism.

To accessible tourism belong more target groups, not just disabled visitors, but also seniors, families with little children, pregnant women, persons with special diets etc. So there are many opportunities and chances for tourism enterprises to improve and reform their products and to contribute to regional development.

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ANALYSIS ON REGIONAL DIFFERENCE OF GREEN TOTAL FACTOR PRODUCTIVITY OF AGRICULTURE IN CHINA

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Keywords:

agricultural total factor productivity – green total factor productivity – SBM – Luenberger productivity index

JEL classification: L88, Q18, Q58

Abstract:

In this paper, we redefine the input-output factors of agriculture, using the Luenberger productivity index based on the SBM directional distance function to estimate the total green factor productivity of 31 provinces in China from 2001 to 2014, and to analyze the regional differences of green TFP, using the carbon emission in agricultural production as the constraint condition. The study found that the average annual growth rate of China's agricultural green TFP was 1.51%, of which annual average annual growth rate of pure technical progress is the main driving force of TFP growth.

Introduction

Agricultural Total Factor Productivity (TFP) and agricultural factor inputs together constitute the driving force for agricultural economic growth. In addition to factor inputs, technological progress, technological innovation, etc. will also achieve economic growth, which in the development of the economy plays an important role. Total factor productivity is used to measure this indicator. However, the process of modernization of agricultural development is the process of agricultural total factor productivity (TFP) replacing agricultural inputs, while the contribution of agricultural TFP to agricultural economic growth continues to increase (Coelli&Rao, 2005). Since the reform and opening up, China's agricultural economy to achieve a rapid growth, but in recent years, global warming threatens agricultural production and development. Compared to industrial systems, agricultural systems are sensitive to climate change. Climate change directly affect crop growth through changes in light and temperature, and changes in crop and weed management through climate change and indirectly affect crop growth. More realistically, climate change increases the frequency and intensity of extreme weather events such as floods, droughts, and so on, all seriously jeopardizing the development of agricultural systems. According to the relevant data, China's agricultural emissions of greenhouse gases accounted for the proportion of the total up

to 17%, agricultural "high carbon" is very obvious. Increasing the Green Total Factor Productivity of agriculture is the only way to realize agricultural modernization.

1. Methods

In this paper, we choose to use the method based on SBM directional distance function and Luenberger productivity index to calculate the agricultural green TFP. When estimating the efficiency of agricultural production in 31 provincial regions of China, the agricultural production system in each area will be regarded as a decision making unit (DMU), and then the optimal production frontier is constructed. Assume that each area of agriculture uses M inputs: $x = (x_1, x_2, x_3, \dots, x_M)$, Get N kind of expected output (good output): $y = (y_1, y_2, y_3, \dots, y_N)$, and L kind of non expected output (bad output): $b = (b_1, b_2, b_3, \dots, b_L)$. And the input and output value of agriculture in each area can be expressed as $x^{k,t}, y^{k,t}, b^{k,t}$, $t = 1, 2, 3, \dots$ on behalf of each period, and $k = 1, 2, 3, \dots$ on behalf of the agricultural production system in each region. The production possibility set meets the three characteristics of closed set, bounded and convexity; Input and expected output have strong disposability; While the expected output is weakly disposable, that is, if the desired output is to be reduced, the expected output will also be reduced; The expected output and the unintended output have zero combination, that is, as long as the expected output exists in the production activities, then the non-expected output will exist, only when the desired output is 0, the non-expected output will not exist. Thus, the production technology set can be expressed as:

$$T = \left\{ (x^t, y^t, b^t) : \begin{aligned} & \sum_{k=1}^K \lambda_k^t x_{km}^t \leq x_m^t, \forall m; \quad \sum_{k=1}^K \lambda_k^t y_{kn}^t \geq y_n^t, \forall n; \\ & \sum_{k=1}^K \lambda_k^t b_{kl}^t = b_l^t, \forall l; \quad \sum_{k=1}^K \lambda_k^t = 1, \lambda_k^t \geq 0, \forall k \end{aligned} \right\} \quad (1)$$

In this equation: λ_k^t represents the weight of each cross-sectional observation; $\sum_{k=1}^K \lambda_k^t = 1$ is restriction, which implies that the frontier reflects the variable-size-of-variance (VRS) hypothesis, and VRS takes into account imperfect competition such as imperfect competition, externalities, and so on. If all agricultural production is assumed to be productive under optimal conditions, then the above constraints can be eliminated and the production frontier can be constructed using the assumption of constant returns to scale (CRS).

2. Results

In this paper, SBM directivity distance function and Luenberger productivity index are used to estimate the carbon output as the expected output of agricultural production, agricultural output as expected output, labor force, land, mechanical power, chemical fertilizer, pesticide, agricultural film and agricultural water. The green technology efficiency and the green total factor productivity of 31 provinces in China from 2001 to 2014 are calculated. All the calculation processes in this paper are based on Matlab7.0. The difference between technical efficiency and total factor productivity is that the technical efficiency belongs to static analysis and is measured at a certain point in time. TFP belongs to dynamic analysis, which takes into account the technical efficiency and the relative change of technology in different periods.

2.1 Annual change analysis of green TFP at national level

Based on the data of agricultural input and output of 31 provinces in China from 2001 to 2014, and considering the non-expected output, the calculation of Luenberger productivity index based on Matlab7.0 can show the changes of green TFP and its decomposition in Chinese agriculture. As shown in Table 1:

(1) China's agricultural green TFP as a whole showed a growth trend. During the 13 years from 2001 to 2014, the average annual growth rate of TFP was 1.51% and the cumulative increase of TFP was 21.07%. The values obtained in this paper are low. The reason we believe that, in the past studies exist, the expected output estimates are too high, the expected output and input is too low to estimate the problem. For example, when the output value of the first industrial output value of the intermediate consumable is used as the output value, the output value is greater than the real value; some of the input variables only include the input of agriculture, ignoring forestry, fishery and animal husbandry inputs, Making the input is less than the true value; others do not consider the non-expected output, or unintended output estimates unreasonable. In this paper, the input and output variables of agricultural green TFP are analyzed in detail, which are in accordance with the present situation of Chinese agriculture and better than other researches. In view of this, this article measured the agricultural green TFP should be more in line with the reality.

(2) During this 13-year period, the technological progress of China's agriculture has been growing at an average annual growth rate of 1.36%. The technological scale is also in a state of slow growth with an average annual growth rate of 0.08%.

(3) In the same time of technological progress, technical efficiency showed a weak growth, with an average annual growth rate of only 0.07%, of which the pure technical efficiency decreased by 0.06%, the average annual growth rate of 0.14%, the weak growth of the main source of technical efficiency Since the scale of efficiency growth. From the above analysis can be obtained initially, access to the WTO in the new century after China's agricultural green TFP growth mainly rely on technological progress, followed by the scale of efficiency growth, once again for the technical scale, pure technical efficiency of the green TFP growth To inhibition. The pure technical

efficiency is negative. Under certain technical conditions, the expected output of the same input factors is decreasing year by year. From the analysis, we can see that the growth of green TFP in China's agriculture since 2001 is mainly due to the "expansion" of the production frontier rather than from the "close" to the production frontier of the production decision-making units.

TAB. 1: China's agricultural green TFP growth rate from 2001 to 2014 and its factor decomposition (unit:%)

year	GTFP	Pure technical efficiency GPEC	Pure technical progress GPTC	Scale efficiency GSEC	Technical scale GSTC
2001~2002	-4.94	0.59	-3.54	-1.41	-0.58
2002~2003	-1.17	-1.13	0.01	0.27	-0.33
2003~2004	3.96	2.72	0.74	3.11	-2.61
2004~2005	0.94	-1.40	1.54	0.78	0.03
2005~2006	0.05	0.27	0.17	-0.37	-0.01
2006~2007	4.24	0.03	3.26	1.00	-0.04
2007~2008	1.92	-0.32	1.73	-0.65	1.16
2008~2009	2.02	1.19	0.17	0.50	0.16
2009~2010	5.39	-0.87	5.18	0.26	0.82
2010~2011	2.34	-0.66	3.52	-2.50	1.99
2011~2012	2.05	-0.54	2.19	-0.12	0.52
2012~2013	1.87	0.04	1.49	0.46	-0.12
2013~2014	0.99	-0.72	1.25	0.45	0.01
mean	1.51	-0.06	1.36	0.14	0.08

2.2 Green TFP provincial level changes analysis

Taking into account the differences in the development level and resource endowment conditions of different provinces, this paper presents the average change of agricultural green TFP and its decomposition factors in 31 provinces from 2001 to 2014. As shown in Table2, 2 The green TFP is sorted in descending order. In addition to Anhui, Xinjiang, Jiangxi and Tibet, the rest of the 27 provinces of agricultural green TFP are in a state of growth. The highest five provinces with green TFP growth were Shandong, Hebei, Heilongjiang, Guangxi and Hubei; the pure technical efficiency gains were in the top five provinces of Qinghai, Hebei, Ningxia, Hubei and Shanxi, and most provinces With the exception of Tibet and Qinghai provinces and other provinces of the pure technological progress are showing growth; the scale of the highest growth rate of efficiency of the highest growth rate of the highest growth rate of the five provinces of Liaoning, Heilongjiang, Inner Mongolia, Guangxi and Hubei, Five provinces are Hunan, Guangdong, Heilongjiang, Guangxi and Gansu; the top five provinces for technological growth are Shandong, Beijing, Tianjin, Henan and Qinghai.

Divided into eastern and western regions, the eastern and western regions of the green TFP are positive, the eastern region of the green TFP growth rate of 2.17%, followed by 1.36% in the central region, the western region green TFP growth rate of 1.01%. The breakdown, pure technical progress and technical scale of the eastern region is the main power of green TFP growth, although the pure technical efficiency and scale efficiency of the green TFP promotion effect is very small, but did not produce drag effect; the central region mainly rely on pure technical progress to promote green TFP growth, the scale efficiency of support in green TFP to a certain extent, but the burden of pure technical efficiency of green TFP was reached 36.76%, the scale of growth technology of green TFP has inhibitory effect; in the western region, pure technical progress is the main driving force of green TFP, followed by third scale efficiency, pure technical efficiency, scale and technology of the west the green TFP has a drag.

In general, agriculture in the central region has the fastest pure technical progress, but in the agricultural science and technology investment, while ignoring the technology input and output efficiency of agriculture, resulting in input-output ratio declining situation; and Central Agriculture In the technological progress, while ignoring the technical scale, making the scale of technology to the same size of the remuneration of mobile technology. The western region has the highest scale efficiency, indicating that western agriculture in the scale of the operation to enhance the fastest, which is closely related to the transfer of agricultural land in the west; compared to the eastern part of the central and western regions, the rural population to go out to work a higher proportion, and in recent years With the speeding up of urbanization in western China, the western agriculture, which has the highest fragmentation degree, will gradually increase its scale production and speed up the land circulation, and gradually increase the scale of agriculture will be the focus of the future western agricultural work. The eastern part of agriculture has the highest technical scale rate, indicating that eastern agriculture in technological progress at the same time, the scale of technology also deviate from the scale of different remuneration technology.

TAB. 2: Average Green TFP Growth Rate and Factor Decomposition in Each Province

Area	Green GTFP	Pure technical efficiency GPEC		Pure technical progress GPTC		Scale efficiency GSEC		Technical scale GSTC	
		Rate of change	The proportion of TFP	Rate of change	The proportion of TFP	Rate of change	The proportion of TFP	Rate of change	The proportion of TFP
Shandong	4.72	0.00	0.00	1.01	21.40	0.59	12.50	3.11	65.89
Hebei	4.48	1.51	33.71	1.50	33.48	0.82	18.30	0.65	14.51
Heilongjiang	3.22	0.00	0.00	3.42	106.21	1.33	41.30	-1.52	-47.20
Guangxi	2.90	0.39	13.45	2.29	78.97	1.21	41.72	-0.98	-33.79
Hubei	2.89	0.95	32.87	2.27	78.55	0.45	15.57	-0.78	-26.99
Guizhou	2.58	0.00	0.00	2.24	86.82	0.00	0.00	0.34	13.18
Qinghai	2.55	3.74	146.67	-2.44	-95.69	0.01	0.39	1.23	48.24

GREEN TOTAL FACTOR PRODUCTIVITY OF AGRICULTURE

Fujian	2.35	0.00	0.00	1.99	84.68	0.00	0.00	0.35	14.89
Liaonign	2.33	-1.34	-57.51	3.50	150.21	0.67	28.76	-0.50	-21.46
Hunan	2.31	0.64	27.71	1.64	71.00	1.38	59.74	-1.36	-58.87
Shanxi	2.30	0.87	37.83	1.25	54.35	-0.02	-0.87	0.20	8.70
Tianjin	2.12	0.00	0.00	2.06	97.17	-1.93	-91.04	1.98	93.40
Ningxia	1.74	1.06	60.92	1.46	83.91	0.35	20.11	-1.13	-64.94
Hainan	1.70	0.00	0.00	0.86	50.59	0.00	0.00	0.84	49.41
Shanghai	1.59	0.00	0.00	0.50	31.45	0.00	0.00	1.09	68.55
Shanxi	1.58	0.00	0.00	1.74	110.13	0.00	0.00	-0.16	-10.13
Jiangsu	1.41	0.00	0.00	1.66	117.73	0.00	0.00	-0.25	-17.73
Beijing	1.16	0.00	0.00	0.28	24.14	-1.39	-119.83	2.27	195.69
Guandong	1.11	0.00	0.00	0.77	69.37	1.34	120.72	-1.00	-90.09
Chongqing	1.06	0.00	0.00	0.76	71.70	0.00	0.00	0.30	28.30
Gansu	0.91	-0.49	-53.85	1.25	137.36	0.86	94.51	-0.71	-78.02
Zhejiang	0.85	0.00	0.00	0.87	102.35	0.00	0.00	-0.02	-2.35
Yunna	0.70	-0.81	-115.71	1.41	201.43	0.49	70.00	-0.39	-55.71
Henan	0.67	0.00	0.00	1.30	194.03	-2.09	-311.94	1.47	219.40
Neimennggu	0.54	-1.97	-364.81	2.34	433.33	-0.05	-9.26	0.22	40.74
Jilin	0.48	-1.94	-404.17	2.16	450.00	-0.04	-8.33	0.29	60.42
Sichuang	0.47	0.00	0.00	1.04	221.28	0.00	0.00	-0.58	-123.40
Anhui	-0.34	-2.69	791.18	1.47	-432.35	-0.05	14.71	0.93	-273.53
Xinjiang	-0.49	0.00	0.00	0.71	-144.90	0.00	0.00	-1.20	244.90
Jiangxi	-0.62	-1.83	295.16	1.46	-235.48	0.26	-41.94	-0.51	82.26
Xizang	-2.36	0.00	0.00	-0.59	25.00	0.00	0.00	-1.77	75.00
Nationwide	1.51	-0.06	-3.97	1.36	90.07	0.14	9.27	0.08	5.30
Eastern part	2.17	0.02	0.92	1.36	62.67	0.01	0.46	0.78	35.94
Central	1.36	-0.50	-36.76	1.87	137.50	0.15	11.03	-0.16	-11.76
Western part	1.01	0.16	15.84	1.02	100.99	0.24	23.76	-0.40	-39.60

Conclusion

Developing low carbon agriculture is the fundamental way to realize the sustainable and healthy development of agriculture. The main conclusions drawn in this paper are as follows: (1) The green TFP of agriculture in China showed an overall growth trend, with an average annual growth rate of 1.51% and a cumulative increase of 21.07% in the period from 2001 to 2014. The growth rate of agricultural green TFP obtained in this paper is lower than other current research. (2) During the sample period, the technological progress of China's agriculture was on the whole growing, with an average annual growth rate of 1.36%. The scale of technology also grew slowly, with an average annual growth rate of 0.08%. (3) While the technological progress has been strengthened, the technical efficiency has also shown a weak growth. The average annual growth rate is only 0.07%, of which the pure technical efficiency has decreased by 0.06% and the scale efficiency has increased by 0.14%. Derived from economies of scale. (4) The green TFP of eastern, central and western regions is positive, the growth

rate of green TFP is 2.17% in the eastern region, 1.36% in the central region, and 1.01% in the western region. The pure technical progress and technical scale of the eastern region are the main driving force for the green TFP growth. Although the pure technical efficiency and scale efficiency promote the green TFP very little, it does not produce the drag effect. The central region mainly relies on pure technology Green TFP growth, the scale efficiency to a certain extent, also supports the green TFP, but the pure technical efficiency of the green TFP drag effect is very significant to 36.76%, the technical scale of the green TFP growth inhibition; on the west Region, pure technological progress is the main driving force of green TFP, followed by the scale of efficiency, the third for the purely technical efficiency, while the technical scale of the western region has a drag on the role of green TFP.

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ADMIRING CULTURALLY-INCONGRUENT WESTERN ICONIC BRANDS: EVIDENCE FROM CHINA

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admiration – iconic brand – culturally-incongruent values

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Abstract:

Iconic brands have gained increasing attention from academic scholars, and many Chinese consumers admire western iconic brands which symbolize desirable culturally-incongruent values. However, limited research has been done to address how consumers develop strong attachment to these iconic brands and how they use these types of brands to fulfill their identity goals. Using netnography and grounded theory, the research proposes a suppression-liberation model to investigate the processes by which Chinese consumers come to admire culturally-incongruent western iconic brands. The model consists of five stages, including personal context, suppressed self, encounter, iconization and liberated self. Theoretical contributions and managerial implications are provided.

Introduction

In recent years, many Chinese consumers began to show strong attachment and fanaticism toward certain western iconic brands which represent strong western values, such as Apple, Harley-Davidson, Jeep, Beetles, and Louis Vuitton. These western iconic brands are highly admired by young consumers and have become increasingly popular in China. The cultural meanings of brands and iconic brands (also called culturally symbolic brands) have gained increasing attention from academic scholars during the past decade (Holt, 2004; Torelli and Ahluwalia, 2012). Although most consumers tend to resonate with brands which represent culturally-congruent values, some consumers admire imported iconic brands which symbolize desirable culturally-incongruent values even if these values contradict culturally nurtured values (Torelli, Keh and Chiu, 2010). As iconic brands increasingly become cultural icons for global consumers, research on what an iconic brand means for global consumers outside of their native country, and how global consumers respond to a foreign iconic brand, is of great interest. However, limited research has been done to address how consumers develop strong attachment to imported culturally-incongruent iconic brands, and how they use these types of brands to fulfill their identity goals in their daily lives.

Based on netnography and grounded theory, the paper aims to investigate the formation mechanism of Chinese consumers' admiration for culturally-incongruent western iconic brands.

1. Methods, literature overview

Iconic brands address the cultural contradiction between prevailing ideology and individual experiences, and represent particular cultural-specific values collectively held by some members in one country (Holt, 2004). Imported iconic brands may represent culturally-incongruent or culturally contradictory values. Thus, consumers may feel tension when the culturally-incongruent values they admire conflict with prevailing social values in their daily lives (Mick and Fournier, 1998; Thompson and Tambyah, 1999). Specifically, Cayla and Arnould (2008) demonstrated that consumers in developing countries generally admire western iconic brands for the desirable culturally-incongruent values embodied in them. Manning (2009) asserted that transitional societies embrace iconic brands because they serve as symbolic salves when societies experience crises of values and shifts in ideology.

Although the general role of brands during the process of globalization and the diffusion of consumer culture from developed countries have been discussed by many researchers (Ger and Belk, 1996; Sklair, 1997), few have investigated the cultural role of western iconic brands during globalization. Just as advertising plays a role in changing cultural values (Zhang and Shavitt, 2003), western iconic brands with culturally-incongruent values may reshape consumers' values and remedy consumers' anxieties in a developing country (Cayla and Arnould, 2008).

The study follows the Consumer Culture Theory (CCT) tradition (Arnould and Thompson, 2005) and uses netnography (Kozinets, 2010) to collect data. Netnography is online ethnography which uses multiple sources to collect qualitative data, including participatory observation, field notes, archival data, and online interviews in online brand communities or chat rooms. To best fit the research themes and build a generalized grounded theory, the research focuses on three exemplars of western iconic brands in different product categories which many Chinese consumers pursue zealously: Apple, Harley-Davidson and Louis Vuitton. The researcher follows conventional procedures of analysis and interpretation (Spiggle, 1994; Arnould and Wallendorf, 1994; Thompson, 1997).

2. Results

In contradiction to individualistic western countries, China is a well-known collectivistic country and is profoundly influenced by Confucianism and Taoism. The three western iconic brands represent strong western values which are relatively contradictory to prevailing Chinese social values. (see TAB.1)

TAB. 1: Perceived western values and prevailing Chinese social values

	Apple	Harley-Davidson	Louis Vuitton
Perceived western values	Creativity Uniqueness Rebellion	Freedom Ruggedness Independence	Petty Bourgeoisie Taste Luxury
Prevailing Chinese social values	Conformity Obedience	Obedience Decency Golden mean	Delayed gratification Frugality

Source: own research

Based on netnography and data analysis, the research found that the processes by which consumers come to admire culturally-incongruent western iconic brands can be interpreted as a suppression-liberation model (see FIG.1). The model consists of five stages, including personal context, suppressed self, encounter, iconization, and liberated self.

FIG. 1: The Suppression-Liberation Model

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Personal context	Suppressed self	Encounter	Iconization	Liberated self
Need for western values	Cultural contradiction	Emotional resonance	Engagement	Admiration

Source: own research

2.1. Personal context

All consumer behaviour resides in the personal context of consumers. The life themes or life projects of consumers are those long-term or short-term goals which they pursue during a certain period of life. After experiencing 20 years of high-speed economic growth and the impact from western values and lifestyles, many Chinese consumers began to admire certain western values in their personal contexts. Evidence from several fans of the three western iconic brands is as follows:

As an artist, I'm always looking for inspiration to make something really different and great. I hate being the same as others like most Chinese people are. (Li, Apple fan, age 28)

Look at us. We have been working for 20 years, but what are we working for? Earning more money? I think it's time to remove all the burdens and go outside to see the big world carefully, to experience a different lifestyle, to live as a real free man. (Chang, Harley-Davidson fan, age 42)

As a general manager and middle class, I told myself that I need to upgrade my tastes and buy something that fits into my identity. I don't want to save money anymore just like my old parents did. (Chen, LV fan, age 37)

2.2. Suppressed self

These desirable values are, to some extent, contradictory to prevailing social values and norms in China. This paradox is what Holt (2004) called cultural contradiction, cultural crisis or cultural anxiety. Therefore, these consumers are suppressed psychologically or spiritually in such a sociocultural context, and are limited in fulfilling their admired values and pursuing their ideal selves. Evidence from several fans of the three western iconic brands is as follows:

Constantly, when I suggest some creative ideas to my boss, my colleagues think it is too risky and adventurous to do so, and there are always some institutional barriers preventing me from innovating. You know, this is typical Chinese culture. (May, Apple fan, age 26)

Although the philosophy of the golden mean in Chinese culture is a good virtue, it also suppresses human nature. When I ride with other Harley owners on the road, we are actually getting human nature back. What is human nature? It's freedom. I think the desire for freedom is something instinctive for us, but it is restricted by many visible and invisible norms around us. (Pan, Harley-Davidson fan, age 40)

Every time my mom finds I have bought something expensive, she is not so happy and always advises me to keep a low profile and learn to save money. So I think it's because of the generation gap, and she just cannot understand me. (Wang, LV fan, age 30)

2.3. Encounter

Iconic brands are excellent at designing their unique products to represent their brand positioning and values. Since consumers have been looking for brands which are capable of fulfilling their personal values and dreams, they find themselves falling in love with the western iconic brands and products at first sight. There is an emotional resonance which occurs between consumers and these western iconic brands. Evidence from several fans of the three western iconic brands is as follows:

When I saw Apple's Mac computer for the first time, I was really shocked by its appearance. I have never seen such an incomparably unique branded product. (Tian, Apple fan, age 30)

I first knew Harley-Davidson Motorcycles from TV news where I saw some pictures and videos, but it is so impressive! You can directly feel a strong ruggedness from its appearance and you just want to ride on it. (Liu, Harley-Davidson fan, age 39)

One day, my friend recommended a video commercial to me by WeChat, and it was about LV. After watching the commercial, I was really moved by the beautiful story and the spirit embedded in it. (Duan, LV fan, age 40)

2.4. Iconization

After encountering these iconic brands, consumers began to actively search for relevant information, and started interacting with like-minded consumers through social networks and online brand communities. Although the marketers of these western iconic brands make little effort to advertise in China, consumers actively learn as much as possible about these iconic brands through the Internet and become increasingly engaged. Finally, consumers are able to perceive the iconicity of these brands through their global myths. Evidence from several fans of the three western iconic brands is as follows:

I like to go to the Apple Store in Shanghai to see the most advanced products and participate in some interesting activities, such as small concerts, lectures and games. I think it is like a church of new ideas and disruptive technologies. Apple has become a symbol of innovation and uniqueness. (Tang, Apple fan, age 28)

I go to our HD community every weekend and I have made many good friends through this community. My favourite thing is to ride my HD along with my buddies in the countryside. So, HD just means freedom and ruggedness for me which I cherish very much. (Zhao, Harley-Davidson fan, age 36)

I visited LV's website and Weibo every day, and have recommended some wonderful pictures to the online community. I like seeing other fans comment on my posts, replying to them, and talking with them about LV's newest products. For me, LV means elegance, petty bourgeoisie taste, and luxury. (Sun, LV fan, age 30)

2.5. Liberated self

These culturally-incongruent western iconic brands satisfy the suppressed desire of some Chinese consumers through the values they represent. In a sense, these western iconic brands create Chinese consumers' new lifestyles and liberate the suppressed selves of Chinese consumers. After a long-term engagement, many consumers admire

these brands and become loyal fans. In this way, these western iconic brands become their beloved western cultural icons. Evidence from several fans of the three western iconic brands is as follows:

In my heart, Apple is such a great brand which I admire and worship. I'd like to thank Steve Jobs for his vision and talent. Apple's products offer me great inspiration and have helped me to define myself. (Tracy, Apple fan, age 31)

I respect HD because it's a great company and brand. I bought HD's helmet, gloves, T-shirts, and shoes, because I love the brand so much and it is a lifestyle to me. (Lin, Harley-Davidson fan, age 39)

For me, LV is the best among all the luxury brands. I don't know why. I just love their design so much. I admire the value and lifestyle it represents. (Chen, LV fan, age 37)

3. Discussion

Building iconic brands has become an increasingly important issue for global marketers. However, limited research has been done to address how consumers develop strong attachment to imported culturally-incongruent iconic brands, and how they use these types of brands to fulfill their goals for identity in their daily lives. The suppression-liberation model provides a new explanation and framework for understanding the admiration Chinese consumers have for culturally-incongruent western iconic brands, and therefore contributes to the consumer behaviour theories on iconic branding. It reveals the processes by which consumers come to admire culturally-incongruent western iconic brands in a developing country and how consumers use these types of brands to liberate their suppressed selves. It also helps in understanding the cultural role of western iconic brands and how they help in reshaping consumers' values in a developing country and in advancing a homogenous global consumer culture.

The research also has its limitations. For example, it uses theoretical sampling but still needs to enlarge on the number of informants and target brands to enhance the validity of the theory. For further research, scholars should collect more data across different developing countries to see if consumers follow the same processes in their admiration of culturally-incongruent western iconic brands. In addition, quantitative data and surveys should be used to test relevant hypotheses in order to build a more generalized and valid theory.

Conclusion

Using netnography and grounded theory, the research finds that the processes by which Chinese consumers come to admire culturally-incongruent western iconic brands can be interpreted as a *suppression-liberation model*, and relevant evidence from informants is

provided. *The model consists of five stages, including personal context, suppressed self, encounter, iconization and liberated self.*

Having experienced a great impact from western culture, many Chinese consumers have started to admire certain western values in their different personal contexts. However, these desirable values are relatively contradictory to prevailing social values and norms in China. Therefore, these consumers are suppressed psychologically or spiritually in such a sociocultural context, and are limited in fulfilling their admired values and pursuing their ideal selves. They find themselves falling in love with western iconic brands and products at first sight, and are able to perceive the iconicity of these brands through their global myths. After a long-term engagement, consumers increasingly admire these culturally-incongruent western iconic brands and become loyal fans.

In addition, the research also offers some managerial implications for iconic branding. Marketing managers should notice that brand iconicity and culturally-incongruent values are unique advantages of western iconic brands when they compete with local brands in developing countries, and must place these values at the centre of their marketing communication strategies. On the other hand, firms from developing countries should discover their own unique cultural values and cultivate their own iconic brands to compete in global markets.

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ARE STRONGER ENVIRONMENTAL REGULATIONS EFFECTIVE IN AGRICULTURE OF CHINA?

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Keywords:

pollution abatement cost (PAC) – environmental technological efficiency (ETE) – weak disposability – strong disposability

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Abstract:

This paper investigates the efforts of environmental policy on the transformation of agricultural development mode. We estimate environment technological efficiency under both weak and strong disposability assumptions and use the difference to calculate the pollution abatement cost. Conclusion the data envelopment analysis model respectively on environmental policy implementation effect and agricultural development mode change evaluation, resulting in environmental governance costs and the transformation of agricultural development mode performance, further analysis of the relationship between the two, and no significant influence of the climate and environment policy on the transformation of the mode of agricultural development. Generally, our findings show that environmental policy did not guarantee better environmental conditions even though China adopted stronger regulations to meet the higher standards.

Introduction

China has achieved rapid agriculture economic growth since its economic reform. Agricultural total factor productivity growth is the core of agricultural development mode change. Some of China's increased gross domestic product (GDP) seems to come at the cost of environmental quality, and climate change and environmental pollution has become an increasingly serious problem in China. Some officials still think the environment regulation will add agriculture costs, hinder the improvement of the TFP of agriculture, and thus undermine the economic development.

Can environmental regulation really hinder the TFP of promotion? There are following three views about the relation between environmental regulation and TFP :One is that environmental regulation will increase the cost of enterprises, which is equivalent to

impose new constraints on the decision-making of the production of enterprises, leading to management, production and sales links more difficult, and TFP decline(Christiansen, Hareman,1981;Gray, Shadbegian,1993);The second is that appropriate environmental regulation will stimulate enterprises to carry out technological innovation and adoption "Innovation compensation effect" and "learning effect" to promote the TFP(Porter, Linde,1995;Ambec et al.,2011;Greenstone, List,2012);Thirdly, environmental regulation is only potential factors to promote the TFP, and cannot directly explain the environmental regulation to improve or reduce the TFP(Walley,Whitehead,1994;Palmer et al.,1995)

There are two ways to treat the variable of environmental pollution. First, we can regard environmental pollution as an input variable. Tzouvelekas et al. (2006), for example, treated “environmental pollution” as an input variable, and then estimated green total factor productivity based on Solow’s residual. On the other hand, we can consider environmental pollution as a ‘bad’ output variable.

With the rapid development of rural economy and society, agricultural non-point source pollution is surging, and the agricultural environment is facing increasingly serious situation. It is significant to measure and improve environmental efficiency scientifically in terms of ecological agriculture for agricultural ecological environment improvement and coordinated development of agriculture and resources environment. It is significant to measure and improve environmental efficiency scientifically in terms of ecological agriculture for agricultural ecological environment improvement and coordinated development of agriculture and resources environment. The Chinese AEE and the TFP of 30 provinces from 2000 to 2014 are studied respectively by proposed model from the perspective of strong disposability and weak disposability.

This paper differs from the previous studies as follows. First, we estimate two ETEs under both weak and strong disposability, whereas most existing studies focus only on estimation of the weakly disposable ETE. We compute China’s agriculture PAC using both ETEs. Second, we put forward environmental policy effects and regional effects, and test assumptions by use of actual data and empirical analysis.

1. Methods, literature overview

1.1. Environmental technology

Färe et al. (2007) introduced environmental technology from the aspect of weak disposability of outputs and null-jointness. Consider the following environmental

production technology:

$$P(x) = \{(y, b) : x \text{ can produce } (y, b)\}, x \in R_+^N \quad (1)$$

Where $P(x)$ is the production set, and x is the input variable with N -dimensions denoted by $x = (x_1, \dots, x_N) \in R_+^N$. There are two output variables: one is a good or desirable output with an M -dimensions denoted by $y = (y_1, \dots, y_M) \in R_+^M$, and the other is a bad or undesirable output with a J -dimensions denoted by $b = (b_1, \dots, b_J) \in R_+^J$. Our production objective involves how to enlarge the good output and reduce the bad output (Färe et al., 2007). There are three important properties of the environmental technology.

1.2. Weak disposability

$$\text{if } (y, b) \in P(x) \text{ and } 0 \leq \theta \leq 1, \text{ we can obtain } (\theta y, \theta b) \in P(x) \quad (2)$$

Here, θ is a changing scalar, and $0 \leq \theta \leq 1$. In other words, we can decrease bad outputs only if we decrease good outputs by at least the same rate of θ . This implies that we cannot discard bad outputs at no cost. This case is related to environmental regulation. Here, the weak disposability assumption allows us to change good and bad outputs proportionately.

1.3. Strong disposability

$$\text{if } (y, b) \in P(x) \text{ and } y' \leq y, \text{ it implies } (y', b) \in P(x) \quad (3)$$

Strong disposability allows for non-proportionate change between good and bad outputs. When inputs and bad outputs remain constant, then any output vector with fewer good outputs is also feasible. This condition is related to an unregulated environment (Färe et al., 2005, 2007, p. 474, p. 1057). Färe et al. (2007) first adopted a directional distance function to estimate inefficiency under strong and weak disposability and then considered the gap to represent PAC.

1.4. The Linear programming

Next, we discuss the linear programming under weak and strong disposability. We presume that there are K DMU's with N inputs, M good outputs, and J bad outputs. If we assess the DMU k' under environmental regulation, linear programming can be expressed as follows (see Färe et al., 2007, p. 1061):

$$\begin{aligned}
D_0^{\vec{WDB}}(x^{k'}, y^{k'}, b^{k'}; g_b, g_y) &= \max \beta^{k'} \\
s.t. \sum_{k=1}^K z_k y_{km} &\geq y_{km} + \beta^{k'} g_{ym}, m=1, \dots, M \\
\sum_{k=1}^K z_k x_{kn} &\leq x_{kn}, n=1, \dots, N \\
z_k &\geq 0, k=1, \dots, K
\end{aligned} \tag{4}$$

The superscript WDB denotes weak disposability of bad outputs. The directional vector is $g = (g_y, g_b)$. Good outputs will expand along the g_y vector and bad outputs will contract along the g_b vector. Here, β is the maximum expansion of good outputs by $(y + \beta g_y)$ and maximum contraction of bad outputs by $(b - \beta g_b)$. The first constraint is to seek the maximum expansion of good output. The second constraint imposes weak disposability on the bad output (i.e. the regulated technology). The best-practice frontier employs equal or fewer inputs than any other DMU k . Furthermore, z_k represents the non-negative weights assigned to different DMUs. Other things being equal, the strong disposability specifies different constraints on the bad output, with the major difference being the use of the following equation instead of the third equation in (4) (see Färe et al., 2007, p. 1059):

$$\sum_{k=1}^K z_k b_{kj} \geq b_{kj} - \beta^{k'} g_{bj}, j=1, \dots, J \tag{5}$$

we assume that $g_y = y$ and $g_b = -b$ for both Equation (4) and Equation (5). The difference in inefficiency under weak disposability and strong disposability can be considered the PAC. Strong disposability is related to an unregulated environment; thus, the companies will not suffer from private loss. Weak disposability indicates conditions under environmental regulation; bad output reduction comes at the cost of reduced production of the good output. Environmental regulation will influence this PAC.

2. Results

2.1. Analysis of China Agricultural Total Factor Productivity Change

We use panel data of China's 31 provinces from 2000 to 2014. The output variables are GDP of primary industry for the good output and CO2 emissions for the bad output. The

input variables are primary industry employment, total planting area of crops, total power of agricultural machinery, applying quantity of chemical fertilizer and agricultural capital investment. We calculated agricultural efficiency changes, agricultural technical efficiency change and total factor productivity by using Leuenberger Malmquiste index. The Malmquist index was extensive used before, but The Malmquist index is the productivity change without considering the environmental impact, the Malmquist index is used with distance functions, which can be used when the good and bad outputs are treated symmetrically. Whereas the Malmquiste Leuenberger index, which is sometimes called as Leuenberger productivity indicator, is the productivity change considering environmental impacts and thus linked with directional distance function.

TAB.1: China's agricultural environment total factor productivity index and its decomposition without bad output (2000-2014)

Year Annual	Agricultural Efficiency changes	Agricultural Technical eEfficiency Change	Total Factor Productivity
2000-2001	1.037	0.971	1.007
2001-2002	0.957	1.105	1.058
2002-2003	1.089	0.964	1.050
2003-2004	0.976	1.027	1.002
2004-2005	0.984	1.016	1.000
2005-2006	1.118	0.995	1.112
2006-2007	0.992	1.027	1.019
2007-2008	0.931	1.045	0.973
2008-2009	0.983	1.091	1.073
2009-2010	0.986	1.050	1.035
2010-2011	0.989	0.983	0.972
2011-2012	1.000	1.067	1.067
2012-2013	1.017	1.064	1.081
2013-2014	0.996	1.087	1.083
2000-2014	1.004	1.035	1.038

Source: own

TAB. 2: China's agricultural environment total factor productivity index and its decomposition (2000-2014)

Year Annual	Agricultural Efficiency changes	Agricultural Technical eEfficiency Change	Total Factor Productivity
2000-2001	1.037	0.971	1.007
2001-2002	0.957	1.105	1.058
2002-2003	1.089	0.964	1.050
2003-2004	0.976	1.027	1.002
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2012-2013	1.017	1.064	1.081
2013-2014	0.996	1.087	1.083
2000-2014	1.004	1.035	1.038

Source: own

We can conclude from table 1 China agricultural total factor productivity from 2000 to 2014 the average annual growth is at a rate of 1.1%, of which the efficiency increased by 1.5%, the technical efficiency was reduced by 0.4%, the increase of scale efficiency and technical progress is the source of increasing total factor productivity. If you don't consider the output of the bad, China agricultural total factor productivity from 2000 to 2014 average annual growth of 3.8%, including technological progress efficiency increased by 3.5%, about 92% of the total factor productivity. The output of bad suppresses the growth of the total factor productivity. From 2000 to 2014, agricultural total factor productivity is floating around 1, there are cyclical and slightly upward trend. The largest agricultural total factor productivity growth is in 2005-2006, 11.2% increase; All agricultural Factor productivity is the biggest decline in 2006 to 2008, reduced about 10%.

New classical economics think environmental regulation policy is very effective on environmental protection, but it can produce regulation cost at the same time. An additional increase in production costs of enterprises, a negative impact on economic growth. Potter and other scholars think reasonable and strict environmental regulation can promote enterprises to carry out more innovative activities to enhance the productivity of enterprises and competitiveness, innovation compensation can be partially or fully offset by the additional costs of environmental protection. From Table 1, two kinds of total factor productivity change trend diagram, the total factor productivity with environmental factors is low for most of the time total factor

productivity without Environmental Regulation. In this paper, the calculation results better illustrates the environmental regulation will produce the negative effect on the economy growth. At the same time in the present case, a carbon reduction policy of our country in agriculture has not produced the influence of innovation compensation effect similar to Porter said.

2.2. Evaluation of Effect of Environmental Policy Implementation

This paper calculates the cost of regulation under the weak environmental regulation and strong environment regulation to assess the effectiveness of climate policy implementation. In the weak environmental regulation model, the bad output is in technically strong disposability, said the good output growth in the same time, bad output is also the same proportion of growth. In the strong environmental regulation model, the bad output is technically weakly disposable, indicating that good output is increasing, when the bad output to be reduced.

TAB. 3: China's agricultural regional environment technology efficiency and regulation cost (2000-2014)

District	Technical Efficiency			Regulation Cost	
	TE	ETE1(strong)	ETE2(weak)	C1	C2
Beijing	0.523268	0.946981	0.946981	0.809744	0.809744
Tianjin	0.568764	0.804398	0.800764	0.414283	0.407902
Hebei Province	0.616194	0.744281	0.744280	0.207868	0.207867
Shanxi Province	0.757002	0.612923	0.612923	0.235069	0.235069
The Nei Monggol Autonomous Region	0.597110	0.822436	0.822307	0.377361	0.377201
Liaoning Province	0.527779	0.913593	0.913593	0.731014	0.731014
Jili Province	0.580585	0.811558	0.789315	0.397828	0.359517
Heilongjiang Province	0.616979	0.749279	0.749279	0.214432	0.214432
Shanghai	0.511823	1.000000	0.954661	0.953800	0.865217
Jiangsu Province	0.535275	0.892533	0.892633	0.667428	0.667329
Zhejiang Province	0.503542	1.000000	0.984758	0.985932	0.955662
Anhui Province	0.702741	0.699616	0.699616	0.004467	0.004467

ENVIRONMENTAL REGULATIONS EFFECTIVE IN AGRICULTURE

Fujian Province	0.505919	0.995175	0.983123	0.967064	0.943242
Jiangxi Province	0.609310	0.848353	0.848353	0.392318	0.392318
Shandong Province	0.620758	0.752463	0.752463	0.212168	0.212168
Henan Province	0.700019	0.704415	0.704415	0.006280	0.006280
Hubei Province	0.659051	0.770908	0.770908	0.169724	0.169724
Hunan Province	0.598659	0.870489	0.870489	0.454065	0.454065
Guangdong Province	0.545911	0.945698	0.955698	0.732330	0.732330
The Guangxi Zhuang Autonomous Region	0.648060	0.817557	0.817557	0.26154	0.26154
Hainan Province	0.500000	1.00000	1.00000	1.000000	1.000000
Chongqing	0.616929	0.851763	0.851763	0.380650	0.380650
Sichuan Province	0.559097	0.940464	0.940464	0.682112	0.682112
Guizhou Province	0.647249	0.822573	0.822573	0.270876	0.270876
Yunnan Province	0.658762	0.749519	0.749519	0.137769	0.137769
Tibet Autonomous Region	0.513968	0.978866	0.978866	0.904546	0.904546
Shanxi Province	0.709086	0.689484	0.689484	0.0288430	0.028430
Gansu Province	0.690926	0.624463	0.624463	0.106432	0.106432
Qinghai Province	0.540969	0.893924	0.893924	0.652450	0.652450
the Ningxia Hui Autonomous Region	0.748248	0.415896	0.415895	0.799560	0.799560
Xinjiang Province	0.571472	0.809529	0.783781	0.416568	0.37151

Source: own

As can be seen from table 3, 2000 to 2014 the average technical efficiency under environmental regulation, in Shanghai, Fujian, Zhejiang, Guangdong province higher values compared with other provinces and cities, are greater than 0.95. It indicates that the eastern region of the environment regulatory effect is better than other regions. The average environmental technical efficiency and environmental regulation cost are not different in most provinces from 2000 to 2014 under the two environmental regulation

conditions. Fujian, zhejiang, Shanghai, jilin province and other places have tiny difference. In the general condition, the stronger the intensity of environmental regulation, regulation cost is higher. In this paper, the calculation results show that, from the overall situation, environmental policy of agricultural carbon emission reduction did not have obvious effect on the eastern coastal areas. The environmental policy played a role, but the effect is still very weak.

2.3. Study on the Relationship between Climate Policy Implementation Effect and Total Factor Productivity

Through measurement and analysis of environmental technology efficiency and environmental regulatory costs in different areas, the conclusion is that the implementation of climate and environment policy is poor, but environmental regulation cost is does exist. So this article will examine the effects of climate policy further. Along with Kyoto Protocol era arrival, the Chinese Government faces ever greater pressure to reduce Greenhouse gas emissions. China promise to reduce carbon dioxide emissions from 2008 to 2016. So we take 2008 as the boundary, the changes of environmental regulation costs before and after 2008 were analyzed, and the effects of gas consumption in east, central and west regions. And then use the strong environmental regulation and weak environmental regulations under the environmental technology efficiency of the average and the total factor productivity to regression, analysis of their specific relationship. In order to study the regional differences and time differences, three dummy variables are added to this paper.

TAB. 4: China's agricultural l environment technology efficiency Tobit regression

Variable	Model 1	Model 2	Model 3
Constant	1.020939***	1.021840***	0.732561***
T2008	-0.020812***	-0.020812***	-0.024403***
East		-0.005084	-0.009352
Middle		0.003497	0.000797
TFP			0.289162***

Source: own

From the calculation results in Table 4, the 2008 emission reduction policy makes the environmental technology efficiency has become lower. Many studies show that environmental regulation will improve the efficiency of environmental technology, so that production activities towards the frontier of environmental production. In this paper, the calculation results are not consistent with their research conclusions. In fact, China should increase the intensity of environmental regulation after Kyoto Protocol and improve the environmental technology efficiency. But the data results are not expected, probably because policy implementation effect is not obvious, or has less effect on agricultural development. When analyzing the regional difference of the environmental technology efficiency, it found that the regression coefficient is of no significantly, which indicates that the environmental technology efficiency has no difference in different areas. Conclusion is also more consistent. Finally, the relationship between the average environmental technical efficiency and total factor productivity of agriculture under the two kinds of environmental regulation are analyzed. There is a positive relationship between the two, when the total factor productivity increased by 1 unit, the environmental technology efficiency was also increased by about 0.3 units.

Conclusion

First, the TFP considering environmental regulatory factors is not clear increased, compared with no environmental regulations, Indicating that the current situation of China's carbon emission reduction policy has not produced innovative compensation effect. We should choose a reasonable and strict environmental regulation policies to strengthen the transfer and diffusion of environmental technology, while improving agricultural productivity and protecting the environment.

Secondly, the difference of the regulatory cost under the strong and weak environmental regulations is small, indicating that the effect of China agricultural environmental policy is not obvious, or less intensity of environmental regulation, resulting the difference in two cases is small. Therefore China should increase the intensity of environmental regulation, improve environmental technology efficiency.

Thirdly, further studies of regional differences and temporal differences in the efficiency of environmental technologies suggest that no difference in the effectiveness of environmental policies in the region. When we carry out environmental policy, we should consider regional differences in the level of development and other conditions, to adjust measures to local conditions to consider environmental regulation intensity. At last, the average TFP of all regions was more than 1, while the eastern region was the

highest followed by the middle. But the regressive phenomenon of technical efficiency existed in each region. The differences between empirical results by two models showed that evaluation on the efficiency of agricultural environment and pollution control measures should follow the characteristics and the mechanism of agricultural pollutants. A win-win situation of agricultural growth, pollution reduction and environmental efficiency promotion can be achieved by taking source reduction strategies. Nowadays, there is still a large space to improve China's agricultural environmental efficiency. During making policy, the space difference should be considered, and more targeted emission reduction strategies should be developed according to regional development and pollution characteristics.

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SELECTED MACROECONOMIC FACTORS AND THEIR INFLUENCE ON RETAIL PERFORMANCE

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JEL classification: E0, M2, L2

Abstract:

The author of this paper tests selected macroeconomic factors, which are supposed to influence the retail performance. The testing was carried out on the grounds of statistical apparatus. Based on previous research, a suitable indicator of retailing performance had been selected and it was used for testing of influences of gross domestic product and general unemployment rate. This research laid the grounds for classification of the strength of dependence of selected macroeconomic factors on the development of retailing. The results of this testing may be used for further scientific research and for prediction of retailing sustainability and performance.

Introduction

Each economic subject (an existing enterprise, a starting business, a bank, an investor) which is involved in given industry should make sure that they are aware of the factors which influence their field and which may affect its performance. This paper focuses on performance of retailing; it tests and assesses selected macroeconomic factors, which are supposed to influence the performances such as gross domestic product or general unemployment rate. This paper follows previous research which dealt with sustainability and performance of retailing from the viewpoint of consumers and their expenditures – see Mareš (2015a) and Mareš (2012). In addition, it is a follow-up of previously tested performance indicator see Mareš (2016). Based on previous research, it extends given issue of retailing performance towards macroeconomic quantity and wider environment of an enterprise. The results of this research may be used for prediction of retailing performance and sustainability. Moreover, it may be further developed by addition of other macroeconomic variables and by using multi-criteria analysis.

1. Methods, literature overview

This paper follows author's previous research, which focused, on population socio-economic levels and on impact of these levels on sustainability and performance of an enterprise or given industry. Previous research was grounded on statistical data, which were verified by means of statistical apparatus. The author also follows other research and professional literature.

- a) The issue of performance – this topic was inspired by those authors Kaplan and Norton (2002), who turned external benchmarks into internal. The author of this paper had adapted their idea for retail business and he applied the influence of GDP (external benchmark) and general unemployment rate HDP (external benchmark) on sales in retail business (internal benchmark).
- b) The choice of a suitable indicator of retailing performance – it was decided to use the sales as a suitable indicator of retailing performance because it had already been verified as a suitable indicator; see Mareš (2016). The sales indicator has a direct relation to market and it is not influenced by other factors.
- c) The issue of wider surroundings research and its relation to enterprise or industry – the author was inspired by Dedouchová (2001).
The choice of suitable macroeconomic indicators – the author was inspired by the method of Top down Approach see Sůvová and Knaifl (2008).
- d) In order to objectively assess macroeconomic variables on the stability and performance of retailing, the findings of author Řezábek (2009) about impact of financial crises on Czech economy were applied.
- e) Hypotheses verification – the verification of the actual hypotheses was carried out on the grounds of statistical data in sufficient time period for hypotheses verification Czech Statistical Office (2010e); Czech Statistical Office (2014c); Czech Statistical Office (2015a); Czech Statistical Office (2015b); Czech Statistical Office (2015d)
- f) Hypotheses assessment – assessment of actual hypotheses was carried out on the grounds of selected suitable statistical apparatus by Řezanková and Löster (2009) and Škaloudová (2015).

2. Results

If we wish to research the performance of retailing business in relation to macroeconomic variables, I need to consider the main indicators, which are supposed to be related to retailing sales and also to gross domestic product which includes not only the consumption but it also expresses the overall performance of the economy and so it contains potential multiplication effects, which may subsequently become evident on the sales (the retailing performance indicator). Another indicator is a general unemployment rate, which – in case of growing unemployment – is supposed to reflect the decrease of purchasing power of the unemployed.

2.1. The retailing performance and GDP

According to Czech Statistical Office (2016a) “Gross domestic product represents the summary of the values which has been added by processing in all sectors of activities which are regarded as productive ones (i.e. including market and non-market services) within the system of national accounting. It is a calculation in purchase prices, for which, market operations are performed (i.e. including product taxes and without product subsidies). The value of non-market services is expressed by means of summary of compensations given to the employees and of consumption of fixed capital“.

TAB. 1: Development of sales and GDP

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Sales in retail trade, except for motor vehicles and motorcycles (millions CZK)	834196	903232	940001	898062	897126	922962	932166	926671		
GDP Billions CZK	3507.1	3831.8	4015.3	3921.8	3953.7	4022.5	4041.6	4077.1	4260.9	4472.3

Source: Adapted from Czech Statistical Office (2010e); Czech Statistical Office (2014c); Czech Statistical Office (2015a); Czech Statistical Office (2015b); Czech Statistical Office (2015d)

Note: Retailing sales (legal and natural persons), except for motor vehicles – the figures for years 2014, 2015 were not available. GDP figure was not available for 2016.

In case of above stated data we can expect due to economic base linear correlation. For linear correlation calculation, we can carry out correlation analysis. „Correlation analysis aim is in research of linear correlation between variables in case that it makes sense to set order. Correlation intensity is assessed on a base of the correlation coefficient that is number within a range $<-1; 1>$. Value 0 means linear independence, value 1 full direct dependence (one variable is linear combination of the other) and a value -1 means indirect correlation. Positive values mean positive correlation (with growing value or order of one variable there are growing values or order of the second variable), negative values mean negative correlation (with growing value or order of one variable there are decreasing values of order of the second variable). Correlation coefficient expresses intensity of mutual correlation. In case of quantitative variables there is used Pearson’s Correlation Coefficient as it has been shown by Řezanková & Löster (2009).“

FIG. 1: Pearson's Correlation Coefficient

$$r = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}}$$

Source: Škaloudová (2015)

In our case, we may adapt given formula in order to see linear dependence between GDP and the sales as follows.

FIG. 2: Pearson's Correlation Coefficient – retail trade – GDP

$$r = \frac{\sum_{i=1}^n (GDP_i - \overline{GDP})(SA_i - \overline{SA})}{\sqrt{\sum_{i=1}^n (GDP_i - \overline{GDP})^2 \sum_{i=1}^n (SA_i - \overline{SA})^2}}$$

Source: adapted from Škaloudová (2015)

Wherein: r – Pearson's Correlation Coefficient, GDP – Gross domestic product, SA – Sales in retail trade, except for motor vehicles and motorcycles

Pearson's Correlation Coefficient – retail trade – GDP amounts to 0.946806. Pearson's Correlation Coefficient – retail trade – GDP tells us that sales in retail trade, except for motor vehicles and motorcycles is 94.68 % influenced by GDP, the unexplained part of the variable i.e. 5.31 is caused by other factors. In this case, it is a positive correlation with growing values or their order. The variables of one value grow and so does the order of the second one, see Řezanková and Löster (2009). We may also conclude that nonzero value see Škaloudová (2015) suggests that the quantities are interdependent. We may even speak of dominant dependency because the quantity gains the value of 94.68 %. The remaining 5.31 % may be regarded as nonmaterial.

2.2. Development of the sales and unemployment

According to Czech Statistical Office (2016a) "General unemployment rate (ILO) is calculated as a percentage of the unemployed from the whole labour. Both numerator and denominator of this fraction are constructed according to the international definitions and recommendations (Eurostat and The International Labour Organisation ILO). It provides estimates from selective inquiry of labour." As it has been shown by The unemployment rate may be regarded as a key factor, which shall be reflected in retailing sales. It is possible to suppose that higher unemployment rate will have a great impact on decrease in retail sales, which shall be proven by correlation analysis.

TAB. 2: Development of the sales and unemployment

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Sales in retail trade, except for motor vehicles and motorcycles (millions CZK)	834196	903232	940001	898062	897126	922962	932166	926671		
ILO %	7.1	5.3	4.4	6.7	7.3	6.7	7	7	6.1	5

Source: Adapted from Czech Statistical Office (2010e); Czech Statistical Office (2014c); Czech Statistical Office (2015a); Czech Statistical Office (2015b); Czech Statistical Office (2015d)

Note: Retailing sales (legal and natural persons), except for motor vehicles – the figures for years 2014, 2015 were not available. GDP figure was not available for 2016.

In our case, we may adapt given formula in order to see linear dependence between GDP and the sales as follows.

FIG. 3: Pearson's Correlation Coefficient – retail trade - ILO

$$r = \frac{\sum_{i=1}^n (ILO_i - \overline{ILO})(SA_i - \overline{SA})}{\sqrt{\sum_{i=1}^n (ILO_i - \overline{ILO})^2 \sum_{i=1}^n (SA_i - \overline{SA})^2}}$$

Source: adapted from Škaloudová (2015)

Wherein: r – Pearson's Correlation Coefficient, ILO – General unemployment rate, SA – Sales in retail trade, except of motor vehicles and motorcycles

Pearson's Correlation Coefficient – retail trade - ILO amounts to –0.38425. Pearson's Correlation Coefficient – retail trade – ILO tells us that sales in retail trade, except for motor vehicles and motorcycles are indirectly influenced by the general unemployment rate, which is –38.425 %. The negative result means that the growing unemployment rate and sales are inversely related, which means that retail sales decrease together with growing unemployment rate and the result –38.425 % may be interpreted so that the retail sales are 38.425 % influenced by unemployment rate. In this case, it is a negative correlation with growing values or their order. The variables of one value decrease and so does the order of the second one, see Řezanková and Löster (2009). We may also conclude that nonzero value see Škaloudová (2015) means that the quantities are dependent. We may also speak of minor dependency because the quantity gains the value of –38.425 %.

3. Discussion

Based on previous general findings regarding stability and performance of the industry, applied regardless the type of industry see Dedouchová (2001), Šůvová and Knaifl (2008) and in terms of approach to enterprise performance regardless the industry based on combination of external and internal benchmarks see Kaplan and Norton (2002) we have achieved a deepened understanding of retail trade performance based on previously statistically-verified research of given industry see Mareš (2016), which dealt with performance and stability of retailing related to mandatory and non-mandatory expenditures see Mareš (2012), Mareš (2015a) and Mareš (2015b). In consideration of the fact that retail trade performance has already been complexly studied in previous research from viewpoint of the consumers and their key factors, the author of this paper began testing wider environment of enterprises and their relation to industry performance by means of selected macroeconomic indicators. Further research will focus on addition of other macroeconomic values and application of multi-criteria analysis.

Conclusion

Each industry has its specifics and key factors, which influence the productivity and sustainability of given business. If one wants to be successful in given business, it is necessary to become aware of these key factors and learn about their ability to influence the performance and stability of given industry. In this paper, based on previous research and theoretical prerequisites, the author chose and tested the following key factors: Gross Domestic Product and general unemployment rate. In addition, the paper examined the ability of these key factors to influence the performance (sales) of retailing business. As a result, the following findings were reached: Pearson's Correlation Coefficient of retailing and GDP has reached the result 0.9468. It means that the retailing sales are strongly dependent on the development of GDP and thus, we may conclude that key factor of GDP has been verified. While testing key factor of general unemployment rate, Pearson's Correlation Coefficient of retailing and general unemployment rate has reached the result of mere -0.3842 . It indicates that there is inverse proportion between the retailing sales and general unemployment rate. Thus, we may speak of minor, however verified, dependency because the quantity has gained the value -38.425% .

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HEALTH AND SAFETY MANAGEMENT IN COMPANIES OF ALL SIZES

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Keywords:

health and safety at work – hazard and risk management – risk assessment – health and safety management

JEL classification: J28

Abstract:

The main task of companies of all sizes: small, medium and large according to the current situation is to improve occupational safety and health conditions by using risk management. Contribution characterises management system of occupational health and safety as an aid to risk management can be used by companies to help make their workplaces safer and healthier and to improve their business efficiency and competitiveness. A well conducted workplace risk management will protect employees by eliminating or minimizing work-related hazards and risks. The contribution is output solutions of grant tasks VEGA No.1 / 0662/15 - Economic and social tools as a factor for job creation in companies.

Introduction

Every company of all sizes could take various benefits if they invest in occupation safety and health management system. Its simple improvements could mean saving for the company, rise profitability, competitiveness and also motivate the employees. By having an occupational safety and health system the company could have an effective and efficient framework to help minimize and prevent occupational injuries, accidents, medical illnesses or even death.

Recently companies face a variety of geographic, cultural and technical challenges in managing safety and health effectively. One of the key tools for improving safety and health conditions and preventing occupational accidents and illnesses in small and medium-sized enterprises is workplace risk management. Risk management encompasses a whole range of solutions, which can also include company safety and health policies, workplace safety and health committees, training and information on occupational safety and health, setting targets for occupational safety and health improvements and risk communication.

If companies' management demonstrates a system of managing safety and health in words and actions, through policies, procedures and financial incentives, that it is

committed to worker safety and health, supervisors and workers will respond by ensuring safe work is performed throughout the organization.

1. Review of Literature and Methods

There are a few principles of occupational safety and health that are important to consider such as effective health and safety procedures and policies, leadership and commitment to enhance and improve occupational safety and health, involvement in risk assessment programs, competent and trained employees in the workplace, efficient measures for risk control, continuous monitoring and process reviews. According to Institute of Safety and Health Management (2014) these principles of occupational safety and health apply to a majority of companies, whether it is a small, medium or large-sized company.

Occupational health and safety management is in Business dictionary defined as an organized efforts and procedures for identifying workplace hazards and reducing accidents and exposure to harmful situations and substances. It also includes training of personnel in accident prevention, accident response, emergency preparedness, and use of protective clothing and equipment.

A health and safety management system involves the introduction of processes designed to decrease the incidence of injury and illness in the employer's operation. Successful implementation of the system requires management commitment to the system, effective allocation of resources, and a high level of employee participation. The scope and complexity of a Health and Safety Management System will vary according to the size and type of the company (Alberta, 2016).

Companies of all sizes are required to manage occupational safety and health at work so as to prevent accidents and ill-health. A safe workplace requires a systematic approach to finding and fixing hazards and risks. This system help companies to manage employees' safety and health and get the balance right between the size of any safety and health problems. Occupational safety and health management system must be risk-based the required safety measures must be proportionate to the real risks involved and must be adequate to eliminate, control or minimise the risk of injury. The system must involve consultation between management of companies and employees who are required by law to cooperate with companies in the safety-management process. For managing workplace safety and health system the law requires employers to identify the hazards, carry out a risk assessment and prepare a written safety statement (HSA, 2006).

In this content according to ILO (2013) hazard means a situation or thing that has the potential to harm a person. A hazard can, therefore, be anything – work materials, equipment (e.g. machinery, tools, etc.), dangerous substances (dust, disease-causing micro-organisms, chemicals, pesticides, noise, etc.), transport, by-products, poor

workplace layout, poor work organization, methods or practices, attitudes. There are an unlimited number of hazards that can be found in almost any workplace.

Risk assessment (HSA, 2006) means that all companies have a duty to write down workplace risks and what to do about them. Assessing risk also means companies must examine carefully what in the workplace could cause harm to the employees, other employees and other people (including customers, visitors and members of the public).

Risk is the chance or probability that a hazard will actually result in injury or illness or damage to property, equipment or the environment, together with an indication of how serious the harm could be, including any long-term consequences. It is a combination of the probability of an occurrence of a hazardous event and the severity of injury or damage caused by this event. Hazards at work may include: noisy machinery, a moving forklift, chemicals, electricity, working at heights, a repetitive job, bullying and violence at the workplace. Risk is the possibility that harm - death, injury or illness might occur when exposed to a hazard (ILO, 2013, 2014).

The contribution characterise occupational health and safety management system of companies of all sizes: small, medium and large using content analysis method and point out that increased attention to occupational safety and health issues can bring many benefits for a company.

2. Health and Safety Management in Companies of All Sizes

Safety and health risk management is an increasingly widely used technique in businesses worldwide. According to European agency for safety and health at work (2016) evidence shows that employees of smaller companies are subject to greater risks than the employees of larger ones, and that smaller companies have more difficulties in controlling risk. Various studies, including European Survey of Enterprises on New and Emerging Risks survey show that the challenges in handling occupational safety and health are particularly significant as the companies gets smaller (EU-OSHA, 2016).

When carrying out a risk management, the different nature of safety hazards and risks and health hazards and risks has to be taken into account. This is especially the case when evaluating the long-term health consequences of exposure to workplace hazards and in the determination of appropriate risk controls. Safety hazards and the resulting risks are generally more evident and therefore usually straighter forward for an employer to deal with. The high level of risk from an unguarded but dangerous machine, a cutting press, for example, is evident. The injury that can result is immediate and evident to all (ILO, 2013).

Health hazards and the resulting risks are often less evident and, therefore, less straight forward for an employer to deal with. Health problems caused by work can develop unnoticed and, in some cases, may not appear until much later in life. Early diagnosis

and treatment may prevent a person's condition from worsening and may even save a life. The effects of repeated, often low dose, exposure to a hazard – over weeks, months and years – also have to be taken into consideration (more details: Szarková, Andrejčák & Matkovčíková, 2014).

Hazard and risk are used interchangeably in everyday speech; consequently, to avoid confusion when carrying out a risk assessment, both terms need to be clearly defined and differentiated. A hazard is anything that has the potential to cause harm, whether to the detriment of the health or safety of a person, or damage to property, equipment or the environment. The potential for harm is inherent in the substance or machine or poor work practice, etc. While hazards are intrinsic to a given substance or process, risks are not and so will vary depending on the levels of risk reduction measures applied. For example, pesticides are intrinsically toxic – they are hazardous – and spraying them may pose serious health risks to farmers or farmworkers. But where those hazards are properly controlled, the risks can be reduced to acceptable levels. When deciding on the acceptability of risk, it is important to take into account the gender, age and health of the workers for whom the assessment is being conducted and also to bear in mind their input (ILO, 2013).

The most common risk assessment tools are checklists, which are a useful tool to help identify hazards. Other kinds of risk assessment tools include: guides, guidance documents, handbooks, brochures, questionnaires, and interactive tools - free interactive software, including downloadable applications which are usually sector-specific (EU-OSHA, 2014).

Relatively poor occupational safety and health management can be attributed to specific characteristics typical of small companies such as structural and organisational features of work and employment, economic position and business relations, business diversity and flexibility, remoteness from regulatory reach, attitudes and competencies of the owners and workers in such small establishments or their short life cycle. These characteristics makes it more difficult for micro and small-sized companies to create and maintain a safe and healthy work environment (EU-OSHA, 2016).

According to European agency for safety and health at work (2016) some other factors that have an impact in the management of occupational health and safety in these establishments when compared to larger ones include: difficulties in regulating, since they are typically heterogeneous, geographically scattered, and lack cohesive representation. Budgetary constraints meaning there is often lack of resources to implement safety and health initiatives and interventions such as paying for health and safety advice, information, tools and controls, having less resources prevents the implementation of prevention activities, less time and energy is available for non-core tasks, which safety and health management is sometimes perceived to be. Good occupational safety and health is not seen as a priority, risk assessments can be costly

and confusing to complete, particularly if a business lacks the resources or the safety and health know-how to do so effectively and also reaching micro and small-sized companies directly can be difficult for organisations promoting or enforcing good safety and health in the workplace.

Discussion and Conclusions

The current situation in many companies shows that accidents and illnesses can ruin lives as well as affecting businesses, for example if output is lost, machinery is damaged, insurance costs increase or other financial penalties. In many countries employers are legally required to assess the risks in their workplace so that they can put in place a plan to control these risks. The concept of a workplace risk management is that it is a continual, ongoing process. A risk management should identify the hazard and the required control measures, an inspection should verify if the required control measures are in fact being used (ILO, 2014).

A workplace safety and health management is a careful examination of what, in the work or business, could cause injury or ill health to people. It allows you to weigh up whether you have implemented enough risk control measures or should do more to prevent harm to those at risk, including workers and members of the public. The aim is to make sure that no one gets hurt or falls ill. The results of a risk management should help employers choose which good practice measures, in the form of risk controls, are most appropriate. Workers and others have a right to be protected from harm caused by an employer's failure to take reasonable risk control measures. A risk management involves dealing with the levels of risk in the actual conditions present at the time the risk management is carried out. It is important to identify who may be at risk and the safety and health consequences for each hazard separately as different risk control measures to prevent or reduce the probability and severity of harm will be required for each hazard. The risks in small and medium-sized enterprises are especially familiar and the necessary risk control measures are also well known and easy to apply (HSE, 2014).

Although small and medium-sized enterprises are very important and represent the vast bulk of businesses worldwide, many of them fail to grow or even survive. Each year, problems of low productivity and poor quality products and services, as well as marketing and finance difficulties lead thousands to bankruptcy. These obstacles often result from the same difficulties and lack of organization that make work hazardous and unpleasant. Such small and medium-sized enterprises have untapped potential for change that can easily lead to better product quality, improved working conditions and safety and health management, and overall a more competitive enterprise. However, they often lack the tools and techniques to implement such changes.

Health and safety management can be used to establish priorities so that the most dangerous situations are addressed first and those least likely to occur and least likely to

cause major problems can be considered later; this is also cost-effective. Using risk management to tackle their daily OSH problems avoids SMEs having to over-rely on (often costly) external experts, consultants or officials to advise them what is wrong and how to solve their problems although they may, of course, seek advice and help from such people (more details: Matulčíková, 2016).

Every company is ultimately responsible for organizing and implementing this health and safety management. OSH is often seen as so much paperwork, red tape, expense and boring rules and regulations that are difficult to understand and tend to make it more difficult for owners and managers to run their businesses. Even among those who do not think in this way, many believe that because they have had few or no accidents, all that is needed is basic common sense and that, in any case, most accidents these days are unavoidable (ILO, 2013).

Health and safety management gives employers and businesses a way to be proactive, to identify potential risks and to take action to remedy problems before they cause an accident or ill-health. They can generally make their businesses safer and healthier, and reap the benefits of improved productivity and quality. It should also benefit businesses through better organization of working practices potentially increasing productivity.

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EVALUATION OF EDUCATION AND ITS APPLICATION IN BUSINESS PRACTICE

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Keywords:

education – human resource – evaluation of learning – level of training evaluation – benefits of education

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Abstract:

Evaluation of learning/education is considered to be the final stage of the cycle in systems approach to education and employee development. The main purpose of evaluation is to monitor and subsequently compare the amount and structure of financial sources invested in the process of education against the benefits of education/learning. If a business wants to evaluate the results and return on investment in education, it has to elaborate not only the aims of education in detail, but it also has to determine the final outcome of the educational process and their transformation into the final aims of the business, classified into immediate and long-term benefits.

Introduction

The need for education appears together with work performance, and it is inevitable in view of the rise in new working activities and new qualification requirements. The aim of corporate education is to develop knowledge, skills, and aptitudes of individuals and the development of the knowledge of teams. In business practice, numerous personnel workers and also private businesses deal with the issues of how to evaluate education, from the aspect of its results. Evaluation of education in relation to costs incurred requires the elaboration of an evaluation system with specification of criteria, which will be used as the basis for the evaluation of educational benefits. In the empirical part of research under the project KEGA 014EU-4/2016, we focused on the attitudes, opinions and ways of evaluating results of further corporate education.

1. Methodology and Review of Literature

The evaluation of education is not only a final stage of the educational process, but it has to be perceived as an integral part of needs analysis, for the purpose of developing future programmes of individual educational activities. The evaluation of education is utilised in a business for various purposes. It is for example:

- a) Information on a particular level of the knowledge and skills acquired, background for expressing the aptitude for the performance of certain activities (Szarková, 2016).
- b) Information about the fulfilment of personal plans of individual employees, which include self-actualisation needs (Matkovčíková, 2016).
- c) Information about a gradual fulfilment of career targets of individual employees.
- d) Helpful in investigating effectiveness and meaningfulness of investments spent.
- e) Efficient for the process of education in itself can reveal shortcomings in its implementation and lead to adjustments to the educational process itself (Přívarová, 2015).
- f) A precious source of planning for the planning and designing of educational activities.

In the empirical part of research under the project, we focused on the evaluation of education that was carried out in businesses. Respondents were human resources with completed secondary education closed with maturity examination and university education (of all the three cycles). Respondents were chosen by random selection, while they had to fulfil criteria specified beforehand: completed education and type of professional activity. The research was carried out by means of the interview method and the questionnaire method with 267 respondents. In terms of the number of employees, the following was the involvement of employees in the research: respondents from small businesses – 52 respondents, respondents from medium-sized businesses – 80 respondents, respondents from large businesses – 135 respondents.

The aim of empirical research was to assess the application of approaches to evaluating corporate education. The research was rather extensive, but in this paper, we focus on the application of approaches to evaluation based on targets. In contemporary advanced society, investment in education and development of human resources represent an important factor of increasing the productivity and competitiveness of businesses. Hamblin (Hamblin, 1974) defines the evaluation of corporate education as an attempt at acquiring information (feedback) about the effects of a particular educational programme and at the same time assessment of its value.

The basic starting point of evaluating results and effectiveness of corporate education is to define relevant evaluation criteria. Milkovich and Boudreau (1993) divide criteria of evaluating corporate education process into internal and external ones. While the internal criteria are connected with the content of programme of training, (e.g. subjective evaluation of the course of training by its participants), external criteria relate to primary aim of the training programme (e.g. change in performance, increase in turnover, decrease in costs, and the like). Despite the influence of education on the business's final outcomes, it is not possible to unanimously differentiate its effects from the influence of other factors.

2. Results

We have to deal with the issues of education evaluation in three time dimensions, i.e. before the beginning of the training during its preparation, planning and designing educational activities; during the training, so that participants' or management's needs may be included in the training, and also after the training. The most comprehensive evaluation is held after the completion of educational activities.

In terms of the application in practice, two groups of models were constructed, namely evaluation models based on aims (Kirkpatrick, 2006) and evaluation models based on a systems approach (Eseryel, 2002), which are currently worked out by other authors.

The present paper deals with the approach to evaluation based on aims. The starting approach of this evaluation is Kirkpatrick's model of evaluation, called also Kirkpatrick's model (Kirkpatrick, 2006) of evaluation of training: Reaction, Learning, Behaviour, Results.

According to Kirkpatrick, education consists from the following steps (levels):

Step 1: Reaction – examines and evaluates how the participants liked the training/education; the rate of satisfaction as compared with expectations, satisfaction with the content of education, with instructors, methods and forms of education, with organisational aspects of educational event. The following are most frequently used methods: observation (during the process of education), interview, and questionnaires.

Step 2: Learning – examines and evaluates what participants of the training have learned, the scope of knowledge and skills acquired, what changes have occurred in their attitudes. The quality of attained knowledge and skills is assessed by means of methods of evaluation (oral, written, practical exams, tests).

Step 3: Behaviour – examines and evaluates how the results of education in work performance have been reflected in the actual work performance, how they newly acquired knowledge and skills have been reflected in practice. The transfer and rate of utilisation of transfer and rate of utilisation of acquired knowledge and skills in practice are also examined. The following methods are used: observation, interview, discussion, questionnaire, action plan, comparison with control group, et al.

Step 4: Results – examines and evaluates particular results of education in relation to cost cutting, quality improvement, productivity increase, effectiveness, etc. Methods used include the interview with top management, methods used by the business for the investigation of effectiveness (profitability, profit/cost ratio, productivity, etc.). It may be difficult to precisely identify and evaluate other factors that influence the overall effectiveness of a business, as well as other economic influences, as for instance changes on the labour market, competition, inflation, and the like.

Apart from the four-level Kirkpatrick model, we can come across also with other models of evaluation. It means, in fact, the elaboration and extension of the original model. A well-known model is the Hamblin model, which extends the third level into two levels: evaluation of the change in the behaviour of the participant who has completed the training and the evaluation of the influence of this behaviour to an organisational unit, where the participant works (Craig, 1996).

Kirkpatrick's model has been extended by the fifth level Jack J. Phillips (Phillips, 2003). He added Return on Investment (ROI) to the original levels. For this reason, Phillips' model is denoted as the Return on Investment model, or ROI model. The basic aim of this step is the return on the funds invested. ROI (Return on Investment) examines the efficiency of education and development on the level of achieved results. The ROI indicator has however several modifications in the area of education and human resource development: ROTI (Return on Training Investment), HCDF (Human Capital Development Framework), and HC ROI (Human Capital Return on Investment).

In empirical research, we analysed the application of approaches to evaluation of education in practice according to size of individual business entities

TAB. 1: Approach to evaluation of education in businesses in %

Level of evaluation	Analyzed businesses by number of employees		
	Small business (52)	Medium-sized business (80)	Large business (135)
Reaction	98	100	100
Learning	60	60	73
Behaviour	98	100	98
Results	96	73	89
Return on Investment	0	2,5	8

Source: results of empirical research

When evaluating education all the methods mentioned above can be applied at all the levels of education mentioned above and they are often applied in businesses. The least applied are calculations of return on investment, in view of a difficult quantification of necessary data. Respondents' opinions indicate that the most important in education are:

- a) Transfer of knowledge to workplace, i.e. the scope to which participants of educational programme use new knowledge and skills in their work

performance. The most frequently applied method of investigating was the method of structured interview with managers and individual participants of the educational programme. Likewise, the method of direct observation has been useful for the evaluation of differences in the work between participants of education and the employees did not take part in the programme/training.

- b) Results achieved, the focus was on the evaluation of education on the level of organisational unit, the subject of analysis was the influence of educational programme on the increase in the productivity of labour, cost reduction, decreasing the rate defective products and the like. Background materials for this evaluation were gained from top managers of businesses by means of structured dialogues, and sometimes also benchmarking was used.

Only few respondents, representing businesses gave their opinions of the application of the evaluation based on the calculation of return on investment into education. The fifth level of Philips' model is applied in only few businesses. Responses obtained show that this fifth level is used more frequently.

The evaluation of the resulting value, i.e. the overall benefits that the business gains from the implementation of educational activities, is demanding for many businesses. Likewise difficult is the calculation of the final benefit in businesses is considered to be an orientation value, because many data on the benefits of education are determined by means of methods that are considerably subjective (are a matter of personal opinion).

3. Discussion

The strategy of corporate education is a professional preparation oriented to developing job-specific knowledge, skills, development of abilities and knowledge. Respondents' opinions indicate that educational activities are directly connected with the work performance, and the knowledge acquired is applied in practice. A crucial part of further education in many businesses has been reduced to obligatory re-qualification trainings, whose mandatory nature is based on valid legislation. For this reason, also calculations of return on investment are largely not made, since a substantial part of trainings is obligatory. After the closing of educational activities, a regular ritual of expressing participants' satisfaction with the training is held. Courses are favourably assessed in terms of professional content and the instructor's didactic routine, and respondents appreciated as high standard of these courses. It is determined who is to participate and in what kind of activity. This is followed by the presentation of the knowledge acquired in a close circle of co-workers. The dissemination of this knowledge is expected to impact on the productivity of labour, improvement of quality, as well as decline in defect products, etc. Employees are expected, often based on a subsequent team education, to identify procedures and methods of utilising the acquired knowledge in their work performance, which should be reflected also in their work results.

It is difficult to evaluate the return on investment in educational activities based on economic indicators. It is even more demanding to assess the changes in knowledge, abilities, in behaviour, but also evaluate a higher rate of rational approach, improvement of leading people, better communication, and other factors that present benefits of education. To achieve this, it is necessary to improve methods of education evaluation and apply several methods in concrete cases, so that we could eliminate subjective (biased) approach in methods applied; it is also necessary to describe the evaluation criteria of setting forth aims of education.

Conclusion

If the evaluation of training/education is to fulfil its significant role in increasing an effective spending of funds, the evaluation of training/education has to be viewed as some system with defined basic areas of evaluation and evaluation criteria. Consider evaluation as a continuous process, which is carried out before, in the course of and also after the closing of education. Elaborate criteria of evaluation and their degree of fulfilment before and after the training. Evaluate training/education according to individual and specific needs of employees, participating in this education/training with respect to their functional classification and job positions. Elaborate a system of evaluation and familiarise employees and managers with this system. Its part is to determine responsibility for the fulfilment with the specification of particular persons, with the specification of roles and determination of the content of analysis of evaluation criteria monitored.

Numerous managers and businessmen are well aware of the fact that human resources stand for the most important assets, and yet, they cannot demonstrate how the finance invested in the human capital improves economic results of the entire society.

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THE IMPACT OF HUMAN RESOURCES ON COMPETITIVE POSITION OF POLISH CREDIT UNIONS

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JEL classification: M21, M54

Abstract:

Polish credit unions have been operating for more than twenty years on the Polish market under the name of Spółdzielcze Kasy Oszczędnościowo-Kredytowe (SKOK). They strengthen their position every year, winning new customers (over 2 million), opening new branches (near 2000) and increasing their capital. The authors conducted a study in which they examined whether there is a relationship between the human factors as a part of competitive potential, and competitive position obtained by the these institutions. The research also aimed at giving an answer to the question whether the differences in the levels of competitiveness of human resources in different credit unions determine the financial and market results of Polish credit unions. The article is a presentation of the results of research in this area.

Introduction

On the Polish financial services market, banks are dominant entities. Customers are increasingly looking for alternative financial institutions, where they can take advantage of a full range of bank services.

One of the alternatives is credit unions, already operating for more than twenty years on the Polish market. Each year credit unions strengthen their position, gaining new customers (over 2 million in 2014.), opening new branches (almost 2,000 in 2014.) and increasing their assets. Credit unions function as a cooperative, which means that they can provide services only to its members, among which there should be certain professional or organizational ties (eg. workers from one workplace).

The Polish credit union sector is dominated by "small" institutions whose combined assets do not exceed 100 million zł (29 offices), but they hold only 5.5% of the assets of the entire sector. However, we must note that the credit union sector is very

concentrated, with the value of the assets of the six largest banks exceeding 500 million zł, and the assets of three of them exceeding 1 billion zł. This means that the six largest credit unions have a total of more than 73% of sector assets, i.e. 13 849 million zł. A similar situation can be seen by analyzing the number of members of each union. The six largest, with over 100 thousand, members hold more than 63% of the total number of members of the sector. This data shows that the situation of unions belonging to SKOK system is very diverse. Therefore, the question arises about the factors that make some unions achieve a much better competitive position than others. In this context, we cannot forget the resource school and the name of J. Barney (1991), who found that the company's competitiveness can only be maintained by having adequate resources. In view of the fact that the publications on Polish credit unions often stress the importance of charisma of the founders of the movement and competencies of employees in building their position on the market (Evans & Richardson, 1999), the authors decided to check the relationship between the competitiveness of the Polish credit unions and their human resources. In this context, the aim of this article is to investigate the relationship between human resources of particular Polish credit unions and their competitive position based on the results of the empirical study.

1. Literature overview

Each company derives its efficient functioning from many factors. One of them is the proper use of the basic factor, which is a factor of human labor. Therefore, a growing interest in human capital can be observed. Market changes and the practice of companies that have been market success, justify treating human resources as the main resource of an organization (Bielski, 2007). Adequate human resources affect the competitiveness of companies in the functioning of the organization in terms of the existing competition and minimizing costs associated with its operation (Barney & Wright, 1997). In addition to human resources, each company also has other material and immaterial resources, but often human resources, which refer to all employees of a given organization, influence the decisions to use other resources at hand (Sępek, 2010). Human Resource Management sees people as a valuable source of success of the company and treats them not as variable costs, but as assets, and therefore is of the opinion that it is necessary to provide the best leadership and opportunities for the full development of their capacity (Armstrong, 1996). Consequently, human resource management as a competitive factor of an enterprise, is treated as a potential source of strategic competitiveness (Koziol, Piechnik-Kurdziel & Kopeć, 2000).

The competitive position, in turn is treated as a result of competition and competitiveness so as ex-post. Attention is drawn to the fact that organizations operating on competitive markets should set a target competitive position and try to achieve it through appropriate strategies and tools to compete. In literature one can find a lot of discrepancies in the way of defining the competitive position and its relationship with other elements of competitiveness (Stankiewicz, 2005).

In literature one can extract a definition of competitive position, which is based on the assertion that development strategy should be the concept of the target market position, which the company wants to achieve and the determination of the method of attaining it by obtaining a competitive advantage (Kaleta, 2010). In other words, the competitive position is regarded as the ultimate effect of competition. At this point, we can quote the definition of the competitive position formulated by M. Porter (1985), who defines it as an effect of creating and maintaining better results, which are based on the results of owned resources and the market conditions of supply and sales, than the results of competitors. This definition entails aspects relating to both the environment (market conditions) as well as the inside of the organization (resources), which causes it to be very multidimensional and timeless. G. S. Day (1997) also points to the competitive position as a result, defining it as a result of competing obtained as a result of application of specific competitive strategy.

Second clearly separated group definitions treat the competitive position as a source of achieved competitive advantage. This means that the competitive position is a manifestation of the companies' possibility of competing seen *ex ante* (Stankiewicz, 2005). The best-known definition found in this group, was presented by the Group Strategor and it presents competitive position as the sum of strengths and weaknesses of the company (Strategor, 2001)

What is more, one can come across some definitions that treat competitive position as a cause, a manifestation and a measure of competitiveness. For example, J. and J. Taggart (1999) define competitive position as the result of interaction between the competitive, potential competition process and the results of this competition.

Cited definitions and approaches to defining the competitive position show a large variety of possible points of view, but careful analysis of these approaches shows that in the context of the assumed objectives, they are relevant and adequate to the assumptions presented by the author. This shows that in order to fully understand this concept, it is insufficient to familiarize oneself with its definition. It also seems necessary examine the basic assumptions adopted by the researcher defining this concept. In this article, competitive position is defined as the result of competition in the sector, considered against the performance of the competition and will be measured by financial results and market performance achieved by credit unions (Woźniewska 2011). According to the definition, the aim of operationalization of the concept of competitive position was to develop a way to measure it. The specificity of the research group, manifesting itself in the form of the legal operation of credit unions on the Polish financial services market, determined the choice of indicators based on which the analysis of financial results and market conditions have been conducted. The analysis of financial results in terms of profitability, liquidity and efficiency was based on the KAPER report formulated by the Fund National Credit Unions, used by all credit unions in Poland, and market performance has been calculated on the basis of the number of members of

a given union (due to the fact that unions are cooperatives, it will be more adequate approach). In addition, the choice of indicators, which are commonly used the unions, ensured comparability of the values indicated by various unions and enabled acquisition of the data needed for the analysis.

2. Methods and results

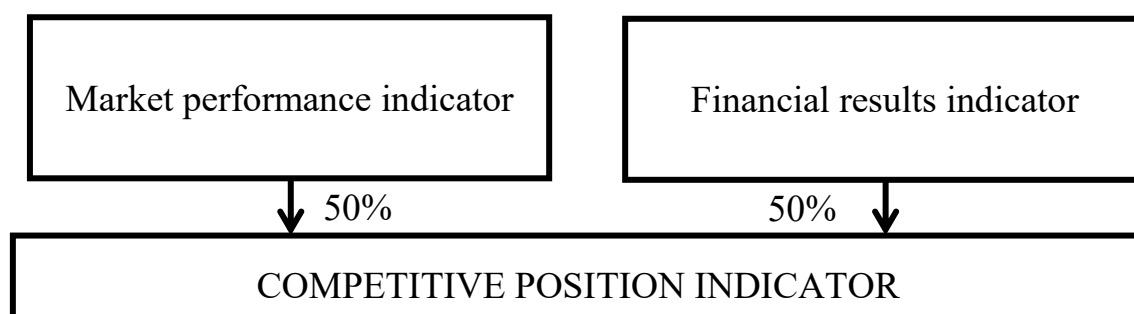
The basic premise of the research in this article, was to examine whether there is a relationship between human resources of individual credit unions and the competitive position achieved by them. Therefore, research hypothesis was formulated as follows:

H1: The level of competitiveness of human resources held by Polish credit unions differentiates them in terms of achieved competitive position.

Due to the design of statistical tests, in the research process in each case alternative hypotheses were formulated additionally to the above substantive hypotheses. The null hypothesis is always a hypothesis about the lack of differentiation (Szreder, 2010).

Implementation of the research required the use of both primary and secondary sources of information. The analysis of secondary information included theoretical monographs and research reports included in dissertations, articles, conference papers and statistical reports. The analysis of the primary information was based mainly on quantitative research and observation. The research was conducted in the period from October 2014 to March 2015 using a distributed questionnaire. In the study the author used a method of full selection, which means that questionnaires were sent to all ($n = 51$) credit union operating at that time on the Polish market. The data collected in the course of empirical research underwent the formal and substantive control, which resulted in classifying 27 unions to the study sample.

To check the validity of the research hypothesis, the author used statistical analysis tools for the analysis of dependency. Due to the inability to use parametric tools, resulting from the sample size, a nonparametric test was chosen as an alternative way of analysis of variance between groups, namely the Kruskal–Wallis one-way analysis of variance by ranks comparing the distributions of the variable in $k > 2$ populations. The dependency study was based on the use of a questionnaire, which consisted of two parts. In the first part, the subjects were to give the market and financial results generated by their unions (based on the report KAPER) that were applied to develop an indicator of competitive position. In view of the fact that in the analysis of the competitiveness of enterprises, elements such as profitability, liquidity and efficiency are usually taken into account, they served to create a financial performance indicator. (As the procedure for an indicator competitive position creation was multi-stage, it has not been presented in details in the article.)

FIG. 1: Indicator of economic performance creation scheme

Source: own construction

The next step was to calculate the indicator of competitive position for all unions by means of the developed procedure (indicator of market performance was assigned a weighting of 50% and the financial results indicator of 50% - figure 1.).

To apply the Kruskal-Wallis test, it was necessary to replace the raw results with the ranks. The ranking procedure based on percentiles enabled the creation of three independent union groups, ie .: achieving low competitive position (rank 1), which included eight unions, reaching an average competitive position (rank 2), which enrolled 9 unions and achieving high competitive position (rank 3), which included 10 credit unions.

The second part of the research questionnaire was constructed on the basis of the grading scale (due to the scale used, the author formulated a hypothesis using the term "competitiveness level"). According to the instructions, respondents were asked to evaluate in eight questions

human resources owned by their unions compared to other credit unions operating on the Polish financial services market in a scale of 1 to 5:

- 1 - "my resource is far worse than in other credit unions"
- 2 - "my resource is a little worse than the other credit unions"
- 3 - "my resource is comparable to other credit unions"
- 4 - "my resource is a little better than the other credit unions,"
- 5 - "my resource is far better than the other credit unions."

Descriptive statistics received in the second part on the level of competitiveness of human resources present as follows (Table 1):

TAB. 1: Overview of descriptive statistics for human resources owned by the Polish credit unions

	Mean	Median	Min	Max	Range	Skewness
HUMAN RESOURCES	3,597884	3,428571	2,714286	5,000000	2,285714	0,776146

Source: own contribution

The average results of human resources are in the range from 2.71 to 5.00, which means that the range between the average results is 2.29. The mean of the observations is 3.60, and the median is 3.43. Distribution of the results in the box and whisker plot (Fig. 1), prepared on the basis of the median, shows that the top of the chart against the median is much longer than the lower, indicating a skew to the right side (0.78). This means that most of the observation is less than the median. The box plot also shows that 50% of the average scores is in the range 3.14 - 4.00. The ratio of the length of the upper whisker and the lower shows, that the spread of the features above the upper quartile (top whisker) is much higher than below the lower (lower whisker). This shows that respondents are more divided on the allocation of low ratings than high.

Figure1. Distribution of average performance level of competitiveness of human resources against the median in box and whisker plot

The next stage of the research was to verify the hypotheses, which were formulated as follows:

H1: The level of competitiveness of human resources characterizing Polish credit unions differentiates them in terms of achieved competitive position

For this purpose the Kruskal–Wallis one-way analysis of variance test in $k > 2$ populations was applied. This test is a popular alternative for one-way ANOVA, which is carried out when there are the assumptions necessary to use ANOVA are not fulfilled, or the nature of the variables does not allow its use (Kruskal-Wallis, 1952). Due to the small research sample, which stems from a limited number of credit unions operating in Poland, nonparametric Kruskal-Wallis test is more suitable than the parametric ANOVA. Kruskal-Wallis test has two basic assumptions. First, the dependent variable should be measured at least on an ordinal scale (in the study dependent variable, which is the competitive position is measured on the interval scale). Secondly, observations in analyzed groups should be independent of each other. The method used for converting the quantitative scale into interval scale based on percentiles allowed the isolation of disjoint groups, thus meeting the objectives of Kruskal-Wallis test.

To properly carry out the procedure of verification of statistical hypotheses, alternative hypothesis was formulated:

H0: The level of competitiveness of credit unions' human resources does not differentiate them in terms of achieved competitive position

The study was established in accordance with generally accepted practice of interpretation of the Kruskal-Wallis test results, that there are grounds to reject the alternative hypothesis H0 if the value of $p < 0.05$.

Based on the data presented in the table, it can be concluded that there are no grounds to reject the main hypothesis H0, because of $p = 0.42$ for human resources. Thus, the level of competitiveness of human resources does not differentiate the competitive position achieved by credit unions. So there are no grounds to reject the alternative hypothesis about the lack of differentiation.

TAB. 2: The indicator value in Kruskal-Wallis test

Independent variable (grouping)	p (Kruskal-Wallis) for the dependent variable - the competitive position	p (Kruskal-Wallis) for the dependent variable – market result	P (Kruskal-Wallis) for the dependent variable - financial result
HUMAN RESOURCES	0,42	0,41	0,41

Source: own contribution

It should also be noted that in terms of constituents of competitive position, it is the financial and market results, human resources also do not differentiate the studied credit union population.

Conclusion

SKOKs pursuing its basic aim is to provide access to financial services to individuals who cannot use these services in other institutions, are very important part of local financial markets. Their longstanding activity on the Polish market proves their competitiveness. At the same time, it should be noted that the market for SKOKs is very heterogeneous and diverse both in terms of size and number of members as well as the quality of its assets. In terms of numbers, small unions are dominant, providing services for a relatively small number of members. In contrast to many small unions, there are also large professionally-managed credit unions on the market, uniting nearly 70% of the members of all credit unions in Poland. In view of the fact that external factors for the majority of credit unions operating in our country are similar, it is worth looking for reasons for the differences in achieved competitive position within these organizations. Due to the fact that in the literature on attaining competitiveness, one can find many references to human resources as determinants of achieved competitiveness and much attention to drawn to competency management and employees of Polish unions, the

author decided to check this dependence in relation to the credit unions in Poland. Negative results obtained in the course of the research procedure verified the hypothesis saying that human resources differentiate the competitive position achieved by credit unions. These points to the fact that, despite the fact that personality factors and the competence of the employees of the Polish credit unions are certainly a valuable resource for these organizations, they are irrelevant for the differences in achieved competitive position. These results are very interesting as recent years have changed the way of thinking about enterprise resources and sources of competitiveness, and it is widely pointed out that in terms of easy access to material resources, the immaterial resources, which include human resources determine the competitiveness of the company to a greater extent (see. Olszewska, 2008, Bratnicki, 2001). The result obtained in the course of the research procedure might suggest that the study should be repeated on a larger research sample and taking into account a greater number of possible determinants of competitiveness.

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INTERCOMPANY COMPARISON OF SELECTED FINANCIAL INDICATORS OF THE SMALL AND MEDIUM ENTERPRISES

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Keywords:

assets – cash-flow – interest coverage – Saaty method – small and medium-sized enterprises

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Abstract:

The paper determines the intercompany comparison of business entities according to own research in the field of small and medium-sized enterprises the Czech Republic. The paper analyzes the selected financial indicators by using selected mathematical-statistical methods in relation to the accounting statements in the period 2015. We monitor indicators, which in terms of their availability and the links in the financial statements, affect the perception and approaches in the operational and financial management of the enterprise, which is reflected into different concepts of the business management and activity. The paper evaluates the intercompany comparison and their importance, what kind of information we should have and how we can use it in practice to define the development prerequisites of enterprises.

Introduction

The international integration acquiring a global dimension is a typical feature of the current development of the world economy, because transboundary flows of goods and capital are getting larger and various investors use the diversities of national economies to efficiently allocate their capital and so the participation of the Czech economy in international economic integration has become its life necessity (Kovanicová, 1999).

Transboundary flows are the flows of goods and capital as well as economic information flows. In compliance with this, accounting (particularly financial accounting) which is used to determine and comprehensively evaluate the financial situation of a company through the financial analysis (FA) covering various methods and indicators has become one of the primary sources of information. A regular economic analysis has become beneficial for micro, small and medium-sized enterprises, as it can draw attention to starting problems in various areas of business in advance, particularly problems of financial management of a business. At the same time, we should not forget the importance of the financial analysis in terms of the

expected development in the near and distant future, because it is one of the aggregate criteria of the business management level, and so business entities are one of the basic forms of organizing the economic life of the society.

The paper aims to show how the group of micro, small and medium-sized enterprises of the Czech Republic which is a significant part of the corporate sector and economy is performing. With reference to the key changes in the European and world economy, it is necessary to mention that the data obtained from the own research are the output of the research period both in respect of the content and the form of processing. In the own research, the data of 350 business entities for the consecutive seven years, from 2009 to 2015, are analyzed in another papers (Sikorová et al., 2013-2016, Zapletalová et al., 2015). Currently, there is no similar research in the region and the paper as well as the implemented research have become integral parts of the information and confirmation of business entities development in the Czech Republic.

The introductory part of the paper presents the business entities and the level of the financial indicators in the context of the overall importance of the financial analysis with reference to the current theory and practice in the Czech Republic. The second part presents the results of the research conducted among the business entities in the period 2015. The final part of the paper evaluates the intercompany comparison of the Czech business entities.

1. Theoretical Framework

The operation of business entities which are one of the basic forms of the organization of the economic life of the enterprise is closely connected to accounting standards. In general, it belongs among the basic sources of economic information and it is the key system in the process of information and management activities of business (and non-business) entities and in related areas. It provides users with information on the financial situation of the enterprise and on its economic result for a given period of time. Furthermore, it increasingly evaluates the method of forecasting of the financial situation, or the ability and extent to which the business entity is able to achieve positive business results in future. In relation to the taxes, the orientation towards satisfying the requirements arising from the needs of the financial management of the enterprise becomes a priority (Sikorová, 2001). The answers to various questions related to the financial management and financial performance of the enterprise can be found using financial indicators which are the basic tools of the financial analysis. The financial analysis is a set of activities the goal of which is to identify and complexly evaluate the financial situation of an enterprise. Its users are e.g. owners, investors, or management of the enterprises which verify with the help of financial analysis if the invested resources are properly evaluated and used. In terms of usability, the view of financial management of the enterprise, namely the effectiveness of its assets usage, the level of investment return, the sufficiency of capital to secure the functioning of the enterprise,

is based on the data of the basic financial statements assisted with the balance sheet, loss and profit, and cash flow statements (Pavelková, 2010, Ručková, 2012).

Among the authors who have been dedicating with the performance of the enterprise and accounting topic for a long term, we can include Czech authors e.g. (Hinke, 2013), (Dvořáková, 2014), (Kovanicová, 2004, 2012), Král (2011), (Landa, 2008) and (Lukeš and Jakl, 2007) or from non-Czech authors (Shamrock, 2012) or (Samuel, 2011).

1.1. Research methodology

In the examined period 2009-2015, a total of 350 respondents - business entities (accounting units) in the Czech Republic was involved in the survey. The categorization of business entities (hereinafter referred to as the size of business) was determined by the number of employees according to the Czech legislation valid from 1st January 2016 (Zákon č. 563/1991 Sb., o účetnictví). The research was conducted from March 2014 till April 2016 and it still continues.

The methods of research include the intentional activity, observation of induced phenomena, and evaluation. The analysis assumes, for a deeper understanding of the individual parts to better recognize the phenomenon as a whole, that every phenomenon is a particular system and apply certain regularities Geist (1992). According Synek (1999) is a method included in the comparison group called empirical methods. This method is based on examining the same and different sites in two (or more) of surveyed objects or phenomena.

The own ascertained data have been expertly examined by observing, comparison, and measuring. In this context, a number of ideas, suggestions and other questions which are related to the research and will be explain and analyze in future own papers. Due to the range of the examined issues and analyzed connections, however, it is not possible to practically follow up all the relatively related aspects in more detail in this paper. From this perspective, the paper does not fully examine the financial analysis, in detail, but narrows the perspective on the most important issues in the intercompany comparison and at the same time, aims to apply the theoretical knowledge in the dialectical relation to the social practice. The paper was used to selected mathematical-statistical methods as Saaty method of paired comparisons and DAME software Microsoft Office Excel. In order to use the Saaty methods first step is according to Zmeškal (2009) "Saaty matrix elements are expressed as a ratio of approximately individual weights",

$$s_{ij} \cong \frac{w_i}{w_j} \quad s_{ij} \in [1/9; 9] \quad (1)$$

Then verifies whether Saaty pairwise comparison matrix consistent. According Saaty (2016) and Saaty and Vargas (2012) is an important indicator of the importance of

consistency in evaluation criteria index inconsistencies. Its amount should not exceed 0.1.

$$CI = \frac{(\lambda_{\max} - n)}{(n - 1)} \quad (2)$$

where λ_{\max} is the largest eigenvalue of the matrix S and n is the number of criteria.

For the calculation of weights was used normalized geometric mean of Saaty matrix rows (logarithmic least squares method). The calculation is made according to the following formula:

$$w_i = \frac{\sqrt[n]{\prod_{j=1}^n s_{ij}}}{\sum_{i=1}^n \sqrt[n]{\prod_{j=1}^n s_{ij}}} \quad (3)$$

With regard to the stated objective, the financial factors related to the intercompany comparison have been determined:

Return on equity (ROE), it is a term that refers to how much net profit falls on one crown invested capital, in the paper marked "A".

Liquidity is the ability of the company to convert assets to cash, from which it is possible to pay liabilities, in the paper marked "B".

Cash flow reflects cash flows of the company for a specific period (usually a year, quarter, month), in the paper marked "C".

The amount of assets what the company owns (buildings, machinery, receivables, money, supplies, etc.). As these assets are financed is evident from the structure of liabilities (equity, payables to suppliers, bank loans etc.), in the paper marked "D".

Interest coverage (TIE - Times Interest Earned Ratio) usually uses the entire term or acronym TIE is a term that refers to how many times the total profit covers interest payments. Interest coverage shows the size of a safety cushion for creditors.

2. Results

Saaty method of paired comparison revealed preferences of different criteria according to the authors, as shown in TAB. Processing of the decision-making process was based on the validity low and high value according to financial factors. Curenly, TAB. 1

shows that there exist the relations between the different criteria for determining the significance of individual criteria and hierarchical levels of decision-making problem.

TAB. 1: The significance of individual criteria

Criteria	ROE	liquidity	cash-flow	the amount of assets	interest coverage	criteria weights
ROE	1	1/4	2	1/2	2	0,1599
liquidity	4	1	1	3	2	0,3623
cash-flow	0,5	1	1	1/2	2	0,1648
the amount of assets	2	0,33	2	1	2	0,2135
interest coverage	0,5	0,5	0,5	0,5	1	0,0992

Source: own processing

TAB. 1 shows that an important indicator of the consistency of evaluation criteria of importance is the consistency index. Its amount should not exceed 0,100. In the examined decision problem is inconsistency index = 0.081 (Its value was automatically displayed in the box at the top right paired comparison matrix). TAB. 1 shows that the most important criterion for decision making profit with a weight of 0.3623 (ie. The relative importance of 36.23 %), the second most important criterion is the amount of assets with a weight of 0.2135 (ie. The relative importance of 21.35%). Third in the ranking criterion is CF weighing 0.1648 (ie. The relative importance of 16.48%), next in line is the criterion of ROE with a weight of 0.1599 (ie. The relative importance of 15.99%). The last criterion of importance is interest coverage criterion is weighing 0.0992 (ie. The relative importance of 9.92%).

TAB. 2 show listed weights of alternatives according to individual criteria, maximization and minimization criteria, which were incorporated into the final normalized values of all criteria, matrix W32. It shows the results of the evaluation method variants AHP. For each variant contains the value representing its relative weight in the file. (ie. the distributive mode in AHP). According to the size of this value are then arranged variants in TAB. 3.

TAB. 2: Evaluation of alternatives according to individual criteria

Criteria	ROE	liquidity	cash-flow	the amount of assets	interest coverage
	value	value	value	value	value
ROE	0,49	0,03	-4054	91539	2,12
liquidity	0,33	-0,12	-256	104680	3,15
cash-flow	0,42	0,11	3159	150460	6,92
the amount of assets	0,31	0,9	8449	177730	4,45
interest coverage	0,19	0,09	1288	145000	2,34

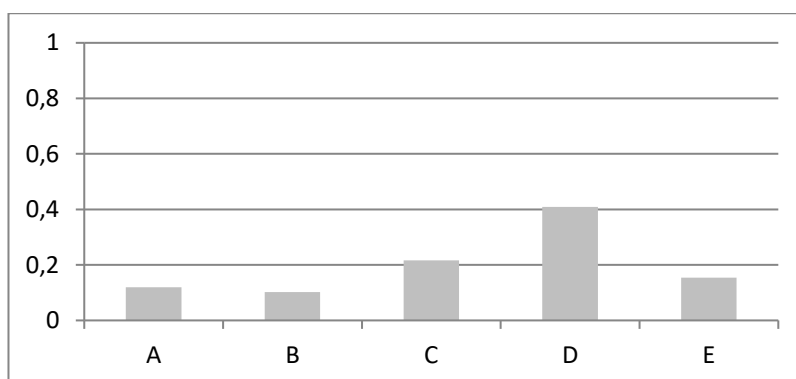
Source: own processing

TAB. 3: The significance of individual criteria

Criteria	weight	rank
ROE	0,13	4
liquidity	0,102	5
cash-flow	0,216	2
the amount of assets	0,409	1
interest coverage	0,154	3

Source: own processing

For comparison the small and medium-sized enterprises has been used DAME software Microsoft Office Excel. For own decision-making process has been entered basic characteristics of the file: number of scenarios (ie. The number of solved problems) = 1, the number of criteria = 5, the number of variants = 5 was also selected as the evaluation of alternatives according to pairwise comparison (qualitative criterion) for criteria: return on equity, liquidity, cash-flow, the amount of assets, interest coverage, FIG. 1.

FIG. 1: Total final of variants

Source: own processing

The article used the decision-making module for Excel DAME, according to 5 variants and 5 criteria and FIG. 1 shows final weight.

3. Discussion

The situation of the small and medium-sized enterprises can be evaluated by a comprehensive financial characteristics of the company, on the basis of which we find out the ability to manage the business including funding. In terms of the evaluation, the factor amount of the assets is of decisive importance and has influence of the structure of the business assets and the structure of sources of funding for business assets, or its financial (capital) structure. The high value interest coverage shows that the financial situation of business entities is better and it is a sign of a high financial standing of the company for investors. Indicators: return on equity and liquidity show a very weak ratio. However, both indicators as such are not a measure of the company success because they neither mirror the business risk nor the risks of foreign capital use. If the value of return on equity is permanently lower or has the same value as the return on shares guaranteed by the state, then the company is predicted to terminate, which is related to company liquidity and a possible threat of insolvency. Factor as excessive liquidity is usually accompanied by a high equity and is often associated with a conservative approach. Too low liquidity used to finance foreign sources. Both indicators evaluate only the past and do not take into account the estimate of future benefits.

Conclusion

The paper states that business entities must have the information on the volume and structure of the individual items of financial reports and the financial analysis provides them information about whether the company is profitable, liquid or indebted is used and the evaluation of the company is using for success on the market. In the field of scientific research and praxis, the mutual coherence of the following was proven it is

not correct to claim that any indicator is either good or bad. For example, a high common liquidity ratio can mean high liquidity, which is positive for the company, or a large amount of cash, which is on the contrary negative, because the excess cash is often a non-productive asset. And that business entities which want to exist on the market in the long term must not only be reasonably cost-effective, profitable, but must also be able to adjust their needs.

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DECISION MAKING IN AGENT-BASED VIRTUAL ECONOMIC MODEL

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JEL classification: C63, D7, L1

Abstract:

Decision making is essential part of every economic system and especially in the field of agent-based economic models, their design is crucial for the system's functioning and overall performance. In this context is expected that decision making will be done autonomously, will be computationally effective, and rational (from the perspective of decision maker, i.e. agent). Mistakes made at this stage of economic model's development are potentially worst. This paper introduces various types of agents in our economic model and describes their respective decision-making procedures and algorithms. The model serves as a virtual lab for research and experimentation on communities of larger scale involving thousands of agents interacting at the same time. This scale allows modeling of the geographic regions and all stages of supply chains.

Introduction

Virtual models of economics offer a platform for planning and testing decisions which are hazardous, expensive or could have unknown consequences in the real world. According to Tesfatsion, such agent-based computational economics models have potential to serve as virtual laboratories for testing and experimentation in controlled environment (Tsfatsion, 2003). Such models serve as a sandbox to simulate effects of various interventions into a complex system. The simulation before taking action can reveal possible threats, negative impacts or strengths of the investigated decision which might not be obvious enough to discover them beforehand otherwise. Even when a model is to some extent simplified and does not contain all variables of real economy and forms of behavior of companies or population, it is still a better option than a blind experiment in the real world which can be set inefficiently, expensive or even counterproductively. Such models might serve as a tool for decision support when decision maker faces complex situation with many possible outcomes, or when considered action might have consequential indirect impact on other economic subjects participating in trading interactions. This allows more effective planning of policy settings, institutional changes, or changes in general economic rules (such as taxes, subsidiary policies, etc.).

Our model simulates an economy of a region. It contains whole production chain, labor market, demands of the population, and transportation of goods. The model covers basic structures and interactions within those fields; however, it omits for example marketing of products, politics, and passenger traffic. Therefore, it can serve as a sandbox for decisions focusing on production and market.

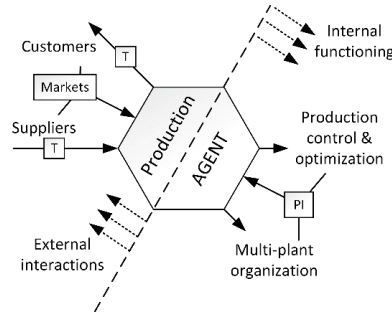
Every agent-based model which represents real system needs to provide agents with decision-making based on interactions or parameters in a model. An agent in a model can represent an individual, an abstract institution or group of individuals with similar characteristics. Regardless of the agent type, it requires some kind of (artificial) intelligence to act in the model. Its decision making (DM) can be based on simple rule sets (rule-based DM), reactions on conditions (reactive DM), or even more complex structures like multi-criteria decision-making (deliberative DM) or neural networks (sub-symbolic DM). Moreover, decisions in the model do not always follow precise mathematical explanation but rather emerge as a result of experience obtained from continuous interactions between agents. In some cases, an element of chance needs to be added to supply inconsistencies of exogenous real variables. Even with simple rules, system is based on bottom-up construction and complex behavior emerges from thousands of interactions within a population of agents. If all key elements are present in the model, then the emerged system is a valid representation of the real phenomena.

1. Model Architecture and Agents Description

1.1. General Model Concept

Agents in our system are capable of autonomous DM and pro-active behavior. General rule for the design of agents is to use as simple and transparent architecture as it is possible for the given role and use modular construction so that agent components are re-usable due to similarity of implementation. In accordance with general agent-based design theory, the decision making is based upon continuous feedback loop where agents are able to perceive their own surroundings and impact of actions and are capable of making changes in the environment in pursue of their goals. Being situated in environment which is mainly described in economic terms, the important part of decision making is done over (statistical) data and predictions describing numerically sets of key performance indicators, which are respectively set for the given DM context. For example, factory agents responsible for industrial production are primarily interested in data about their supply/demand partners in the supply chain and handling own logistics.

FIG. 1: Encapsulation of agent (T = transportation, PI = performance indicators)

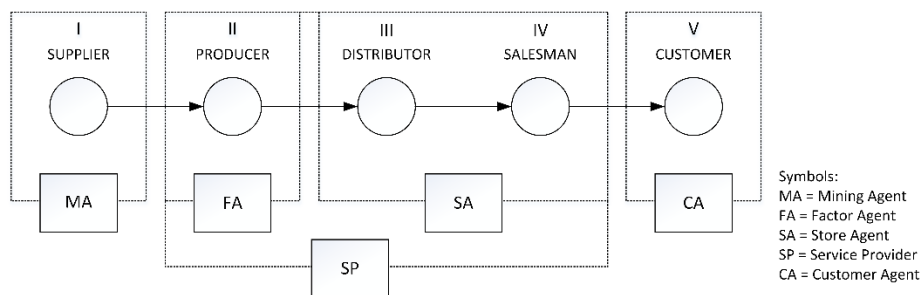


Source: authors

Agents are interacting with their business counterparts in standardized interactions and formal contracts. Two sides of interactions are generally distinguished here (see Fig. 1 as an example) – internal functioning where orders are given to the subordinate component (such as individual production plants and on the lower level production lines) by the company management. On the outside, interaction with business partners and markets are made by company representatives. This allows holarchic organizational paradigm to be used in the mode for encapsulation of multiagent sub-system functioning and effective work distribution.

In the system, several types of agents are used (which will be described in the following subsection) and these agents appear in the system in certain roles, according to Fig. 2, depending on their position in the supply chain. In general, production is organized into chain structure as well since it is necessary to capture all dependencies on production inputs providers and production output consumers.

FIG. 2: Supply chain participants



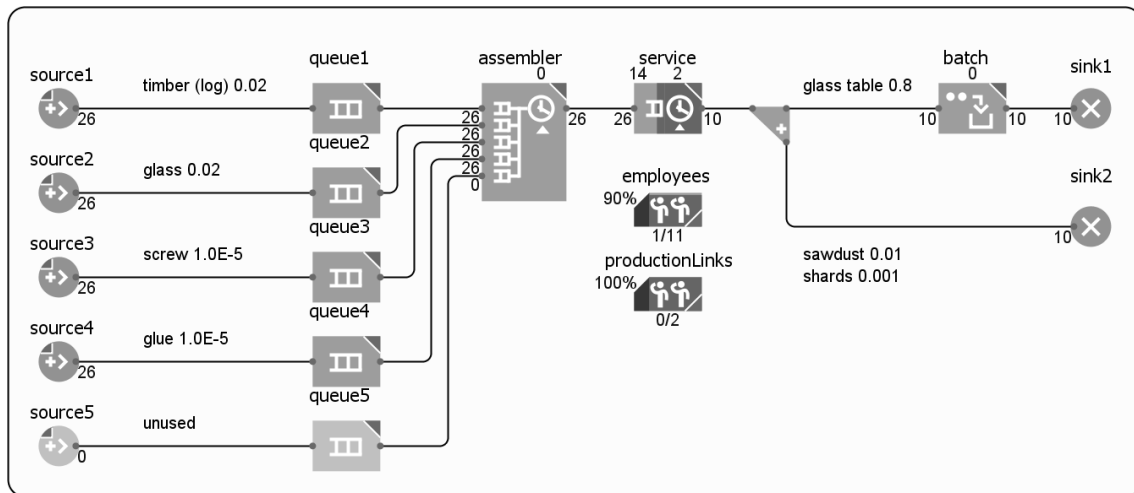
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1.2. Production Agents

Production in AVE model is provided by companies with multi-agent representation (Tucnik & Nachazel, 2016). The companies divide responsibilities into three layers which each makes decisions according to own inner states, a situation of subordinate agents or interactions with the market. Production Agent (PA) represents the highest managerial

control level of the company. Factory Agent (FA), representing a subsidiary of the company in a specified location, is a middle level of the structure. On the lowest level, ProductionLine Agent (PLA) or Mine Agent (MA) manages the actual production. This structure allows efficient handling of multi-plant production aspects. Fig. 3 shows an example of ProductionLine Agent in furniture workshop.

FIG. 3: Process model of production in ProductionLine Agent (example)



Source: authors (model implemented in AnyLogic 7)

1.3. Transportation Agents

Goods within production chains or wholesale/retail stores network need to be delivered from place to place in the region, which is a task for transport network in the model. The Transport Company handles the simple assignment of transport orders to an available truck, represented by Transport Agent (TA). TAs have a simplified version of DM based on matchmaker agent assignment of orders. Apart from that, they use pathfinding methods to navigate through the map at the lowest possible cost or time. For this task, different priorities might be used (such as fastest route or route with the lowest risk of a traffic jam, etc.), but DM is still simplified to the maximum.

1.4. Stores and Consumer Agents

Since the model has to consider simulation time and computational complexity, modeling consumers as individual agents would significantly slow down the whole simulation. Each Consumer Agent represents a group of consumers with similar properties: specialization (profession domain), education, and social status. Joining agents into groups does not interfere with the intended complexity of the model since numbers behind each of representatives may change over time. However, decision-making for a group requires a different approach than the one for individual entities.

1.5. Meta-Agents

AVE model also contains some abstract types of specialized agents which do not represent real entities. Especially agents providing the model with communication platform for other agents are a vital element of the model. Both goods and labor market uses such agent to match demands and offers: Broker and Matchmaker. Both types are used for facilitation of trade interactions. Matchmaker agent is capable of search for appropriate agent for the given task which is requested to be done by information seeking party. Broker agents function similarly but instead of simple forwarding contact information, broker agent accepts responsibility for the task requested by client and delegates it to appropriate set of agents.

The third and final type of meta-agent is government agent. This agent is responsible for policy settings and behavioral constraints and at this stage of model implementation this task is handled solely by the user. This is part of future work on the model, to provide more autonomy of behavior to the system as a whole.

2. Decision Making Algorithms

The DM method description will be divided into several sub-sections according to the type of agent which use it. There are some differences between various types of agents, especially regarding input data used in DM and the level of detail required for decision-maker to be able to do rational decision. In this context, a rational decision means selection of the most effective course of action in the means of preferred performance indicator such as - for example - time or fuel consumption (for transportation agents), or highest profit (for various agents in general). Depending on the level of model detail, a large number of factors might be taken into consideration when making decision, but there is an obvious trade-off between complexity of such DM-related information and model performance. It is worth notice that intended use of model is to emulate economic development on the regional scale, i.e. with over 10k agents working in parallel. A large set of these factors is comprised by stochastic factors such as model state prediction, or risk elements, and might bear significant computational load. Overview of most important agent-related characteristics is at the Fig. 4.

2.1. Production Agents' DM

Different approaches and DM methods are suitable for each layer of Production Agents. While Company Agent aims for long-term goals and controls direction of the whole company, Factory Agents makes sure that local factory area has optimal settings for production, sales, storage, and employees. Its behavior is a set of rules which reacts to the market situation and inner state of the factory. For example, when demand is low and products are pilling in its warehouse, the Factory Agents starts to lower price and might decrease production volume by reducing the number of active ProductionLine Agents or shifts.

FIG. 4: Overview of agents` characteristics

	MINING	MANUFACTURING	SERVICES	CUSTOMER
GOALS		<ul style="list-style-type: none"> • Profit • Technology improvement • Expansion • Turnover • Continuous production • Pollution & waste elimination • Production size • Market share 		<ul style="list-style-type: none"> • Employment • Salary maximization • Consumer basket items quality & quantity • Clean environment • Education opportunities
STRATEGIES		<ul style="list-style-type: none"> • Profit maximization • Turnover maximization • Production size maximization • Competition elimination • Competition behaviour analysis • Technological investments • Expansion • Supply management • Cost reduction 		<ul style="list-style-type: none"> • Labor market analysis • Professional specialization • Consumer basket composition analysis • Store selection
ATTRIBUTES	<ul style="list-style-type: none"> • Profit margin • Market price • Market history & trends • Prediction of market • Stored products and materials • Customer demands • Equipment & inventory • Turnover • Pollution & waste 	<ul style="list-style-type: none"> • Competitors database • Costs • Government policies • Labor market • Bank account balance • Location • Valid contracts • Production inputs availability 		<ul style="list-style-type: none"> • Bank account balance • Own salary • Labor market offers • Employment rate • Average salaries • Personal preferences • Location

Source: authors

ProductionLine or Mine Agents manages production alone. Their task is generation of goods if all requirements are met. They consume input materials and create goods along with waste. Number of employees assigned to the agent and number of machines affect the speed of the process.

2.2. Stores Agents` DM

Store Agent manages the distribution of goods to population (Consumer Agents). It regularly checks supplies of goods and orders products which are estimated to be sold out soon. Its DM reacts to changes in its warehouse and market. Prices are set according to taxation, supplies of the product, and operation costs (including salaries of employees, storage fee, insurance and energy cost).

2.3. Consumer Agents` DM

Consumer Agent uses multi-criteria decision-making method TOPSIS (Zolfani & Antucheviciene, 2012) to select one of available Store Agents from which it purchases a basket of goods to cover its needs. Criteria for the selection are price, quality, and

durability. Weights of these criteria vary depending on the social class of the Consumer Agent. Since the agent represents a group, the output of DM should be rather a distribution instead of a single choice, where the best choice for the agent gets the highest portion of purchases of the group and vice versa.

Conclusion

This paper provided a brief overview of our model of regional economy and related principles of decision making. The system consists of several types of agents with each type representing different category of economic unit. This allows establishment of the whole production chain model. DM of agents is heavily dependent on their position in the production chain since it is necessary for them to establish functional relationships with their suppliers and customers (handling both supply and demand sides of their own production). The current system framework is functional but in certain aspects simplified. However, the model architecture allows gradual implementation of missing features which leads to model with more detailed representation of the real world. This allows application of bottom up occurrence emergent phenomena in the system with complex network of economic relation which is an alternative approach to more traditional model based on various forms of Walrasian equilibrium. The model has potential to bring interesting results in the field of regional economies modeling and may serve as decision support tool for policy makers, regional developers, planners or researchers.

Acknowledgement:

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THE INFLUENCE OF SOCIAL NETWORKS ON MACROECONOMIC STABILITY

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macroeconomic stability – social networks – information dissemination

JEL classification: D87, E12, E32

Abstract:

The paper deals with the possible influence of social networks on macroeconomic stability. It is based on an article, which was published in the journal “Economics” and describes influence of different topologies of social networks to information dissemination and thus on the economic behaviour of various subjects. The results of the study show that the speed and flow of information directly affects the economic stability. The greatest effect on economic fluctuations have a scale-free network, similar to today's internet. In the area of functioning of social networks, there are the other factors that can significantly affect the investigated dependence of economic stability. The questions are influence of foreign sector in open economy, whether the formation of expectations and interactions in the real world would be always reciprocated, preferences in the media used in different age categories, and the other psychological factors.

Introduction

In recent years, people spend more and more time on the internet. They search for information, read current news, chat with their friends and play games there. Using social media promotes this trend. Especially young people spend on the internet and social networks several hours daily. Published information and opinions shape their behaviour, view on their life, society and economic events. Social networks are also one of the ways, how companies can communicate with their customers and the outside world. Social networks can be considered a significant shift in the transmission of information, similar as the advent of the internet. Way of disseminating information and topology of social networks can affect macroeconomic indicators. Shu-Heng, Chia-Ling and Ming-Chang (2013) analyse this issue in the scientific article Social Networks and Macroeconomic Stability and the following parts of this paper deals with the other factors that were not included in their article.

1. The theoretical bases

1.1. The Agent-Based DSGE Model

The studies of Shu-Heng Chen, Chia-Ling Chang, and Ming-Chang Wen (2013) are based on the agent's oriented modeling. The authors used Agents' New Keynesian DSGE" model, which was based on the fundamental economic relations.

$$y_t = a_1 E_t y_{t+1} + (1 - a_1) y_{t-1} + a_2 (r_t - E_t \pi_{t+1}) + \varepsilon_t \quad (1)$$

$$\pi_t = b_1 E_t \pi_{t+1} + (1 - b_1) \pi_{t-1} + b_2 y_t + \eta_t \quad (2)$$

$$r_t = c_1 (\pi_t - \pi_t^*) + c_2 y_t + c_3 r_{t-1} + u_t \quad (3)$$

Equation no. 1 describes the aggregate demand in the economy. It is derived from the Euler equations and working with a representative permanently living household. The household maximizes its utility function in an infinite planning horizon. As Kamihigashi (2006) proved this assumption can be imagined as a contemporary home, that maximizes your benefit with respect to future generations. The "yt" denotes the output gap in period t, "rt" is the nominal interest rate and the "πt" the rate of inflation. In this model is assumed rational expectations, which are expressed by the expectations operator, marked "Et".

Equation no. 2 is the Phillips curve New Keynesian economics. From the perspective of the economic system this equation represents the suppliers (companies). Companies in order to maximize profits are changing the price of their products, thus affecting inflation. Even in this case has certain level of expectation.

Equation no. 3 describes the behaviour of central banks according to the Taylor rule. This tool is based on the reaction of central banks to deviations in inflation and growth of the production of the desired target levels. The equation defines the relationship between the interest rate "rt", output gap "yt", inflation "πt" and the inflation target "πt* ". Method and regularities of expectations resolves the following chapter.

1.2. Ising Model

For the determination of the course of expectation in networks with different topologies used Ising model, which is one way of solving grid models. Social networks can be seen as a set of agents who communicate with each other. The arrangement of these networks can be defined using graph theory and thus determine their topology. In this study were investigated topology:

- a) Fully-connected network;
- b) Circle and regular network;
- c) Small world and random network;

d) Scale-free network bod.

Shu-Heng Chen, Chia-Ling Chang, and Ming-Chang Wen (2013) defined values for each characteristic topologies, which were used in the DSGE model as parameters for the calculation of own simulations. For calculating the volatility of the output gap and inflation was chosen two step method. At the beginning, there was done the simulation of ten different networks and were determined preliminary hypotheses. In the second step, simulation was conducted a large scale and was carried out a regression analysis of results. At the end of each simulation were available time series of the variables, which were the output gap and inflation.

2. Analysis of the study results

Analysis of the results showed, that the monitored indicators are depended on the topology of social networks and the degree of connectedness agents. Shu-Heng, Chia-Ling and Ming-Chang (2013) defined these statements for interpretation of results:

- a) *“The more liquid the information flow, the higher the stability; more specifically, the higher the degree of the network topology, the higher the stability.”*
- b) *“The higher average clustering coefficient, the easier it will be to facilitate the herding effect.”*
- c) *“The faster the information is disseminated, the more stable is the economy.”*

3. Discussion

Examining the relationship between happenings on social networks and the functioning of the economy can be explored by different ways. Shu-Heng, Chia-Ling and Ming-Chang (2013) chose the method of modeling and simulation using the agent's models. As they wrote in their conclusion, the model, which was used, ignores the fact that some specific social networks, as corporate or banking networks, could have a productive function and skews the results partly.

Shu-Heng, Chia-Ling and Ming-Chang (2013) used Agents' New Keynesian DSGE" model, which contains three equations. They represent three components in economy. The first is Consumption, which includes private expenditures of households. The second equation and the second component of economy is Investment, which comprises expenditures of firms, for example, business investment in equipment. The third equation represents the third component of economy – Government spending, which is the sum of government expenditures on final goods and services. These three components of economy are also used for calculation of the Gross Domestic Product (GDP) by expenditure approach. The expenditure approach is one way how to calculate nation's GDP by summing the four possible types of expenditures. They are Consumption, Investment, Government Purchases and Net Export, which is not included in the model in the article of Shu-Heng, Chia-Ling and Ming-Chang (2013).

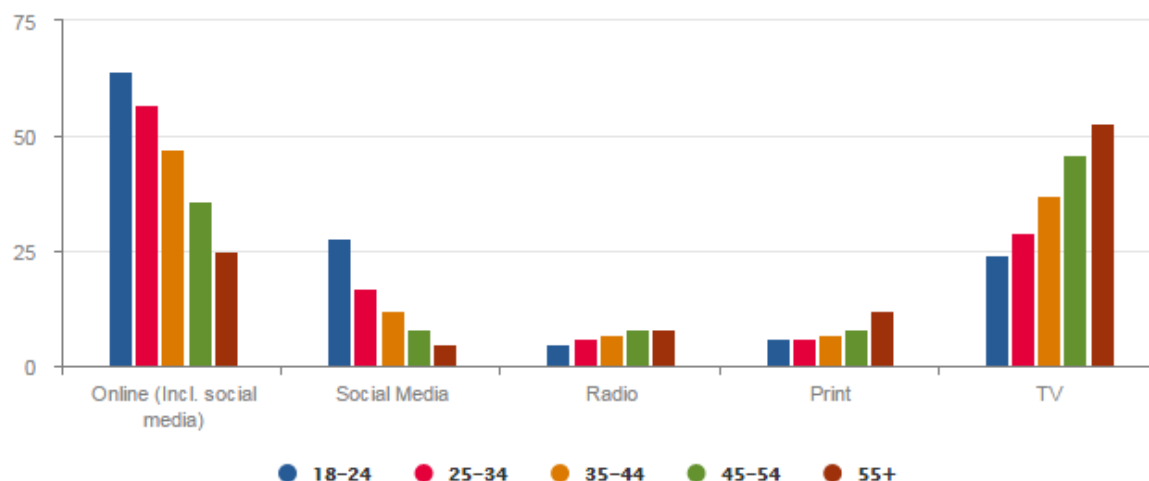
For an open economy, foreign sector has a major impact on economy dynamics. The domestic economy is linked to the foreign sector through trade, prices and financial market. Aliyev, Bobková and Štork (2014) in the paper “Extended DSGE model of the Czech economy” present a New-Keynesian small open-economy dynamic stochastic general equilibrium model. This model consists of four components of economics, including Net Exports. Aliyev, Bobková and Štork (2014) defined Import as the sum of imported consumption and imported investment goods. In the same way Export includes consumption and investment goods delivered to foreign countries. Net Export or commercial balance is the difference between the nation’s export and imports over a certain period. Aliyev, Bobková and Štork (2014) assume the law of one price, which means that foreign price and imported goods prices are linked through the nominal exchange rate. Foreign interest rate, exchange rate and foreign trade affects the country’s economic stability and adding the foreign sector to the model could provide more accurate information.

The question is whether the formation of expectations and interactions in the real world would be always reciprocated. Rational expectation is the economic hypothesis, which was described by J. F. Muth in his book *Rational Expectations and the Theory of Price Movements* already in 1961. According to this hypothesis, it is expected that people would make up the views on the future of all available information, and they shape their expectations. As Holman (2005) proved, people use both the experience of previous years, and various forecasts and estimates of economic experts regarding future economic developments. Therefore, it can be assumed, that if people get the information on social networks, this information will affect economic stability.

Social networks are becoming the main source of information. Current studies show, that more and more people prefer reading online news on their smartphones and computers. Levy, Newman, Fletcher and Nielsen (2016) present the results of their research, which demonstrate, that half (51% of investigated entire sample) say they use social media as a source of news each week. As Levy, Newman, Fletcher and Nielsen (2016) proved, that *“around one in ten (12%) say it is their main source. Facebook is by far the most important network for finding, reading/watching, and sharing news. Television news still remains most important for older groups but overall usage has continued to decline.”* Currently, TV news and online news are main source of information. Reading printed reports declines. The big change is the use of social networks as a source of news. The number of people who used Facebook, Twitter, Instagram or Snapchat for getting the latest news, has almost doubled since 2013. A chart no. 1 shows main news sources split by age. The research was conducted in 26 countries, including the Czech Republic. Within the European Union, it was found, that 10% of the population use social networks as a main source of news. The numbers in other countries are 14% in the United States, 18% in Australia and 27% in Greece. In the Czech Republic, the number of users who use social networks as a main source of

news also increases. Research shows, that last year it was 6% and in 2016 it is around 8%.

FIG. 1: Main news sources split by age



Source: Levy, D. A. L., Newman, N., Fletcher, R., Nielsen, R. K. (2016). *Overview and Key Findings of the 2016*. Oxford: Reuters Institute.

According to report most important social network for finding, reading and watching news is Facebook. Across the sample 44% say Facebook for news, which in turn represents two-thirds of all Facebook users. As Levy, Newman, Fletcher and Nielsen (2016) proved “YouTube is also a key network (19%) while Twitter remains an important social network for news (10%) favoured by journalists, politicians, and heavy news users in particular. Instagram continues to grow fast, along with WhatsApp in some countries” Social networks gradually replace newspapers, radio and television, which were the main source of information on current events, including economic indicators that affect rational expectations and macroeconomic stability.

One of the problems of social networks as the main source of information is the quality and veracity of published news. The volume of data continues to grow, everybody can publish on the internet and the accuracy of the published data validates nobody. Verification of the quality of information and resources is very important. Caspi and Gorsky (2006) analyse in their research answers of 257 respondents and show that, most of them “believe that online deception is very widespread, only about one-third of them reported engaging in online deception”. Risk to the credibility of information is using anonymous sources, vandals attack, manipulation of information, and the lack of guarantees.

In the area of functioning of social networks, it is applied to a large number of other factors that can affect the investigated dependence of economic stability. These factors include various influences to describe disciplines, such as sociology and psychology. It

is therefore not possible to take into account all these influences. For example, K. Wilcox and A. T. Stephen (2013) demonstrate that social network use increases self-esteem in the short term, but indicate less self-control after browsing a social network. Additionally, Wilcox and Stephen (2013) submit evidence, that greater social network use is associated with a higher body mass index and higher levels of credit card debt for individuals with strong ties to their social network. A further factor may be the education of users of social networks, both in economic and other fields.

Conclusion

Using social networks increasingly affects people's lives in all areas. The number of users growing and the social networks become the main tool for the transmission of information. They gradually replace newspapers, radio and television, which always were the main source of information. Shu-Heng, Chia-Ling and Ming-Chang (2013) used the Agents' New Keynesian DSGE "model and Ising model in order to check whether the topology of social networks affects macroeconomic stability. The results of study show that social networking arrangement and method of disseminating information have an influence on rational expectations of users and macroeconomics stability. However, there are other factors, such as from area of sociology and psychology, which also affect behaviour of users, their rational expectation and thus economic indicators. Therefore it is not possible to take into account all these influences.

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KUZNETS HYPOTHESIS OF INCOME INEQUALITY: EMPIRICAL EVIDENCE FROM EU

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JEL classification: D63, C23, O15

Abstract:

The article aims at identification of the determinants of income inequality in the EU countries in the period of 2004-2013. Specifically, we test for the existence of an inverted U-shaped relationship between income inequality and the level of economic development measured by the GDP per capita, as it is predicted by the Kuznets hypothesis. The data come from Eurostat (EU-SILC), International Monetary Fund and World Bank. Our results provide evidence for a U-shaped, rather than the inverted U, relationship. We find that unemployment rate and tertiary education attainment are statistically significantly and positively related to income inequality. Also old-age dependency ratio is significant in the EU15 countries, while a share of self-employed is significant in the new member states.

Introduction and literature overview

Inequality is natural and it does not have to be a negative phenomenon. Income inequality stems mainly from unequal distribution of employment rewards of individuals and these have to differ depending on educational attainment, entrepreneurship, productivity, etc. Unequal incomes provide motivation for work, investment in education, accumulation of human capital and incentives for innovation and entrepreneurship (Dabla-Norris, 2015). Barro (2000) points out that concentration of income and wealth in the hands of few individuals can be a positive process and result in new businesses and higher investment in education, especially in the developing countries. However, income inequality can be an effect of lack of opportunity and disadvantage of particular groups in the society. Excessive inequality can cause social tensions, e.g. higher crime rates, lead to a political and economic instability and poverty. Campbell, Haveman, Sandefur and Wolfe (2005) in their study indicate that an increase in income inequality negatively affects the average years of schooling, particularly among the lower income households. In general, from the economic sciences point of view, high inequality can cause suboptimal use of resources.

The problem of high and growing income inequalities has attracted attention and resulted in scientific research and growing policy concerns by governments and international institutions. Numerous empirical studies, e.g. by OECD (2011), Salverda et al. (2014) and Franzini and Pianta (2016), indicate that since the 1980s, incomes in the developed countries have become more dispersed and they are now more concentrated in the top 1% or 0.1% of population.

One of the most debated theoretical frameworks for analyzing income inequality is the so called Kuznets hypothesis. Kuznets first published his research results on the relationship between income inequality and the economic growth in 1955 (Kuznets, 1955). The hypothesis states that, at the beginning of its development, a country experience a relatively low, but rising income (wage) inequality. The inequality will rise because the productivity of agricultural sector is considerably lower than it is in the emerging and growing industrial sector. Kuznets argued that during the later course of economic growth, after the initial rise in wage inequality, a decline in wage dispersion should be expected due to, firstly, a shift of labour from the agricultural sector towards the industry, and secondly, the progress in agriculture modernization and productivity. The resulting relationship has a shape of an inverted U which is known in economics as the Kuznets curve.

Early empirical studies on Kuznets hypothesis published in the 1970s, e.g. Paukert (1973) and Ahluwalia (1976), confirmed the concept of inverted U-shaped relationship between income inequality and economic development. Later studies based on better quality cross-sectional and panel data, and covering sample period of 1980s – by Deininger and Squire (1998), Fields and Jackubson (1994), Bruno, Ravallion, and Squire (1996) and Ram (1997) – found no proof of the existence of the Kuznets curve. The latest empirical evidence on the subject has been mixed. Barro (2000) presents the results of panel data analysis of 100 countries and concludes that Kuznets curve holds as a “clear empirical regularity” (after controlling for other factors influencing income dispersion). The author also finds that primary and secondary schooling attainment is negatively related to inequality, while higher education attainment is positively related.

Barro’s findings on the Kuznets curve are confirmed by the studies of Thornton (2001) and Phahan, Upanhyay and Bhandari (2010). On the other hand, Gallup (2012) using panel data of 87 countries did not confirm Kuznets hypothesis and found the existence of anti-Kuznets curve – a statistically significant U-shaped relationship between income inequality and economic growth. A number of contemporary studies have found the evidence of the U-shaped relationship: (Fields & Jackubson, 1994), (Kiatrungwilaikun & Suriya, 2015) and (Castells-Quintana, Ramos & Royuela, 2015). Also, as Kiatrungwilaikun and Suriya (2015) point out the latest trends observed in the data seem to contradict Kuznets hypothesis – inequality tends to decline in low-income countries and increase in developed economies. Raitano (2016) suggests that the relationship between income dispersion and economic growth could have changed

during the last decade. The author reports an increase in inequality after the outbreak of the global financial crisis in 2008.

The aim of this paper is to identify the determinants of income inequality in the European Union countries and to examine whether Kuznets hypothesis is valid in the sets of EU27, EU15 and EU12 countries in the period of 2004-2013.

1. Methodology

The following panel data model is used to analyse the determinants of income inequality (Kim, Huang & Lin, 2011):

$$GINI_{it} = \alpha + \beta_1 \ln GDP_{it} + \beta_2 (\ln GDP_{it})^2 + \beta'_3 Z_{it} + \mu_i + \varepsilon_{it} \quad (i = 1, \dots, N), (t = 1, \dots, T), \quad (1)$$

where μ_i is an country effect, and Z_{it} is a vector of explanatory variables: the age structure of population, the degree of trade openness, educational attainment and the proxies for the labour market including the unemployment rate and the share of self-employment (table 1).

In order to prove Kuznets inverted U-curve we expect the following parameters in the equation (1): $\beta_1 > 0$ and $\beta_2 < 0$ ($|\beta_1| > |\beta_2|$). If the data cover mostly the downward part of the curve, then values of $\beta_1 < 0$ and $\beta_2 < 0$ ($|\beta_1| > |\beta_2|$) will be obtained. In this case, the inverted U-curve is asymmetric, with an elongated right tail (Galbraith & Kum, 2002). As Galbraith and Conceição (2001) point out there is the third possibility of the shape of the relationship, which is based on recent findings of rising inequality in several developed countries. The values of the parameters: $\beta_1 < 0$ and $\beta_2 > 0$, ($|\beta_1| > |\beta_2|$) describe a U-shaped relationship between income inequality and GDP per capita, which contradicts the original Kuznets hypothesis.

Numerous studies on income inequality (especially early publications on the subject) were criticized for the poor quality of income data (see Atkinson and Brandolini (2003)). In this article we use highly reliable, internationally comparable Eurostat EU-SILC data on Gini coefficients based on equivalent disposable income before social transfers. Additionally, data from International Monetary Fund (World Economic Outlook Database) and the World Bank have been used. The set of countries in our sample include: EU15 states: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom, and 12 new member states: Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia. The choice of the data source and countries included in the analysis determined the sample period of 2004-2013. The EU-SILC data on all sample countries is only available for this time period. In the post-socialist countries of Eastern Europe which joined the European

Union in 2004 and 2007 the SILC survey started from 2005 providing data on income from 2004. The latest available EU-SILC data for all countries come from 2014 survey thus limiting our sample period to 2013.

The list of explanatory variables in our models is inspired by the study of Barro (1999). Table 1 presents the list and descriptions of all variables.

TAB. 1: Description of the variables used in equation (1)

Variable	Definition	Source
Gini	Gini coefficient of equivalised disposable income before social transfers (pensions included in social transfers)	Eurostat/ EU-SILC
GDP	GDP <i>per capita</i> : real gross domestic product <i>per capita</i> based on purchasing-power-parity (PPP) measured in 2010 international dollars	own calculations based on IMF database
Depend	Old-age dependency ratio: the ratio of the number of persons aged 65 and over to the number of persons aged between 15 and 64	Eurostat
Selfemp	Share of self-employed: the number of self-employed as a share of total number of employed	World Bank
Unemp	Unemployment rate: the number of unemployed persons as a percentage of economically active population	Eurostat
School	Tertiary education attainment: the number of persons holding tertiary education diploma as a share of population aged 15 and over	Eurostat
Open	Trade openness: (import + export)/GDP	World Bank
New	Dummy variable: 0 in a case of EU15 country, 1 for EU12 country	

Source: own elaboration.

Gini coefficient, logarithm of GDP and square of logarithm of GDP are used as the key variables necessary to test the Kuznets hypothesis. We make some important changes to the Barro's set of control variables in order to adjust it to our specific sample. Firstly, democracy and rule-of-law indices were omitted because all countries in the sample were members of the European Union and thus maintained high democratic and legal standards. Secondly, we add two variables serving as proxies for the labour market: unemployment rate and the share of self-employed in total employment.

2. Results

In the first stage of our investigation the equation (1) for all EU27 countries has been estimated. Then, in order to identify differences in income inequality determinants between old and new member states, two separate models for these sets of countries

(EU15 and EU12) were estimated as well. The statistically insignificant explanatory variables were sequentially eliminated from the equations so the final versions of the models include only statistically significant determinants of Gini coefficient. The results are presented in table 2. The parameters of the fixed and the random effects models were estimated with LSDV and GLS methods, respectively. The Wald test, and the Breusch and Pagan Lagrange Multiplier test (Greene, 2012) were applied to confirm the relevance of the decomposition of the error term and/or the constant term. For a choice between the fixed and the random effects models the Hausman test (Baltagi, 2005) was performed. A model with random effects proved most suitable for equations describing inequality in EU27 and EU15 countries, while for the country group EU12 the specification with fixed effects has been selected.

TAB. 2: Determinants of Income Inequality

Variable	EU27 (Random effects)	EU12 (Fixed effects)	EU15 (Random effects)
Const	876,238 *** (160,781)	1105,34 *** (345,504)	1265,44 ** (572,463)
lnGDP	-156,496 *** (31,612)	-202,085 *** (69,908)	-229,899 ** (106,282)
(lnGDP) ²	7,231 *** (1,550)	9,579 *** (3,544)	10,658 ** (4,932)
Depend	0,483 *** (0,095)	-	0,596 *** (0,132)
Selfemp	-	-0,217 ** (0,102)	-
Unemp	0,285 *** (0,047)	0,263 *** (0,065)	0,271 *** (0,085)
School	0,187 *** (0,054)	0,286 *** (0,085)	0,226 *** (0,076)
New	-4,621 *** (1,439)	-	-
Open	-	-	-
Observations	270	120	150
Breusch and Pagan LM test	LM = 518,088 p = 0,0000	LM = 148,508 p = 0,0000	LM = 252,865 p = 0,0000
Hausman specification test	H = 6,80424 p = 0,235611	H = 25,2292 p = 0,0001258	H = 6,04063 p = 0,302286
R-squared	0,918	0,927	0,926

***, **, *: 1%, 5% and 10% statistical significance respectively.

Source: own calculations.

In all three models: EU27, EU12 and EU15 parameters β_1 and β_2 are statistically significant, and their signs $\beta_1 < 0$, $\beta_2 > 0$, ($|\beta_1| > |\beta_2|$) mean that the relationship between

income inequality and the level of economic development has a shape of U. It implies that in each country group income inequality declines and then increases with the rise of GDP per capita following a quadratic trend.

Unemployment rate and educational attainment statistically significantly and positively influence Gini coefficient. The higher unemployment rate and university educational attainment the greater income inequality is. Old-age dependency ratio is significantly related to inequality in EU27 and EU15 groups, while it is insignificant in the EU12. The share of self-employed is statistically significantly related to Gini index only in the new member states and the higher the incidence of self-employment the lower inequality. Trade openness proved insignificant in all specifications.

3. Discussion

Our results do not support Kuznets hypothesis. In fact, the anti-Kuznets U-shaped relationship between Gini index and GDP per capita has been proved in all three panel data models. Our results are consistent with the findings by Fields and Jackubson (1994), Gallup (2012) and Kiatrungwilaikun and Suriya (2015). Castells-Quintana, Ramos and Royuela, (2015) also provide the evidence on significant U-shaped relation between inequality and economic growth in a panel of EU regions at NUTS 1 level.

Kiatrungwilaikun and Suriya (2015) argue that Kuznets curve may be not valid, because the inverted U pattern can be disturbed by the emergence of the digital technologies. It is mainly the industrial sector that benefits from the new technologies. The rise in its productivity driven by the shift of more skilled labour into this sector and growth of new economy will increase wages in relation to the agricultural sector. The increase in wage disparities reverses the trend which follows from the inverted U shape. Autor, Katz and Kearney (2006) propose a similar explanation. They describe a new pattern in income inequality in the US as the “polarization” of the labour market, with employment demand (and wages) polarizing into high-wage and low-wage jobs at the expense of middle-wage work. The authors show that computerization strongly complements the non-routine, abstract, cognitive tasks of high-wage jobs, and directly substitutes for the routine tasks found in many traditional middle-wage jobs. The use of computers has little impact on non-routine manual tasks in relatively low-wage jobs. Galbraith and Conceição (2001) suggest the existence of so-called “Augmented Kuznets Curve” which predicts that inequalities in some of the most advanced countries (United States, UK and Japan) increase in response to rising internationalization.

Our results on the significant and positive influence of higher education attainment support the findings by Barro (2000) that the higher share of population holding a university diploma the greater income inequality. Statistical significance of unemployment rate as a factor determining income inequality is not controversial. Such

outcome could have been expected especially in our study which utilizes data on disposable income before social transfers.

Conclusion

The empirical evidence on the relationship between income inequality and economic growth (development) measured by GDP per capita has been mixed. Recent studies based on data from the end of the twentieth century and the beginning of the present century seem to contradict the traditional theory based on Kuznets hypothesis which predicts the inverted U-shaped relationship between the two variables. In case of many developed countries income inequality has not been declining and has not followed the trend predicted by the inverted U-curve.

We used the data from Eurostat (EU-SILC), International Monetary Fund and World Bank for the period of 2004-2013 and estimated panel data models with fixed effects and random effects. Our analysis for three sets of EU countries: EU27, EU15 and EU12, concluded that there exists a statistically significant U-shaped relationship between income inequality and economic growth. Our results contradict Kuznets hypothesis, however they confirm findings from some recent studies by other authors. There are various explanations of the phenomenon of the latest rise in income inequality in the developed counties. Some authors indicate the influence of globalization and internationalization on modern economies, effects of the global crisis after 2008, others point out to the rise of digital economy which contributes to the increase in productivity and wages of the highly skilled, substitution of middle-wage jobs by computers and the polarization of wages.

Economic growth is not the only factor influencing the dispersion of income. In all our models concerning three groups of countries unemployment rate and tertiary education attainment are statistically significantly and positively related to income inequality. The old-age dependency ratio is significant in the group of EU15 countries, while a share of self-employed in total employment proved significant in the new member states. The share of exports and imports in GDP which served as a proxy of the degree of internationalization of the economies proved statistically insignificant in all country groups.

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SIZE AND SEASONALITY OF BUYING OF PIGS FOR SLAUGHTER IN THE COUNTRIES OF THE VISEGRAD GROUP (2005-2015)

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pig livestock – seasonality – The Visegrad Group

JEL classification: Q130, Q170

Abstract:

Expansion of the European Union in 2004 gave rise to a new competitive situation on the EU's agricultural markets. The aim of the study is to analyze the changes in the production of pigs for slaughter in the Visegrad countries compared to selected major livestock producers in the European Union. The analysis has been limited to the review of trends and seasonal component of the size of the purchase of pigs for slaughter in the V4 countries, Germany and Denmark. The study covered the period 2005-2015.

Introduction

Expansion of the European Union in 2004 gave rise to a new competitive situation on the EU's agricultural markets. In addition to the many benefits that result from the activity in the common market (the ability to freely sell products, increase in export opportunities, the benefits for agriculture of individual countries on the implementation of the Common Agricultural Policy, regional and structural programs) one should also take into account the potentially negative effects of this process (Kowalska 2016; Szymańska 2015). These include first and foremost the creation of a whole new competitive situation on the various agricultural markets and the need for systematic working out of competitive advantages. This applies to agricultural producers, processors and distributors of the new members but also the countries which were already operating in the structures of the EU.

Meat and pork products are one of the most consumed foods in this part of Europe (Piwowar 2014). For example, in Poland in the period between 2005-2015, the pork consumption was 39 to 43.6 kg per year / capita, and in the Czech Republic from 41.6 to 45.6 kg per year/capita (Rynek Mięsa 2016; www.statista.com). In total four countries of the Visegrad Group form a very big market of approx. 64.5 million consumers.

The aim of the study is to analyze the changes in the production of pigs for slaughter in the countries of the Visegrad Group compared to selected major livestock producers in the EU.

1. Methods and sources of materials

The analysis covers the period between 2005 and 2015. Statistical materials from Eurostat and Meat Market Observatory databases published by the European Commission were used in the analysis. The study used basic methods of statistical analysis of data, including multiplicative time series analysis (Olszańska 2012). Limited to the analysis of trends and seasonal component of the size of the purchase of pork in the Visegrad countries, Germany and Denmark.

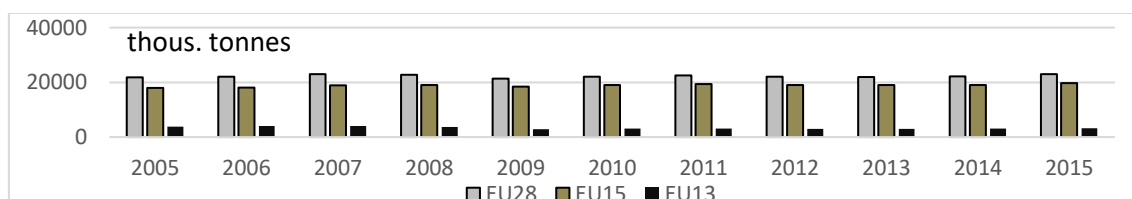
2. Results and discussion

In 2005 in the European Union purchase of pigs for slaughter amounted to approximately 21.78 million tonnes. Until 2015 it increased by approx. 5.3%, which can be regarded generally as a positive phenomenon. It should also be noted, however, that significant structural changes occurred during this period. In the EU-15 purchase in the years 2005 to 2015 increased by 9.9%, however in the newly admitted countries it decreased to 84.2% (Fig. 1). This means the decrease in the purchase of pork in the EU-13 from the level of 3.85 million tonnes per year in 2005 to the amount of 3.25 million tonnes in 2015.

In 2005 the total purchase of pigs for slaughter in the countries of the Visegrad Group amounted to approx. 2,760 million tonnes. In 2015 it decreased to about 2,573 million tonnes, about 6.8 percentage points, which is perhaps not so great value, but in individual countries, the situation varied significantly (Table 1, Fig. 2).

In Poland, the largest level of purchase of pigs for slaughter was recorded among the countries belonging to this group in 2015. Compared to 2005 it decreased by only 1 percentage point. In subsequent years of the analyzed period the situation in this field was very diverse. A significant decrease in the purchase occurred in 2008-2013, then in the years 2014-2015 there was an increase in its size.

FIG. 1: Purchase of pigs for slaughter in the European Union over the period 2005-2015 (thous. tonnes)



Source: based on: <http://appsso.eurostat.ec.europa.eu>

Slightly less favorable situation was observed in purchase of pigs for slaughter in Hungary. In the analyzed period the purchase decreased from 453.9 thousand. tonnes to 409.3 thousand. tonnes, so about 10 percentage points. Similarly to the situation in Poland, significant slump in purchase was recorded since 2008. The minimum purchase level for the analyzed period took place in 2013 and amounted to approx. 74.2% of the level in 2005. In 2014-2015 an increase in the volume of purchase was noted.

TAB. 1: Purchase of pigs for slaughter in the Visegrad countries, Denmark and Germany in the period 2005-2015 (thous. tonnes)

Years	Czech Rep.	Hungary	Poland	Slovakia	Denmark	Germany
2005	380.29	453.89	1,925.64	139.94	1,792.83	4,499.99
2006	358.51	489.13	2,071.36	122.26	1,748.58	4,662.22
2007	360.32	499.44	2,090.62	113.82	1,802.19	4,985.37
2008	336.49	460.41	1,888.04	102.41	1707.4 0	5,114.32
2009	284.57	388.72	1,608.24	70.15	1583.2 0	5,241.36
2010	275.91	416.15	1,741.43	68.6 0	1666.3 0	5,443.17
2011	262.94	387.3 0	1,810.78	56.91	1718.4 0	5598, 00
2012	239.75	345.93	1695.2 0	54,16	1603.7 0	5459, 00
2013	234.27	336.73	1,684.26	52.4 0	1589.4 0	5474, 00
2014	235.99	368.62	1,838.46	33.77	1593.9 0	5507, 00
2015	227.74	409.3 0	1,906.11	30.27	1598.7 0	5562, 00

Source: based on: <http://appsso.eurostat.ec.europa.eu>

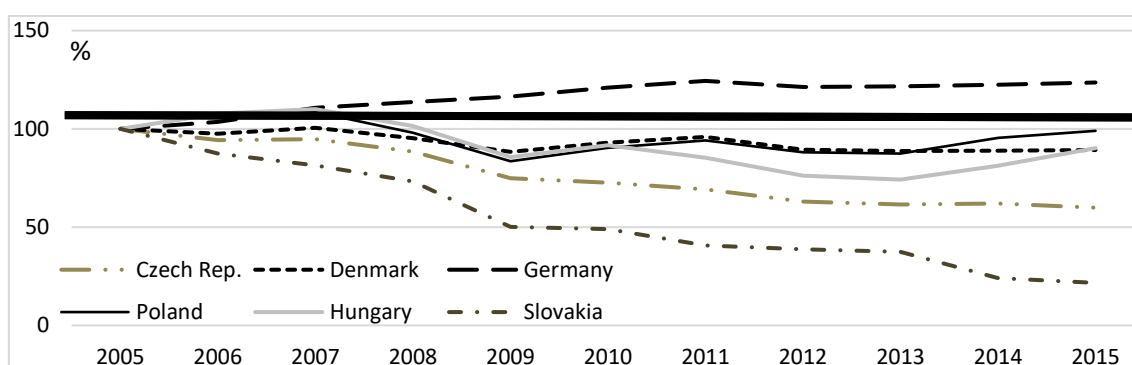
In the Czech Republic and Slovakia, the situation in the production and procurement of pigs for slaughter was far less favorable. Purchase in these countries has been steadily decreasing since 2005. In the Czech Republic between 2005-2007 a relatively small decrease in the purchase of livestock by a total of approx. 4.5 percentage points was noted. In Slovakia, with a much smaller scale of production than in the Czech Republic, the decline for the period was as high as 18.7 percentage points. Throughout the analyzed period in the Czech Republic purchase of pigs for slaughter decreased from 380.3 thousand tonnes to 224.7 thousand tonnes, so approx. 40 percentage points.

In Slovakia purchase decreased from 139.9 thousand tonnes to 30.3 thousand tonnes, so to a level of 21.6% of the purchase in 2005. In both countries, we have to deal with the collapse of production and purchase of pork.

During this period, in two selected major producers and exporters of pork in the EU - Denmark and Germany, we observed a slightly different situation. In Denmark, although this is a much smaller country, the size of the purchase in the analyzed period was comparable to the level in Poland. Since 2008 it began to decline reaching a relatively stable levels of 88 - 95% of the level of purchase from 2005. This is a manifestation of a fairly consistent policy pursued in a well-organized and integrated pork market in Denmark. Part of production potential has been transferred to other countries. Danish companies are also developing fattening commissioned in other countries, eg. in Poland (Jacobsen, Jensen, Dalgaard, Westhoek, Kristensen 2016).

A significant increase in the purchase took place in Germany. In 2005 Germany's share of livestock production in the EU amounted to slightly more than 20% but since 2008 it reached more than 24%. In total, over the period 2005-2015 purchase of animals in Germany increased by 23.6%.

FIG. 2: Dynamics of the volume of pork purchase in the analyzed EU countries over the period 2005-2015 (2005 = 100%)



Source: own study based on: <http://appsso.eurostat.ec.europa.eu>

Along with changes in the volume of purchase in different countries since 2005 significant changes in the number of farms fattening pigs were noted (table 2). The available sources provide the data for selected four years. In all the analyzed countries there has been a significant reduction in the amount of these farms, but to varying degrees and from very different levels of output. In 2005 the biggest number of fattening pig farms were registered in Poland, as much as 701.66 thousand. In subsequent years, there was a significant drop in their number (to 39.7%). In Slovakia in 2013 only 21.6% of farms undertook pig fattening, compared to the level from 2005. In the Czech Republic the number of farms decreased to 34.5%. In Hungary the smallest decrease in the number of farms was recorded. In Denmark in 2013 43% of farms

undertook pigs fattening compared to 2005. As a result, a slightly smaller purchase than in Poland was realized by 3,86 thousand farms, while in Poland by 278.4 thousand.

TAB. 2: Changes in the number of farms involved in the production of pigs for slaughter in the countries of the Visegrad Group, Denmark and Germany

Years	Czech Rep.	Denmark	Germany	Hungary	Poland	Slovakia
2005	14 590	9 020	88 680	316 480	701 660	41 670
2007	11 390	7 210	79 420	283 510	664 020	39 620
2010	4 000	5 070	60 100	183 100	388 460	10 780
2013	5 040	3 860	49 100	133 930	278 400	8 990
2013/2005 (%)	34.5	42.8	55.4	42.3	39.7	21.6

Source: based on: <http://appsso.eurostat.ec.europa.eu>

Based on the collected data, the size of purchase is attributable to one farm in subsequent years was calculated (table 3). The data shows that by far the largest concentration of breeding took place in Denmark and in Germany, although in this case the scale of sales per one farm was much smaller. In both countries, the size of the purchase on one farm has increased on a similar scale, slightly more than doubled. Similar levels were also observed in Poland. However, in this case in 2013 level of purchase per farm was only 12.58 tonnes, while in Denmark, 411.76 tonnes in the Czech Republic, with an increase of 78.3 percentage points - 46.48 tonnes. Despite progressing concentration of production, the scale of purchase attributable to the statistical farm leading fattening pigs in Hungary as well as Slovakia was still quite low.

Another vital issue for the stability of the livestock markets in different countries is seasonality of purchasing, ie volatility of purchase throughout the year. It stems from the variability in the supply related to conditions of pig farming. Markets which are less structured, characterized by the lower concentration of pig farming, greater seasonal supply of livestock is a characteristic feature. With the development of horizontal and vertical integration as well as with the increase in scale of pig fattening producers gained more flexibility to adjust production schedules to meet the needs of customers. Similarly, as is the case in other industries dealing with cost optimization, reduction in the size of inventories can be noticed. Also, in a situation of well-organized supply chain seasonality of purchasing occurs, related largely to the seasonality of demand for meat and eating habits of consumers.

TAB.3: The average size of the purchase of live pigs per statistical farm leading fattening pigs in the Visegrad countries as well as Denmark and Germany (in tonnes / farm)

Years	Czech Rep.	Denmark	Germany	Poland	Hungary	Slovakia
2005	26.07	198.76	50.74	6.08	0.65	3.36
2007	31.63	249.96	62,77	7.37	0.75	2.87
2010	68.98	328.66	90.57	9.51	1.07	6.36
2013	46.48	411.76	111.49	12.58	1.21	5.83
2013/2005 (%)	178.3	207.2	219.7	206.7	187.0	173.6

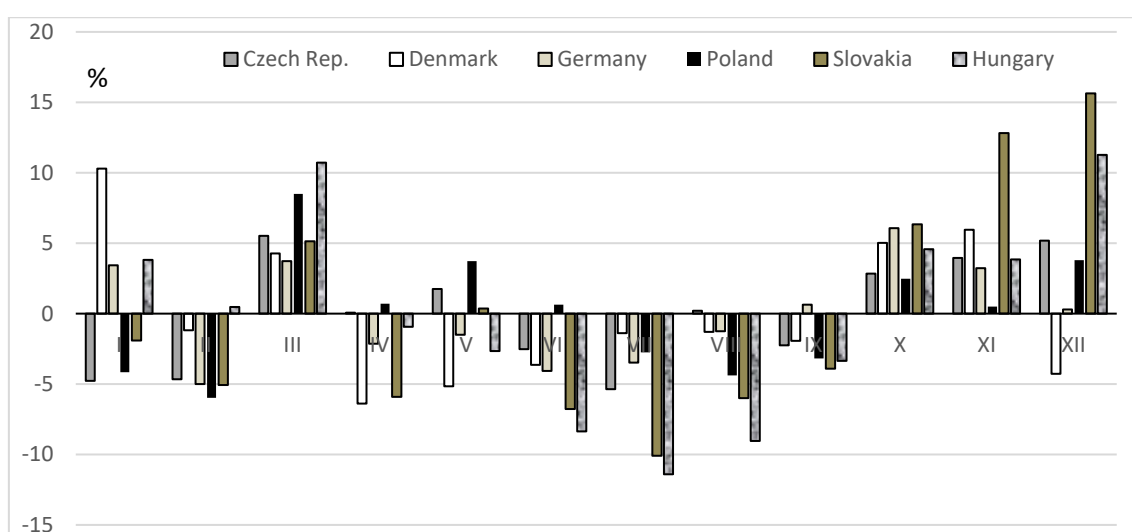
Source: own study based on: <http://appsso.eurostat.ec.europa.eu>

The study calculated, on the basis of monthly data on the volume of purchase, average values of coefficients of the seasonal buying in individual months in the analyzed countries for the years 2005-2015 (Fig. 3.4) and the average annual seasonality factors for each country, indicating the differences of volatility of purchase between countries in a given year (Fig.5) (Roosen, Hennessy, Hennessy, 2004, Luszczewicz, 1987; Pułaska -Turin, 2008).

Analysing the problem of diversity of the volume of buying in subsequent months one can notice that across the countries the differences are relatively small. In all countries higher than the average purchase, taking into account entire analyzed period, happened in March, October and November and December (except Denmark). In February and from April to September purchase in all countries or in their vast majority, stood below the monthly average for the year. Visible is also variation in the scale of seasonality of purchase between countries. The largest fluctuations were observed in the case of Hungary. In July, purchasing in that country was lower than the annual average of approx. 11.4 percentage points, while in March and December it was higher by more than 10 percentage points. Substantial differences in the volume of buying in the year was also observed in Slovakia. While in Slovakia purchasing strongly increased, in comparison to other countries, in November and December (the Christmas season). In total, in Slovakia purchase of pigs for slaughter on average fluctuated greatly, ranging from -10.1 percentage points below the annual average in July to 15.6 percentage points above the average in December. This means that the scale of changes in procurement during the year was the highest of all countries, which shows the least progress in the organization of the livestock and pork markets in the country. In Poland, the diversity of the purchase during the year was lower than in the previously analyzed countries and

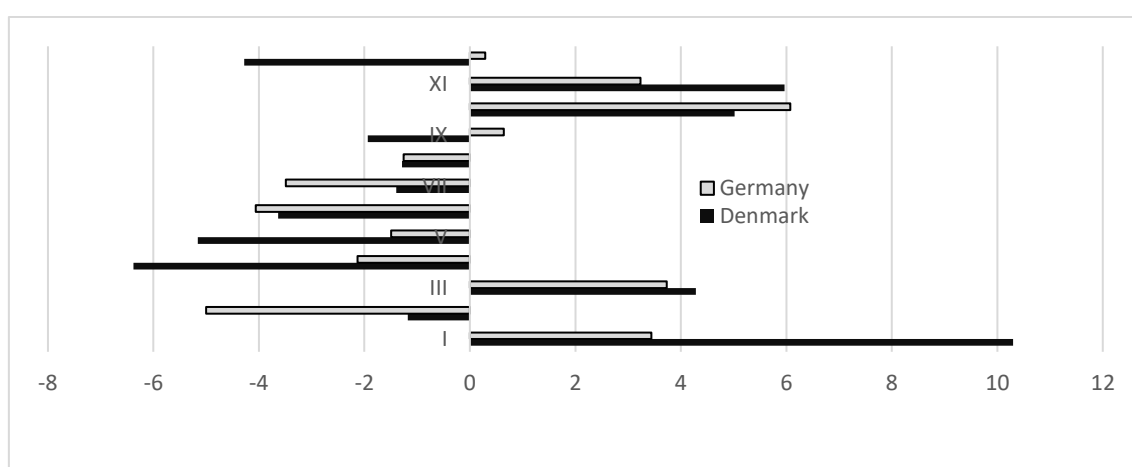
ranged from -5.97 percentage points in February to 8.49 percentage points above the average in March. In the remaining months the purchase did not deviate from the average of more than ± 5 percentage points. Very stable purchase could be observed on the Czech market (-5.4 percentage points in July to 5.5 percentage points in March). This is the market where buying in the analyzed period fluctuated less than in the German market (-5 percentage points in February to 6.1 percentage points in October) and Danish market (-6.4 percentage points in April to 10.3 percentage points in January).

FIG. 3: Average seasonality of purchasing of pork in the countries of the Visegrad Group, Denmark and Germany in the period 2005-2015 (%)



Source: own study based on: <http://ec.europa.eu/agriculture/market-observatory/meat/pigmeat>

FIG. 4: Distribution of the purchase of pigs for slaughter in individual months of the year in Denmark and Germany, the average for the years 2005-2015 (%)

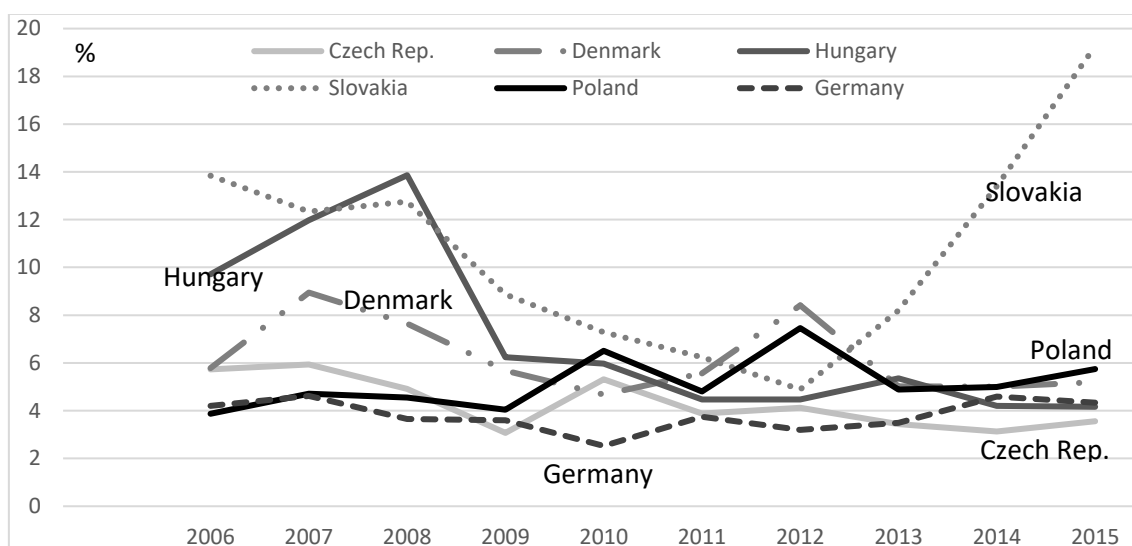


Source: own study based on: <http://ec.europa.eu/agriculture/market-observatory/meat/pigmeat>

Based on the example of the distribution of purchase across the year on the Danish and German markets it can be noticed how deliberately Danish producers control production schedules (Fig. 4). They fill in the gaps in the market in periods of low supply of livestock in the majority of analyzed countries (January) or increased demand for livestock (November - the period of preparation for Christmas for example long ripening hams and sausages) and limit production during periods of high supply in other national markets. In the summer months the purchase of pork on the Danish market is only slightly lower than the average.

Fig. 5 shows the average values of the coefficients of seasonality in the analyzed countries in the individual years.

FIG. 5. Average annual values of coefficients of seasonality in the Visegrad Group countries and Denmark and Germany in the years 2005 to 2016 (%)



Source: own study based on: [http://ec.europa.eu/agriculture/market-observatory/meat / pig meat](http://ec.europa.eu/agriculture/market-observatory/meat/pig%20meat)

The results of the calculations show that from 2013 the scale of fluctuations in the size of purchase in individual months of the year in the various countries was relatively small and in the last year analyzed ranged from 3.6% in the Czech Republic to 5.7% in Poland. The only exception was Slovakia, where from 2013 a strong increase in the seasonality factors to a very high level of 19.3% in 2015 was observed (with a very small scale of purchase at the same time).

The lowest average values of coefficients of seasonality were recorded in Germany. Their maximum value was 4.6% (2007, 2014) and a minimum was 2.5% (2010). Among the countries of the Visegrad Group lowest fluctuations were reported in the Czech Republic from 3.1 (2014) to 5.9% (2007) and Poland from 3.9 to 7.5%. Larger fluctuations occurred in Hungary, which was probably related to the low concentration of breeding pigs.

Conclusion

The above data indicate that countries which joined the EU in 2004, including the countries of the Visegrad Group, are facing a problem of competition from well-organized, integrated, supported by a strong institutional environment producers in the so-called "old" EU. The situation in individual countries is very diverse. A significant decrease in the volume of buying was recorded in the period 2008-2013. After this period in Poland and Hungary the purchase increased and in Slovakia and the Czech Republic the unfavorable downward trend deepened.

In all the analyzed countries processes of concentration of production progressed. In Poland they occurred the fastest. It should be noted, however, that in Poland concentration level of production of pork is very low compared to Germany or Denmark and the Czech Republic. Significantly lower levels of concentration of production occurred in Hungary and Slovakia.

Distribution of purchase of livestock in the year in most of the analyzed countries is similar. Only in the case of Denmark there are noticeable slight shifts of the supply across months in comparison to other countries. It seems that this is the result of a flexible response to changing needs of slaughterhouses in different periods of the year. It is preferable to gradually lower the average coefficient of seasonality in purchase of livestock in most of the countries analyzed, except for Slovakia. This means that the producers of livestock are better adapting to market needs, eliminating the internal conditions of the seasonal breeding and rearing of piglets and fattening of pigs.

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VALUATION OF INTANGIBLE ASSETS

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company – intangible – asset – revenue – know how

JEL classification: K110

Abstract:

The work is focused on the valuation of intangible assets. First presented are theoretical concepts related to the field of intangible assets. Then we focused on characterization of selected yield methods. Before the actual measurement we introduce the intangible asset, which is being valued. Before individual valuation methods of intangible assets are used, it is necessary to perform corporate data analysis. Then selected yield methods were used. Their results are presented listed according to different methods. Based on these results, a comparison of the methods used was performed. Specifically, they are evaluated according to information value, and according to complexity. Conclusion contains a summary of the procedure used to achieve the desired result and certain recommendations on which method is best to use in practice were made based on the results.

Preface

Unlike the valuation of tangible assets, valuation of intangible assets presents in practice more complex problem. Assets of material nature can be described, measured, weighted and better evaluated. Intangible assets are usually unique by nature and it is more complicated to attribute particular benefits from its use to its owner.

In this paper we focus at first on the issue of intangible assets itself and then we draw attention to some particular problems related to valuation of intangible assets. Second part introduces valuation methods including those most used in practice – i.e. yield methods. Later we focus on interpretation of the particular intangible asset and the procedure of obtaining all data necessary for asset's valuation. This data is later used in selected yield methods whose results are compared according to their predictive value and labour intensity. The last part contains the overall summary and recommendations which method is the best for valuation of this intangible asset. Research results (126 respondents in total) were used to analyze issues of intangible assets valuation in a particular company. This paper to verify the concept of intangible assets valuation and make comparisons for a particular company.

1. Concept formulation

In this section, we will take a closer look at the definition of intangible assets, as well as issues that are associated with the valuation of intangible assets and basic valuation methods.

1.1. Intangible Asset Definition

Under the new Civil Code we can understand the term “intangible” in relation to a certain thing as a certain right(s) whose nature permits so, and other things without any material nature. (Kurzycz, 2012)

The term “asset” is, specifically in the economic area, designed for any thing that increases benefits.

Therefore “intangible asset” can refer to a product of intellectual thinking, which lacks a tangible essence, is not monetary in nature, and aims to improve something, to define, to protect. It is also important for this type of asset to be understood.

Intangible asset also has some special features. These include the fact that the provider of intangible assets cannot lose it. Intangible asset can be used in multiple locations at the same time. When in use, they are not consumed - on the contrary, they are rather improved. They can be more easily transmitted over great distances. (Malý, 2002)

1.2. Problems related to intangible asset valuation

As the main problems associated with the valuation of intangible assets we can consider (1) the relationship between the value of intangible assets and time, (2) valuation risks, (3) determination of the share presented by intangible assets in the manufacturing production and (4) costs of industrial property protection.

1.2.1. Relation between intangible asset value and time

This problem is dependent primarily on the nature of intangible assets. If it is, for example, some know-how, we can assume a decline in its value over the time. The opposite situation may arise in case of a trademark - this type of intangible asset can get higher value over the time. But it is true just in that case, when the trademark belongs to the company which is stable and prosperous. (Malý, 2007)

1.2.2. Risks of valuation

The basic valuation risk concerns mainly yield methods that work with the future development of an intangible asset. The risk is presented by a different development from the expected course of events, as well as by certain financial risks or industrial and legal risks, i.e. a loss of rights to a given intangible property. (Malý, 2007)

Specific risk level is provided in Decree no. 345/2015 Coll., Annex No. 22. The risk level is given under the term “capitalization rates” and amounts to 12% (Notice, 2016). This decree is directly related to Act no. 151/1997 Coll., On property valuation. Statutory determination of the risk level is convenient - unfortunately, it does not take into account the nature of the intangible assets, so it can be misleading.

1.2.3. Share of intangible assets in the manufacturing production, industrial property protection costs

The share of intangible assets in the production relates mainly to technical solutions. To determine the share correctly, accurate economic data associated with intangible assets are of the utmost importance. If precisely defined data is not available, an educated guess can be used. However, the estimate already includes some distortion of reality. It is simpler to determine the share in production for a trademark, which mostly covers the total company production.

Costs of industrial property protection represent rather a minor problem in relation to the valuation of assets. Often the actual value of intangible assets is higher than spending on their legal protection. Specific costs will then relate to the registration fee at the patent office and further maintenance fees. (Malý, 2007)

1.3. Intangible assets valuation methods

Three different methodologies can be used for valuation in this area. These are: comparative methods, cost methods, and yield methods.

1.3.1. Comparative methods

This methodology has a good predictive value, as it uses the market in which valued assets are traded for valuation. To use this method, it is necessary to have a specific market, a sufficient number of traded assets in the chosen market, and all the necessary information available. The advantage of this method is in the use of market environment. Its disadvantage lies in the fact that in case of intangible asset of unique nature it is not possible to perform this type of valuation, because of the absence of market environment. (Malý, 2002)

1.3.2. Cost methods

This type of valuation methodology is used least in practice. This method is based on replacement cost and the revaluation of historical costs.

Replacement cost operates with costs that would be required to obtain once more the subject of valuation, which would bring the same benefits. To find out the value it is necessary to determine the price at which we would be able to obtain an exact copy of

the intangible asset which is being valued. Subsequently we need to deduct the costs resulting from wear and tear.

Historical cost method consists of converting money spent on obtaining intangible asset in the past, to current prices. You can take advantage of inflation coefficients. (Malý, 2002)

1.3.3. Yield methods

It is a methodology that is most frequent in practice and considers a time factor. As an example we can use (1) method of intangible assets valuation in accordance with Act no. 151/1997 Coll., On property valuation, (2) licensing analogy method and (3) net present value method.

The first method based on the above mentioned Act refers to intangible assets as to a property right. This method is relatively simple and fast, but it can be seen as inaccurate, because it uses a fixed of capitalization rate. (Mařík, 2011)

Licensing analogy method is more complex and thus more accurate. Moreover, it uses specific data from the company itself. Its results say what amount would have been incurred, if the company had not owned the given asset. (Mařík, 2011)

Net present value method discounts future earnings to present value. It can be used for valuation of multiple intangible assets. Based on the obtained values we can further determine which asset is best to use. The higher the resulting value, the better. (Malý, 2002)

2. Methods

The process of intangible assets valuation requires analysis of corporate sales, which were achieved due this subject of valuation. Furthermore, the overall corporate revenues were also analyzed to get the necessary data. The obtained data was then used in three yield methods. The first method used was based on the Act no. 151/1997 Coll., On property valuation, the second one was licensing analogy method and the third one net present value method.

2.1. Method according to Act no. 151/1997 Coll., On property valuation

The first method used is represented by the following relationship: (Mařík, 2011)

$$C_v = \sum_{j=1}^n \frac{Z_j}{(1 + \frac{p}{100})^j} \quad (1)$$

Where:

CV = the price of property rights determined by a yield method,

Z_j = annual net revenue from rights usage in those years, when the right was used

p = the capitalization rate as a percentage, for property rights set out in the Annex 22, Decree no. 345/2015 Coll.

j = serial number of the year in which the right will be used

n = number of years when the right will be used

2.2. Licensing analogy method

The second from the above mentioned methods is licensing analogy method, which can be formulated like this: (Mařík, 2011)

$$HV = RV * LP * KZ * KK * PM \quad (2)$$

Where:

HV = annual valuation of intangible assets,

RV = annual range of production in financial terms

LP = license fee

KZ = coefficient of obsolescence / coefficient of appreciation

KK = coefficient of capitalization rate

PM = the share of intangible assets in manufacturing production

2.3. Net present value method

The third chosen method is net present value method, expressed as the following relationship (4):

$$NPV = \sum \frac{CF_t}{(1+r)^t} \quad (3)$$

Where:

NPV = net present value

CF = cash flows in years

t = duration of use

r = discount interest rate

3. Case study - problem analysis

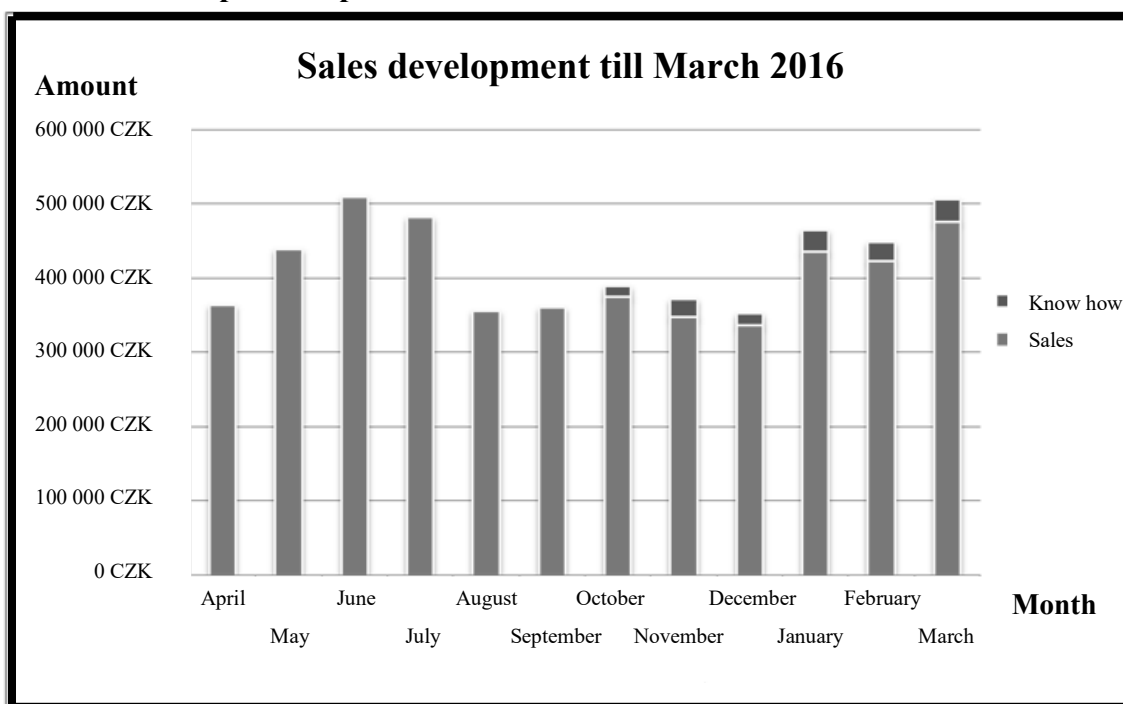
The valuation subject of intangible nature is, in this case, a know-how, which was introduced in INGEMA company (ltd). One of the business activities of this company includes buying and selling goods. The know-how which is being valued is used in sales sphere (namely the introduction of sales via Internet auctions). This kind of sales has not been implemented in the company until recently. To increase sales it was necessary to start focusing on different readily available market environments.

The know-how itself lies firstly in the years of knowledge and experience with an assortment of the goods that is offered for sale. A thorough knowledge of the market environment in which sales are newly implemented is also used. Since the introduction of this method of sale, company's sales have really increased. Therefore, the owner of the company expressed his interest to value this know-how to get some idea about its value.

3.1. Sales analysis

Firstly, the development of corporate sales is shown for the given period.

FIG. 1: Sales in period April 2015 - March 2016



Source: own processing

The figure represents the total revenues of the company (blue) and sales revenues obtained by introducing a new know-how (green). This data presents the base for

collection of further information necessary for valuation by means of the individual methods.

To ensure the sales achieved by means of using the know-how for at least twelve consecutive months, it was necessary to use a logarithmic regression for prediction, in order to subsequently make an overall valuation of this intangible asset. This process is described in the following table.

TAB. 1: Determination of the annual net income from the use of property rights

Month	Sales	License fee	Sales tax	Procurement of goods	Profit
October	15 219 CZK	2 283 CZK	837 CZK	6 849 CZK	5 251 CZK
November	23 658 CZK	3 549 CZK	1 301 CZK	10 646 CZK	8 162 CZK
December	15 525 CZK	2 329 CZK	854 CZK	6 986 CZK	5 356 CZK
January	29 023 CZK	4 353 CZK	1 596 CZK	13 060 CZK	10 013 CZK
February	25 492 CZK	3 824 CZK	1 402 CZK	11 471 CZK	8 795 CZK
March	29 901 CZK	4 485 CZK	1 645 CZK	13 455 CZK	10 316 CZK
April	29 354 CZK	4 403 CZK	1 614 CZK	13 209 CZK	10 127 CZK
May	30 332 CZK	4 550 CZK	1 668 CZK	13 649 CZK	10 464 CZK
June	31 194 CZK	4 679 CZK	1 716 CZK	14 037 CZK	10 762 CZK
July	31 965 CZK	4 795 CZK	1 758 CZK	14 384 CZK	11 028 CZK
August	32 663 CZK	4 899 CZK	1 796 CZK	14 698 CZK	11 269 CZK
September	33 300 CZK	4 995 CZK	1 832 CZK	14 985 CZK	11 489 CZK
Total	327 626 CZK	49 144 CZK	18 019 CZK	147 432 CZK	113 031 CZK

Source: own processing

Current revenues obtained by using know-how (October to March) are listed first in the table. The following months are coloured gray – it is constructed prediction, which helps us to obtain data for the period lasting at least 12 consecutive months. License fee amounts to 15%, sales tax 5.5%, acquisition of goods represents 45%.

3.2. Valuation according to Act no. 151/1997 Coll., On property valuation

For this method we need data from the table no. 1 - the total profit in the amount of 113 031 CZK. Capitalization rate is specified in Annex no. 22 of Decree no. 345/2015 Coll., (6). Time of use of property rights was set for three periods and the amount resulting from property law was set as unchangeable. Calculation according to formula no. 1:

$$C_v = \frac{113\,031}{\left(1 + \frac{12}{100}\right)^1} + \frac{113\,031}{\left(1 + \frac{12}{100}\right)^2} + \frac{113\,031}{\left(1 + \frac{12}{100}\right)^3}$$

$$C_v = \frac{113\,031}{1,12} + \frac{113\,031}{1,2544} + \frac{113\,031}{1,4049}$$

$$C_v = 100\,920,54 + 90\,107,62 + 80\,453,23$$

$$C_V = 271\,481,39$$

The value of property law amounts to 271 481.39 CZK.

3.3. Licensing analogy

For this yield method we further had to perform linear regression for the prediction of corporate sales revenues achieved without using the given know-how. Their total for the twelve months period amounted to 4 817 037.66 CZK. To these predicted sales we need to add aggregate sales from the know-how use (Tab. no. 1), to get a total volume of production amounting to 5 144 664.08 CZK. Like before, in this case we considered a three-year period with a fixed amount for a range of production. Calculation according to formula no. 2:

TAB. 2: Know-how valuation using licensing analogy

Period	Range of production RV	License fee 15 % RV*LP	Coef. of obsolescence 10 % KZ	Value incl. obsolescence RV*LP*KZ	Coef. of capitalization 12 % KK	Share in production 6 % PM	Annual value in CZK HV
2016	5 144 664	771 700	90%	694 530	0,8929	6%	39 491
2017	5 144 664	771 700	80%	617 360	0,7972	6%	31 342
2018	5 144 664	771 700	70%	540 190	0,7118	6%	24 486
TOTAL							95 318

Source: own processing

The license fee is set as a percentage of 15%. Obsolescence coefficient was selected considering that even though experience and skills are continuously increasing, given sales environment is relatively easily accessible. Therefore the rate of obsolescence was set at 10% per annum. Capitalization rate of 12% was obtained from the Decree no. 345/2015 Coll., Annex no. 22 (Notice, 2016). This rate was then used in calculation:

$$KK = \frac{1}{(1 + d)^t} \quad (4)$$

Where:

KK = capitalization coefficient

d = level of capitalization

t = consecutive seasons, when the value is determined

Share in production was determined as the ratio of sales achieved by means of using the know-how to the total corporate sales.

The total amount for three seasons then makes 95 318 CZK, which is a completely different result than we got from the first method used. Furthermore, according to the business owner it is a more real value.

3.4. *Net present value*

The last selected yield method considers again only the resulting profit achieved from property law. Again we have the three consecutive periods. The cash flow value was obtained from Tab. no. 1 as the total profit. Same as in the two previous cases, we consider it unchangeable. The only difference here is a discount indicator – its value can be drawn from the CNB website (2016). However, the value of 0.05% is very low, therefore we calculate with the rate of 5%, using formula no. 3:

$$NPV = \frac{113\,031}{(1 + 0,05)^1} + \frac{113\,031}{(1 + 0,05)^2} + \frac{113\,031}{(1 + 0,05)^3}$$

$$NPV = \frac{113\,031}{1,05} + \frac{113\,031}{1,1025} + \frac{113\,031}{1,1576}$$

$$NPV = 107\,648,57 + 102\,522,45 + 97\,640,43$$

$$NPV = 307\,811,45$$

As a result we now get the amount of 307 811.45 CZK. It is given mainly by the fact that here we have set a different discount rate. Individual amounts for the periods are thus higher than in the first method used, which is basically identical.

4. Discussion

Using three yield methods for the valuation of intangible assets, different results has been achieved. The largest difference was found between licensing analogy method and net present value method.

The first method, based on the Act no. 151/1997 Coll., On Property Valuation, is a bit simple, which also means that it is quite inaccurate. This results from the fixed capitalization rate, which is given by Decree no. 345/2015 Coll., Annex no. 22 and related to the Act on property valuation. This method does not take into account the nature of intangible assets, which, based on its characteristics, may evolve differently over time.

Second method of license analogy contains multiple variables, which are at the same time based on internally generated corporate data. Therefore a larger distortion of reality cannot occur - which results in more reliable end result.

Net present value method is again simpler and therefore less accurate than the method of licensing analogy. However, there is no fixed discount rate - it may be adjusted by the company at its discretion. In this case it was set at 5%

According to the values obtained from the individual methods it can be stated that more accurate results are achieved by license analogy method. It is more complex in its requirements on the input data, but because of this, the result is more accurate. The other two methods can be described as simple, but less accurate, with lower predictive value.

Based on these findings, license analogy method may be clearly recommended for the valuation of intangible assets,

Conclusion

The first part includes description of the intangible asset nature and the related issues that govern its valuation. Different methods which may be used for determination of the intangible asset value are also presented.

Second part contains the characteristics of intangible asset which is being valued, as well as a closer explanation of procedure for valuation of intangible assets and individual valuation methods. They were subsequently used for processing of specific corporate data. Calculations used to determine the value of intangible assets conclude this section.

The last section includes an overall evaluation of the obtained results and describes problems of particular methods. Subsequently, based on the obtained results, recommendations are made - licensing analogy method seems to work best.

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DEVELOPMENT DETERMINANTS OF LOCAL GOVERNMENT UNIT'S PROFILES

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Abstract:

The main task of local government units is to meet the needs of residents. Yet, not only residents are customers of local governments units. These include also local businesses and their contractors, tourists and many others. Their expectations from local government units are often contradictory. Given the complexity of customers and their expectations, local governments are not able to equally satisfy all their needs. This results in specialization and development of local government units' profiles. This article presents the determinants for development of such profiles. In particular, it examines the role of specific resources, management, history, social capital and external factors.

Introduction

A local government unit may be a municipality, a city or a region. The profile of a local government unit is expressed as above-average accumulation of factors favoring certain activities and meeting specific needs within the area of this local government's jurisdiction. Thus, such activities are carried out there with particular intensity. We have to do with a profile when the activities, in which the local government is specialized, ensure substantial inflow of funds from outside its jurisdiction. Thus, the idea of profiles may be classified as an exports-based growth concept (Tiebout, 1962; Kaldor, 1970). The cumulative growth theory is also a close concept (Myrdal, 1957). The offer of local government units and entities located on the territory of their jurisdiction is addressed not only to residents but also/and primarily/ to external customers. These may be companies buying products from companies located in the municipality, consumers buying food produced there, tourists, people willing to buy property and settle in the particular area and others. The notion closest to "profile" is "specialization".

1. Studies of profiles - methods, literature overview

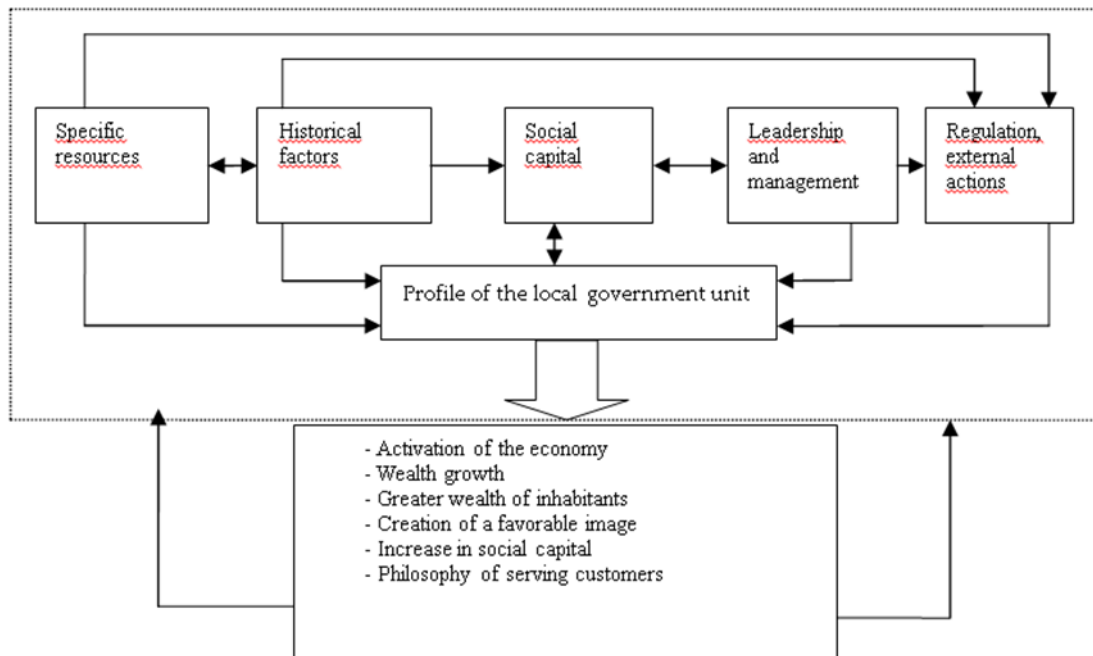
Economic development processes of local governments are analyzed by many researchers. They may take interest in many fundamental issues such as relationship between development and growth (Melkers, Bugler & Bozeman, 1993; Beauregard, 1993; Sengupta, 2000; Chang & Ram 2000). Analyses may also concern problems and areas of local governments' operation, for example, development of entrepreneurship (Westlund & Bolton 2003), clusters (Porter, 1990; Brodzicki & Szultka, 2002; Nowak 2009), strategy development (Wiatrak 2011; Mastalka, Silhankova & Strakova 2014) or development of natural protection activities (Lesniewski, 2013). The concept of profiles fills in the gap between analyses and research on macro- and microeconomic scale. It is relatively easy to operationalize, since profiles can be relatively easily identified using both quantitative and qualitative methods. They may be identified with the use of the employee surplus method or the specialized function identification method (Strahl, 2006). Also cluster analysis or multiplier analysis may be used. Dynamics, and above all complexity and probabilism of processes of creation and development of profiles, may also urge researchers to use qualitative methods in their studies. Due to the diversity of local government units, methods adopted by the researcher must be sufficiently broad, ample and flexible to make it possible to appropriately arrange the objects studied. It is neither practicable nor perhaps even possible to create rigid measures of classifying local governments and, at the same time, characterizing profiles. Measures used in the studies often become outdated. In Europe, such measures as access to telephone, number of cars, access to water and sewage treatment plants have lost their importance. Popularization of higher education is also changing the weight of this factor in assessing the potential of local governments. The aim of the study was to describe and explain the processes and mechanisms of creation of profiles in local government units. The author was interested with selected aspects of the creation and transformation of profiles only. Such research originates from the tradition of *Verstehen*, i.e. an in-depth understanding of phenomena and is essentially based on inductive reasoning (Frankfort-Nachimias & Frankfort, 2001). The research was based on case studies, which in accordance with the definition of R. Yin is an empirical way of studying contemporary phenomena in the context of real life. This is particularly true of such phenomena, in which the relationships between the studied phenomenon and the context are not fully clear and evident (Yin, 2003). During the study, the author collected quantitative and qualitative information, yet analyzed it in a qualitative way. As a result of the multiplicity of actors and determinants of this process, irregular interaction and their mutual multiplication and offsetting, the quantitative study would have to be limited to a selected segment of the whole process only and would not factor in the system-inherent complexity of the issues discussed. The study covered 30 selected municipalities. In 21 of them, as it later turned out, the author managed to carry out the first and the second stage of the study. The author selected a similar number of representatives of each profile, yet some of them had a mixed character. The information obtained in the first phase of the study was quantitative and qualitative. It

was derived from the existing publications. Statistical data, development strategies of municipalities and regions, and newspaper articles were analyzed. The second stage of the study consisted in conducting interviews in selected municipalities and cities. In-depth interviews conducted with 42 persons were transcribed, coded and analyzed.

2. The most important components of the profile creation process - results

Some profiles are formed spontaneously, others are created in a purposeful and planned manner. Individual profiles are developed based on different resources and can contain sub-profiles. However, the general mechanism of profile creation, common to all units, is shown in Figure 1.

FIG. 1: Factors determining the local government's profile



Source: own

2.1. Specific resources

Specific resources are the key to determining the profile. The less frequent the specific resource in the region and in the country, the more valuable it is and the more it can form the basis for profile creation. Specific resources include: deposits of natural resources, high quality arable land, soil and weather conditions favouring the conduct of certain types of activities, proximity of large markets, location near the affluent urban areas, access to efficient transport networks, diversified terrain structure and natural attractions, real estate and other assets held by municipalities and others. Sometimes specific resources almost decide about the current and future profile. This happens when these resources are particularly valuable for a particular group of entities, and a given

location does not have at its disposal any other, equally valuable resources. Land in municipalities located in the vicinity of large cities is especially valuable for housing construction. Strong pressure from investors results in fast changes in the profile of many of these municipalities - from agricultural to residential one. The overwhelming majority of towns located by the sea witness the development of touristic activity. Probably, this process would take place even if it was deliberately hindered by the authorities of such towns. The strength of the impact of the specific resource plays in this case a dominant role. Apart from the direct impact on shaping the profile, precious resources affect this process also indirectly. Firstly - used in a certain way for a long period of time, the valuable resources shape the location and determine its profile, while creating barriers to change it. In a certain area a specific land use planning is developed, specialist knowledge and experience is gathered and transferred and a specific brand and image of the place is created. All this helps to maintain and consolidate the existing profile. Secondly - in certain cases, this process is enhanced by the administrative measures or specific regulations.

2.2. Historical factors

In many cases, historical factors have a decisive influence on the direction and the pace of the profile determination process. This is due to the following phenomena:

- a) The conduct of a particular activity leads to a gradual development of appropriate know-how and experience, which are subject to accumulation, diffusion, inheritance and improvement. Human capital shaped in this way is attractive to many investors looking for a place to do business. Moreover, it promotes the development of entrepreneurship in the area.
- b) The historically determined profile is not only conducive to the development of know-how, but also affects the formation of specialized infrastructure.
- c) The historically shaped image and brand of the place may have a strong impact on profile consolidation. The image formed in the past may contribute to the deepening of specialization and hinder changes of the profile.
- d) Factors which consolidate the historically shaped profile are also the inertia of residents and certain businesses operating in the area. Many entrepreneurs, despite strong economic incentives urging them to relocate or even liquidate their business, continue to operate in a particular area.
- e) Combination of factors and historical developments frequently produces agglomeration effects. The existing conditions, not only urge the existing business to continue their business activity in the area, but also constitute an incentive for new investments.

2.3. Social capital

Social capital is one of the most important factors shaping the profile. According to P. Bourdieu, social capital is the sum of the existing or potential resources associated with the existence of permanent networks of more or less institutionalized interdependences - or, in other words, related to the participation in a particular group

(Bourdieu, 2001). According to R. Putnam, the effective operation of institutions is strongly dependent on the social context and the history of a particular area (Putnam, 1995). Social capital may be seen as one of resources, and its role is so significant that it should be analyzed separately. Social capital is largely determined by historical factors, yet, it is also affected by current decisions and events. Typically, along with the development of a particular area and its specialization, the knowledge and experience of people in a particular domain also increase. The accumulated knowledge and experience begin, at some point, to play a key role in consolidating the profile. Thus, what used to be the unintentional (the most often) result of individual decisions of the authorities, residents and businesses (e.g. as regards the development of certain economic activities) becomes the driving force of development. Apart from historical factors, the educational system plays a crucial role in shaping the social potential. In many places where the profile has already been shaped or is currently being shaped, attempts are being made to adapt the educational system to current and future needs of the local labor market. Local attitudes, values and standards or beliefs are equally important. Cultural features of the communities undergo changes, but it is a slow process and generally beyond control. In the process of deliberate shaping of profiles, the cultural features and the cultural background should be treated as a predetermining factor and any planned activities should be adapted to them.

2.4. Leadership and management

One of the major factors, and sometimes even the most important factor determining the profile of a local government unit is the way, the vision and the direction imposed by the central personage and the method and quality of managing a particular government unit. In many cases it is thanks to leaders that make local governments, which used to be ordinary authorities, gain momentum in development and achieve excellence in the implementation of selected functions. The primary purpose of a leader is to appropriately define key resources which are available in a particular area. It is not always clear which resource is actually the key one in a particular situation. The leader, having a specific vision of local government's development, is often forced to select the key resources which will be the basis for meeting the key needs (also defined by leaders) of customers. This means that leaders play in such a situation, the role of initiators of the profiling process. The role of leaders is thus associated with the following:

- a) The need to have a clear and convincing vision of how leaders can develop the local government. It seems that there are very few such visionaries, but these relatively few may stamp their own imprint for many years.
- b) The ability to see and select key resources. Not all of the advantages of the place are easy to identify. Some features and phenomena may be seen as burdens or threats, and only the visionary leader can see them as a future asset.
- c) The ability to select key customers. In practice, this means the ability to choose the future profile of the area. The leader has to demonstrate both personal

courage and extensive knowledge. In many cases, leaders decide whether the local government will continue the current trend of development or whether they will start to change the current profile.

- d) The ability to inspire others with the vision and gain allies. The vision of the president of a city or town, mayor of a municipality or head of a community must be shared by the majority of inhabitants. The key task is to find the right channels of communication with inhabitants and the ability to create a clear, convincing message. This means the need to gain allies and the ability to overcome resistance.
- e) Independence or political autonomy of leaders. Relatively few prominent activists of local government units are also political activists (although such cases may not also be ruled out).
- f) Leaders' belief in their reasons, persistence and resistance to criticism. Effective local leaders can firmly and skilfully defend their case. Shaping the profile is a complex process and it takes time. Failures that may arise should not discourage and weaken leaders' determination.
- g) Achievements. The achievement of success is the condition for leaders to have faith in their own effectiveness. It is important for a leader to be able to boast of even a small success at the beginning of their term of office. This strengthens their position and consolidates their faith in the rightness of the chosen direction. It undermines critics and helps to gain new allies. The absence of success at the beginning of the term of office clearly weakens the leader's position and gives the impression of their ineffectiveness.

2.5. Regulations and external actions

Decisions of legislative and executive authorities can also directly and indirectly affect the development, consolidation or disappearance of profiles of local government units. The profiles of local governments are often affected by external decisions regarding resources of a particular area. Such decisions can affect the formation, method of use and also the disappearance of resources. It often happens that smaller local government units have limited influence on decision about resources. Also decisions of other authorities may affect the creation or disappearance of resources, as in the case of the construction of a ring road, which will direct traffic (and the demand for particular types of services) away from the place or the creation of a landscaped park, which will limit the possibilities of construction, but it will help to develop tourism. Decisions and external actions may have a direct or indirect impact on the profile of the place. The examples of direct actions are decisions on the construction of large industrial plants, investment in infrastructure and construction of other facilities with a strong impact on the functioning of the municipality (e.g. construction of military units, prisons etc.) Indirect decisions are not addressed to specific places, but may be of particular importance for them. For example, the decision to tighten the requirements for greenhouse gas emissions may be of particular importance for local governments with industrial profile, where power plants, cement manufacturing plants, steel mills and other plants emitting large quantities of such substances are located.

3. Discussion

We have to do with a profile when the activities in which a given area is specialized provides it with a significant inflow of funds from outside of the area. Thus, the concept of profiles makes clear reference to the economic base theory e.g. (Wang & von Hofe, 2007). According to the theory of exports-based growth, there is a relationship between the growth rate of the export business and the level of employment in all sectors of local economy (Tiebout, 1962). Moreover, according to the concept of B. Weinstein, H. Gross and J. Rees (1995) an important consequence of the export business is partial tax shifting to inhabitants of other regions. The achievement and success of the already operating businesses encourage other entrepreneurs to start business in the municipality. The trickle-down effect, first described by Hirschmann (1964) is driven by investment. Typically, the development of the municipality and its specialization contribute to broadening the knowledge and experience of inhabitants of given area. The accumulated knowledge and experience start, at some point, to play a key role in consolidating the profile. Consequently, what used to be the unintentional (most often) result of individual decisions of municipal authorities, residents and businesses (e.g. as regards the development of certain economic activities) becomes the driving force of development. Other key determinants of the creation of profiles are specific resources, historical factors, competent leadership as well as the regulations and external actions. Although the studies by numerous authors (Wiatrak 2011; Kuźniar 2013; Kłobukowski 2014) confirm the benefits of specialization of municipalities, the concept of profiles still needs further verification.

Conclusion

Local government units' profiles are the result of the combined action of a number of external and internal factors. The strength of the impact of these factors often causes that profiling takes place regardless of the current aims and activities of municipalities and it is extremely difficult to gain control over such spontaneous processes. Sometimes, however, this process is planned and controllable. This can protect against such dangers as such, for example, excessive specialization or destruction of broadly understood resources, necessary for a particular profile to function. The key task of municipal authorities is to reduce the risk in the process of creating and developing profiles.

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MODELLING THE DEVELOPMENT OF EGGS PRICES IN THE CR

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Keywords:

Box-Jenkins methodology – egg prices – prediction

JEL classification: C22, C53, Q13, Q18

Abstract:

The aim of the paper is to examine the long term development of consumer prices of eggs, analyse possible sources of volatility, and project them into future. We applied Box-Jenkins methodology on monthly data from 01/2001 to 08/2016 obtained from agris.cz. The stationarity was tested by ADF test and the type of the ARIMA model was identified from ACF and PACF functions. It was found that the best model for modelling the consumer prices of eggs was ARIMA(1, 0, 0) with constant and impulses in crisis months (03, 05, 07/2012). Based on the results we can expect that the price will slightly increase from 2.56 CZK/pc to 2.61 CZK/pc in next 12 months.

Introduction

Eggs are an important and cheap source of proteins and therefore needed for healthy nutrition. World market with eggs is characterized by increased production and consumption in many countries. For the Czech Republic (CR) it is typical that the imports of eggs are high, because the prices of foreign (especially Polish) eggs are lower. The self-sufficiency level of the CR in eggs was 85.5% in 2015, and of inhabitants 42.7% (this % of congeries of eggs was noted at households). Annual consumption of eggs was 14.3 kg/inhabitant (249 eggs / inhabitant / year). (Ministry of Agriculture – MoA, 2016). From this amount 21.3% of eggs were coming from domestic breeding. In year 2015 the egg market was characterized by the year-to year decrease of the average number of laying hens, decreasing of the egg production and increasing of imports and exports, decreasing consumption and slight decrease of price.

Unlike other agricultural sectors, poultry is not directly subsidized. On the other hand, there are requirements on welfare of laying hens. Starting from January 2012, the farms in EU had to widen the battery cages and hence adjust the production halls. The date of force of the legislation was decided in already in 1999, but not all member states took necessary investments and therefore tried to postpone the force of the directive. Czech producers belonged to the group that obtained new battery cages on time. “The

production capacities stayed larger as according to the legislation, the farmers could keep old production halls when they were not housing there any hens“, (Pechrová and Medonos, 2016). Eggs producers had to adjust to the requirements of the welfare agricultural policy in 2012 when small battery cages were banned. Necessary investments into new cages might have influenced the costs of the farms. There was a concern that those higher costs would be reflected in the higher prices of the products eggs. Truly, the average price was the highest in March 2015 from period 2001–2016.

The aim of the paper is to examine the long term development of consumer prices of eggs, analyse possible sources of volatility, and project them into future. „Traditionally, future egg price has been predicted using a combination of regression analysis and experienced-based intuition to build a model, which is then fine-tuned to prevalent market conditions“, (Ahmed and Mariano, 2006). Our article is structured as follows. First, the results of previous researches in the sector of eggs production are presented. Next section describes used data and method. Then the results of the analysis are displayed and discussed in the next. Last section concludes.

1. Literature review

Modelling of prices of eggs can be done by various methods. For example, Li et al. (2013) used chaotic neural network. They elaborated a short-term prediction model of weekly retail prices for eggs from 01/2008 to 12/2012 in China. Predicted prices were compared with results of Autoregressive Moving Average (ARIMA) model. “The result shows that the chaotic neural network has better nonlinear fitting ability and higher precision in the prediction of weekly retail price of eggs”, (Li, Li and Wang, 2013). Similarly, for the case of China, Li, Li and Wang (2010) used econometric model to assess monthly prices of eggs from 03/2000 to 09/2009. Explanatory variables were commercial price, feed market prices and first-order and second order lag of monthly eggs. For the case of Japan egg prices, Oguri et al. (1992) applied autoregressive model and modified multiple regression model on monthly and yearly wholesale egg prices for years 1986–1990. The multiple regression model was more useful and predictable than the autoregressive model. However, the t-value of dummy coefficient of partial regression was low. Neural networks for prices of eggs projections were also used by Ahmad and Mariano (2006). The advantage is that the neural networks recognize the pattern in previous annual egg prices and then predict the future price more efficiently. For extended discussion see research of Ahmad (2011) “Results suggest that neural networks may be a more reliable method of egg price forecasting than simple regression analysis if reliable data are collected and manipulated for such models,” (Ahmad and Mariano, 2006).

2. Methodology and Data

The data about consumer prices of eggs were obtained from internet pages www.agris.cz for the period from January 2001 until August 2016. From 2011, the data were observed with week periodicity. Until that, they were collected weekly, so they were transformed on monthly data by calculating the arithmetic mean. Two gaps in 2015 were filled by a value which was the average of two neighbour-hooding values. Average annual prices are presented in FIG 1.

FIG. 1: Average annual prices of eggs (CZK/pc)

Year	2001	2002	2003	2004	2005	2006	2007	2008
Price (CZK/pc)	2.79	2.39	2.44	2.78	2.35	2.34	2.51	2.80
Year	2009	2010	2011	2012	2013	2014	2015	2016
Price (CZK/pc)	2.60	2.49	2.32	3.59	3.07	3.09	3.07	3.10

Source: own elaboration. Note: Average for 2016 includes first 8 months.

The time series was tested by augmented Dickey-Fuller test (ADF test) whether it was stationary. There are 3 types of ADF test with constant and trend, with constant only, and without constant and trend. The first case is calculated according the equation (1)

$$\Delta Y_t = \beta_1 + \beta_2 t + \beta_3 Y_{t-1} + \sum_{i=1}^m \alpha_i Y_{t-i} + \varepsilon_t, \quad (1)$$

where ΔY_t is the first difference of the examined variable, t is trend variable, ε_t is pure white noise error term, m is the maximum length of the lagged dependent variable, and α, β are parameters (β_1 represents the constant). Box and Jenkins (1970) introduced the models that are working with autoregressive (AR) and moving average (MA) processes. When the time series is not stationary, its difference of d^{th} order must be done. When there is a seasonal term, the form is SARIMA(P, D, Q)(p, d, q). Diagnostic of the model type is done by Autocorrelation function (ACF) and Partial Autocorrelation function (PACF) that were plotted in order to determine the order p of AR process and order q of MA process. Despite that the Fisher F-test for seasonality revealed that it is present, the coefficients for SARIMA model were not statistically significant. Therefore, in our case, an ARIMA(p, d, q) model is sufficient (2).

$$Y_t = \beta + \sum_{i=1}^p \alpha_i Y_{t-i} + \sum_{j=1}^q \delta_j \varepsilon_{t-j} \quad (2)$$

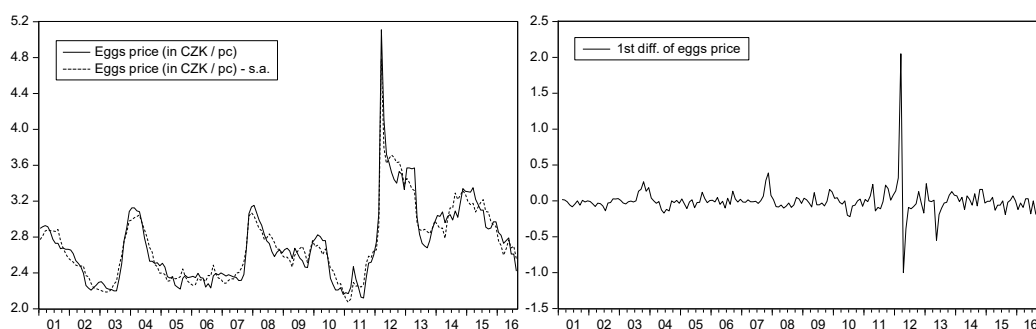
The model is applied on seasonally adjusted time series. The adjustment was done by algorithm elaborated by Census X13-ARIMA. Verification of the model for was done for by Breusch-Godfrey serial autocorrelation LM test. Null hypothesis states that there

is no serial autocorrelation. If the calculated value exceeds the tabled criterion from Fisher and χ^2 distribution the null hypothesis is rejected and there is autocorrelation. Heteroscedastity was tested by Autoregressive Conditional heteroscedasticity (ARCH) test. Null hypothesis was again that there is no heteroscedasticity. The test is also using Fisher and χ^2 critical values and rejects the null hypothesis when the calculated value of the test exceeds the table values. Finally, the normality was tested using Jarque-Bera test with null hypothesis that the residues are normally distributed. Calculated value of the test is compared to critical value of Jarque-Bera distribution. If the value exceeds the table one, null hypothesis is rejected. Based on the ARIMA model, the predictions are done for 12 months with 95% confidence intervals. We used software Eviews 8.

3. Results

During the period 2001 to 2016, the prices fluctuated mostly between 2 to 4 CZK per piece. The lowest price was in 2011 (2.32 CZK/pc) and the highest the year after (3.59 CZK/pc) when new battery cages were required. In 03/2012, the average price in the CR achieved 5.11 CZK/pc. Taking into account that this year the Easters were at the beginning of April, the producers could profit from higher demand for eggs (The price was 4.11 CZK/pc at that time.). High average price did not last; it decreased to 3.33 CZK/pc by the end of the year. However, it got back under 3 CZK/pc (as in 01/2012 – 2.74 CZK/pc) only in 06/2013 (2.83 CZK/pc). In 01/2014, the price was again over 3 CZK/pc (3.04 CZK/pc). Next decrease of the prices under this threshold was noted only in 08/2015. In last available month – 08/2016 was the price as low as it was not for almost four years. Lower price than 2.42 CZK/pc the most recently occurred in 09/2011. The development of the prices of eggs is displayed at FIG 2. First differences could have been used to make the time series stationary. After this transformation the process that generated consumer price of eggs became a white noise process and could not been modelled. Due to this fact, we did not integrated the time series. Seasonally adjusted time series has character of log-normal distribution with mean of 2.71 2.66 CZK/pc, median 2.66 CZK/pc, and standard deviation 0.40 CZK/pc.

FIG. 2: Development of consumer prices of eggs (CZK/pc) from 01/2001 to 08/2016 (left – empirical and seasonally adjusted data, right – first differences)



Source: own elaboration

ADF model with trend and constant, constant and without trend and constant were elaborated. After the differentiation (integration of the first order) the eggs consumer prices becomes a white noise process and hence it is not predicable. Only in the case ADF model without constant and trend, the time series is non-stationary, other models are stationary at 5% significance level. The F-test for seasonality revealed that the seasonal term is present (with 0.01% level of significance), but its value is low. In SARIMA model, no parameter was statistically significant. Therefore, we used ARIMA model and applied it on seasonal adjusted time series. A Census X13-ARIMA algorithm was applied. There had to be put a unit impulse on observations 03, 05, 07/2012 (the impulses should not be in the months in the row, there is a danger of autocorrelation) in order to accommodate the shock in 2015. The results are presented at FIG. 3. IMP is a time series of dummy variables with $IMP\ 1 = 03, 05, 07/2012$. Model was due to high variability estimated in natural logarithms.

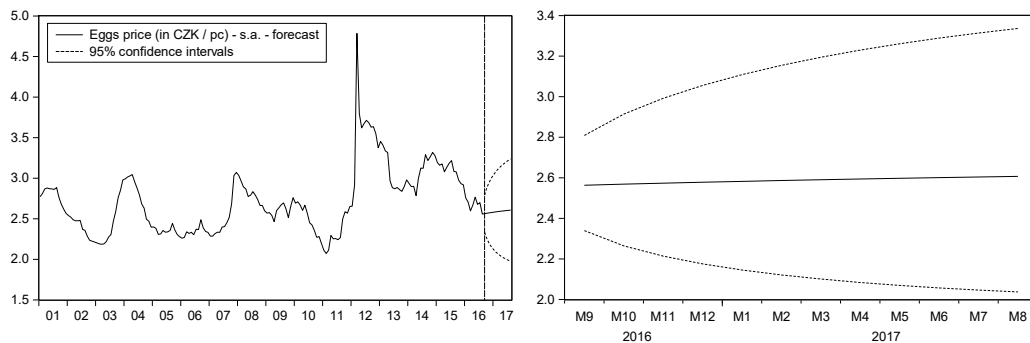
FIG. 3: ARIMA(1, 0, 0) with constant model of eggs consumer prices (CZK/pc) from 01/2001 to 08/2016 with projection to 09/2016 to 09/2017

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.977104	0.059470	16.43025	0.0000
IMP	0.114081	0.019136	5.961471	0.0000
AR(1)	0.943877	0.024379	38.71672	0.0000
R-squared	0.897623	Akaike info criterion	-3.323117	
Adjusted R-squared	0.896510	Schwarz criterion	-3.271281	
F-statistic	806.6390	Hannan-Quinn criter.	-3.302113	
Prob(F-statistic)	0.000000	Durbin-Watson stat	1.900726	

Source: own elaboration

There was no heteroscedasticity and autocorrelation. However, due to the long time series, they were not normally distributed at the 0.05% level of significance. Nevertheless, this requirement does not have to be necessary fulfil. The consequence is only in the confidence intervals of the predictions that might have been biased (wider) than that would be in the case when the residues were normal.

FIG. 4: Prediction of consumer prices of eggs (CZK/pc) for 09/2016-08/2017



Source: own calculation

The prediction of price of eggs was done in the original data (non-logarithm). The results are displayed at FIG 4. On the left graph, you can see the development from the beginning of the time series. Right graph shows the detail of the projection. According to the results the price of eggs will slightly increase. It shall be 2.56 CZK/pc in August 2016 and increase to 2.61 CZK/pc in August 2017. No significant changes are expected. Upper bound of 95% confidence intervals show that the price shall be higher than 2.79 CZK/pc and lower than 3.24 CZK/pc. Taking into account the lower bound of the interval, the price shall be lower than 2.33 CZ/pc and higher than 1.98 CZK/pc.

4. Discussion

Researchers usually find that the agricultural time series are non-stationary and stationary after first differentiation (see for example Rumánková, 2016). In our case, the differentiation of the first order caused that the process that generated the time series of consumer prices of eggs was only a white noise. It is not possible to model it. Therefore, we used the integration of order 1. It reveals that modelling of the prices of eggs is complicated. Besides consumer prices are derived from farmers' prices. There might be some other more suitable methods for modelling the agricultural prices – e.g. neural networks as applied by Ahmad and Mariano (2006). Also expert guesses are quite reliable. For example agrarian analyst Havel (2012) expected that the high prices of eggs caused by the change of legislation at the beginning of 2012 will not last. He was right that the lack of eggs was not a treat and that the prices decreased after the crisis.

Conclusion

The aim of the paper was to model the development of consumer prices of eggs, and project them into future. Knowing the future consumer price reduces the market risks of the egg producers as those prices are related. We applied ARIMA(1,0,0) model with constant on the data from 01/2001 to 08/2016. The highest price was noted in 2012, but it decreased and stabilized later. Prediction from 09/2016 up to 08/ 2017 suggests slight increase of the consumer price of eggs (from 2.56 CZK/pc to 2.61 CZK/pc) without dramatic changes. Also 95% confidence intervals do not expect any significant increase (max. 3.24 CZK/pc) or decrease (min. 1.98 CZK/pc) at the end of the period. The challenge for future is to predict the consumer price of eggs also by other methods (e.g. regression model with relevant explanatory variables) and compare the results.

Acknowledgement:

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THE EFFICIENCY OF LOW WATER RETENTION IN POLISH PROVINCES – SPATIAL ANALYSIS

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Keywords:

low water retention – efficiency – natural disaster – public finances

JEL classification: H12, H56, H83

Abstract:

The research question of article is: did the 2010 flood have influence on efficiency of the low water retention in Polish provinces? In the article is verified the hypothesis: the 2010 flood had influence on efficiency of low water retention in Polish provinces. Before flooding in 2010, the lowest efficiency of low water retention was registered in Podlasie (11.54 US\$ per 1 m³) and Opole (11.75 US\$ per 1 m³). After mentioned flood, lowest efficiency was noted in provinces located in the Vistula river basin (Lesser Poland – 105.17 US\$ per 1 m³, Silesia – 69.42 US\$ per 1 m³).

Introduction

In the year 2010, the great flood occurred in the area of Poland. It was the most devastating inundation in the Vistula River basin in last years. Five years later, area of Poland was affected by drought. Droughts and floods are examples of natural disasters (Abbott, 2009; Alexander 1993). These phenomena can be defined, according to the Natural Disaster Act, as an events connected with impacting of nature's forces (Ustawa, 2002). In counteracting effects of such phenomena, the important role should play the low water retention (Piepiora, 2012).

Low water retention can be defined as comprehensive, multi-pronged action within river basins, taking into account natural and economic conditions. Useful resources of low retention can be enriched by deep plowing or tilling the soil concise and liming and enrichment in organic matter and heterogeneous light soils (agromelioration) and the forestation of the landscape (phytomelioration) (Drabiński, 2006). Economic conditions can be considered in the aspect of efficiency. In economic theory, there are several types of efficiency – among them the allocative efficiency and efficiency of X-type. Allocative efficiency means that resources available to the community are used to

produce goods and services in a way that is closest to the actual distribution of social preferences. The efficiency of X-type is associated with the level of effort required to obtain the product. In practical terms the substance of efficiency is reduced to study the relationship of total effects (results) of actions to total inputs using the quotient or differential formula. Thus, in accordance with the economic terminology, the efficiency should be narrowly defined as the ratio of investments to results (Kachniarz, 2012).

Because the data concerning drought in the year 2015 are not yet available, the aim of the article is to verify the hypothesis: the 2010 flood had influence on efficiency of low water retention in Polish provinces. The research question of article is: did the 2010 flood have influence on efficiency of the low water retention in Polish provinces?

1. The methodology

Authors used the method of analysis of efficiency of X-type – the ratio of investments to results. The data for Polish provinces in years 2003-2014 were collected from the BDL – GUS (GUS, 2015). Then the analysis in spreadsheet was conducted. The currency was changed from Polish Zloty to US dollar (NBP, 2016). After the analysis, maps were generated using Polish Geoportal 2 iMap (Geoportal, 2016) and conclusions were drawn.

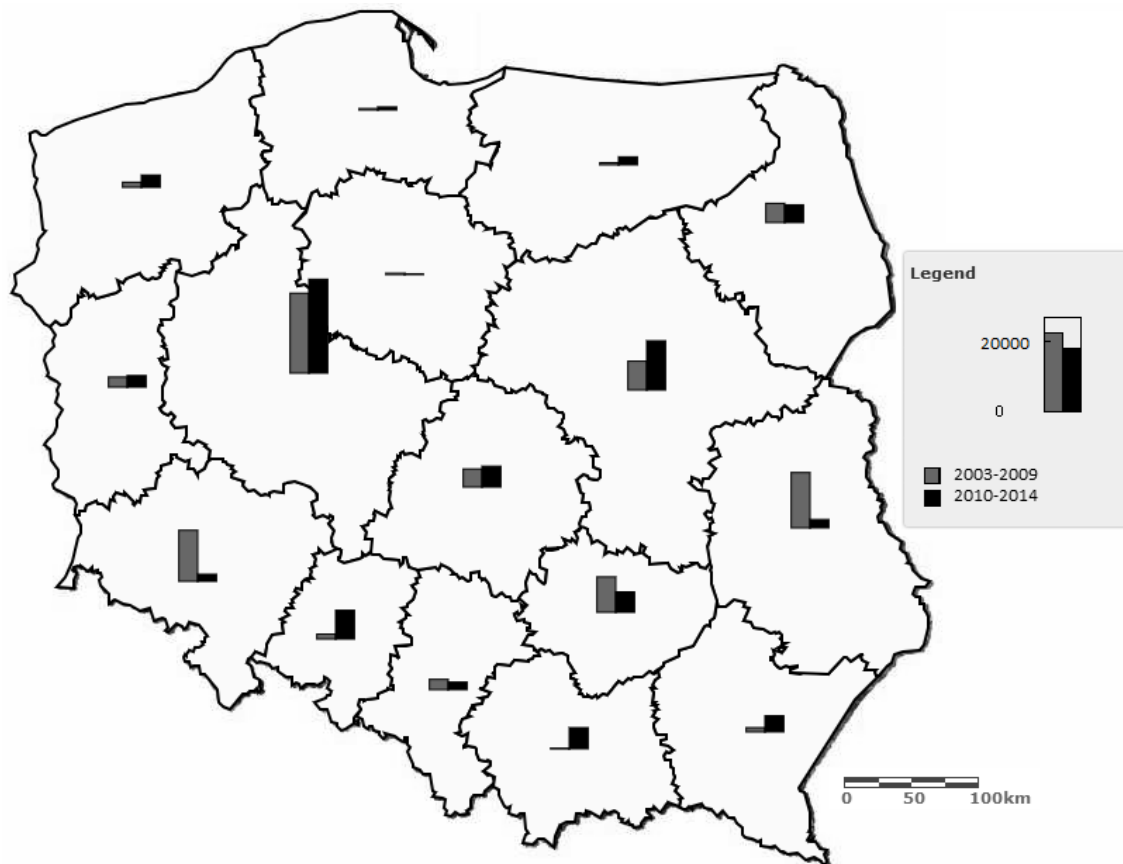
2. Investing expenses for low water retention in the area of Poland

Poland is situated at the Baltic Sea in the Middle-East Europe. The south part of Poland has two mountain ranges called the Sudetes (Sudety) and the Carpathian Mountains (Karpaty). The main rivers of the country are Oder (Odra) and Vistula (Wisła). The climate of the examined country is characterized as a transient of the mesothermal zone (Piepiora, Babczuk, Kachniarz 2015b). Poland has 16 provinces: dolnośląskie (Lower Silesia), kujawsko-pomorskie (Kuyavia-Pomerania), lubelskie (Lublin), lubuskie (Lubus), łódzkie (Łódź), małopolskie (Lesser Poland), mazowieckie (Masovia), opolskie (Opole), podkarpackie (Subcarpathia), podlaskie (Podlasie), pomorskie (Pomerania), śląskie (Silesia), świętokrzyskie (Holy Cross), warmińsko-mazurskie (Warmian-Masuria), wielkopolskie (Greater Poland), zachodniopomorskie (West Pomerania).

In the period 1919-2015 floods occurred most often in the examined area. The phenomenon of flooding applies equally the whole country (D. Guha-Sapir, 2015). Floods are hydrometeorological disasters (Rodzik, 2008; Somorowska, 2009). As we can see in fig. 1, the highest level of investing expenses for low water retention before (23 million US) and after 2010 flood (27 million US\$) was noted in Greater Poland. Besides, the higher level of expenses after 2010 flood was noted mostly in provinces situated in the Vistula river basin. The money for investments in low water retention came from: budgets of voivods, the Fund for environmental protection and water

management, the Fund for protection rural areas, structural funds, budgets of self-governments and from other sources.

FIG. 1: Investing expenses for low water retention in Polish provinces in the years 2003-2009 and 2010-2014 (in '000 of US dollars indexed to the year 2014)

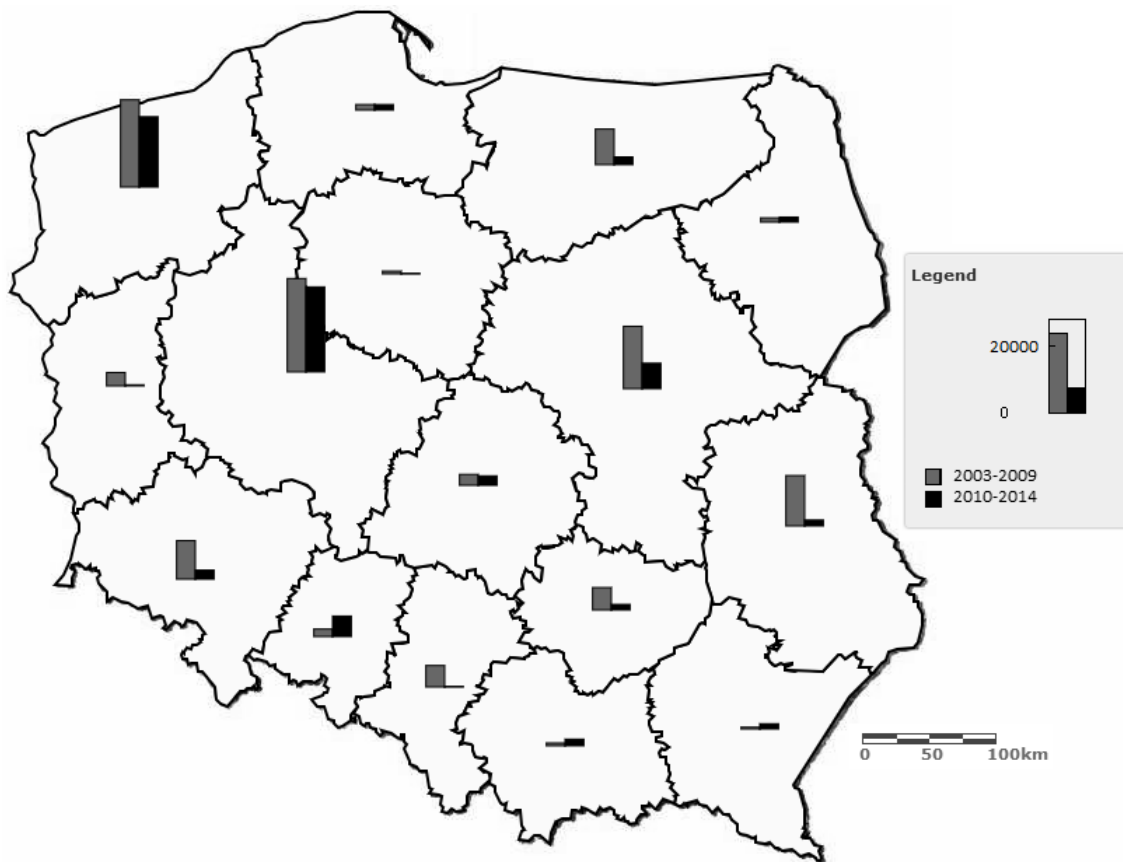


Source: Own study

3. Effects of investing in low water retention

As we can see in fig. 2, the highest capacity was noted in Greater Poland Province and in West Pomerania Province. In Greater Poland increasing capacity (dam3) amounted to 2793 dam3 and 2541 dam3 and in West Pomerania – 2609 dam3 and 2102 dam3. The capacity decreased everywhere besides Opole after 2010 and it was not connected with the flood.

FIG. 2: Effects of investing in the low water retention – the capacity in the years 2003-2009 and 2010-2014 (in '000 of US dollars indexed to the year 2014)

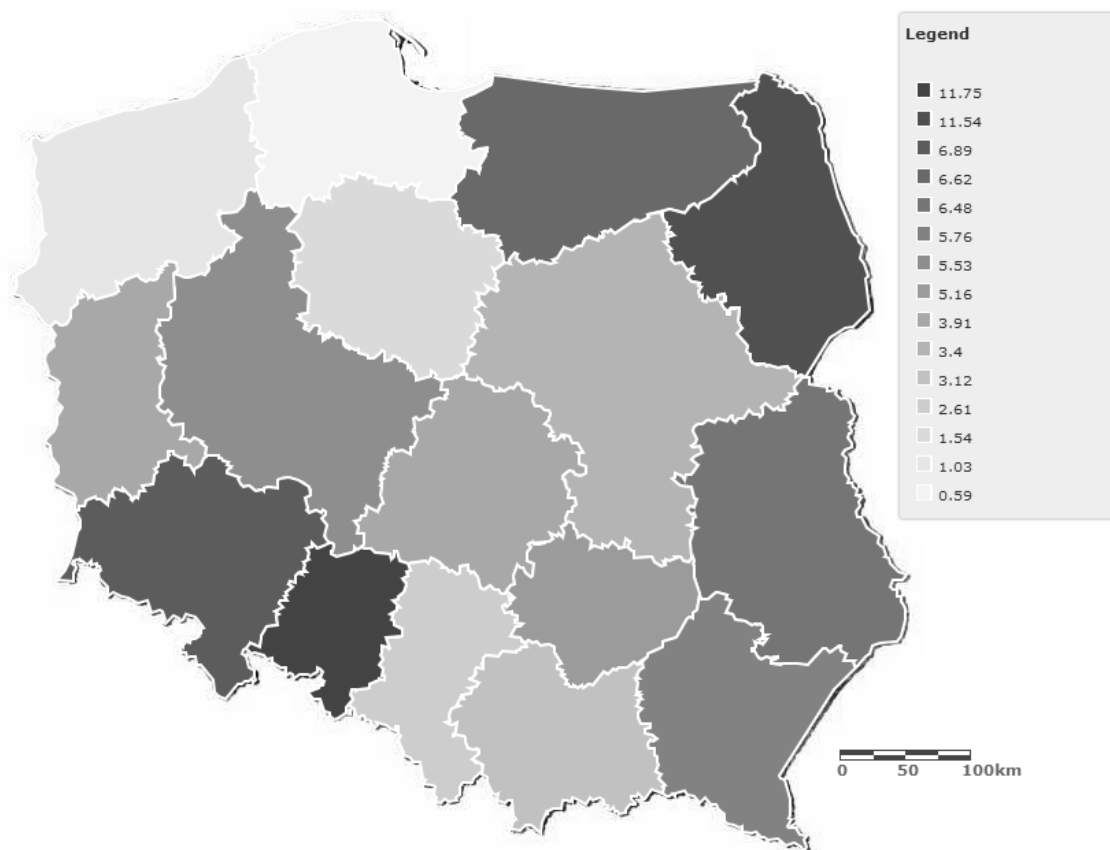


Source: Own study

4. The efficiency of low water retention in the period 2003-2009

As we can see in fig. 3, the darker color means the lower efficiency. The lowest level of efficiency of low water retention was noted in Opole – 11.75 US\$ per 1 m³) and Podlasie – 11.54 US\$ per 1 m³). On the third place was Lower Silesia– 6.89\$ per 1 m³). The situation in Lower Silesia and Opole can be connected with recovery after earlier flood in 1997. The highest efficiency of low water retention was noted in Pomerania – 0.59 US\$ per 1 m³) and West Pomerania (1.03 US\$ per 1 m³).

FIG. 3: The efficiency of low water retention in the period 2003-2009

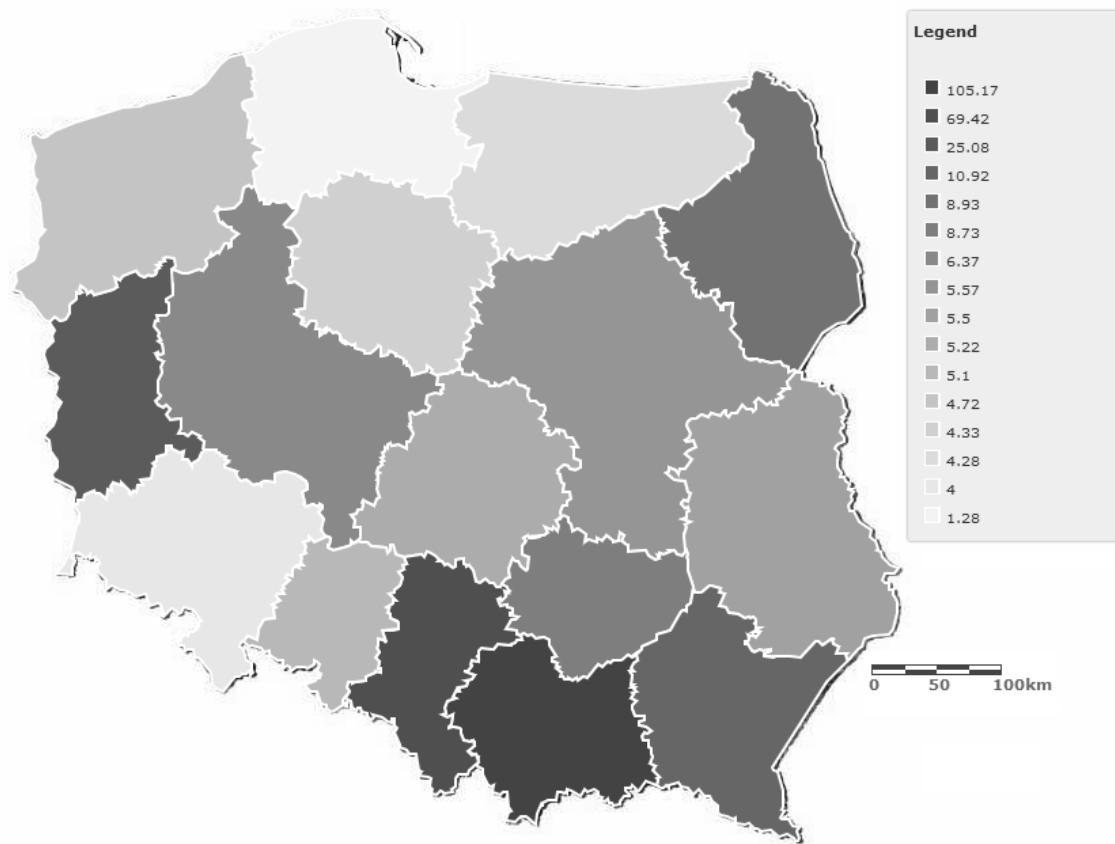


Source: Own study

5. The efficiency of low water retention in the period 2010-2014

In the fig. 4 the darker color also means the lower efficiency. We can see the influence the 2010 flood on the efficiency of low water retention in the period 2010-2014. The lowest efficiency of low water retention was noted in provinces located in the Vistula river basin (Lesser Poland – 105.17 US\$ per 1 m³, Silesia – 69.42 US\$ per 1 m³). The highest efficiency of low water retention was noted in Pomerania – 1.28 US\$ per 1 m³).

FIG. 4: The efficiency of low water retention in the period 2010-2014



Source: Own study

Conclusion

After analysis of efficiency of low water retention in area of Poland, following conclusions can be drawn. The 2010 flood had influence on efficiency of low water retention in Polish provinces. Before mentioned flood the lowest efficiency of low water retention was noted in Opole (11.75 US\$ per 1 m³) and Podlasie (11.54 US\$ per 1 m³). After the 2010 flood, lowest efficiency of low water retention was registered in provinces located in the Vistula river basin (Lesser Poland – 105.17 US\$ per 1 m³, Silesia – 69.42 US\$ per 1 m³). It is worth to notice that this paper was limited by the time period of the research. The future research will focus on extending of analysed time period and explaining why the efficiency of low water retention did not become better in provinces located in the Vistula river basin after flood in 2010.

Acknowledgement:

It is worth to notice that the article is part of the research project 'Financing catastrophic damages' chaired by PhD Zbigniew Piepiora (Piepiora, Babczuk, Kachniarz 2015a).

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DEVELOPMENT OF RENEWABLE ENERGY IN THE VISEGRAD COUNTRIES - COMPARATIVE ANALYSIS

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Keywords:

renewable energy – development – The Visegrad Group

JEL classification: Q420, Q490, Q590

Abstract:

Renewable energy, in the light of the current policy implemented in the European Union is a priority for energy security and sustainable energy. This problem is particularly important in areas with relatively low energy self-sufficiency, or areas where the energy generation is predominantly based on fossil fuels. In this paper we analyzed the development of the renewable energy sector in the area of the Visegrad Group. The basic range of analysis covered the period 2004 to 2014. Particular attention was paid to the similarities and differences in the studied problems because of the range of spatial and temporal analysis.

Introduction

From the point of view of economics, the economy of V4 countries - the Visegrad Group (Fig. 1), have undergone tremendous structural change since the early 90s. The changes concerned the most important sectors and industries of the national economy, including the energy sector.

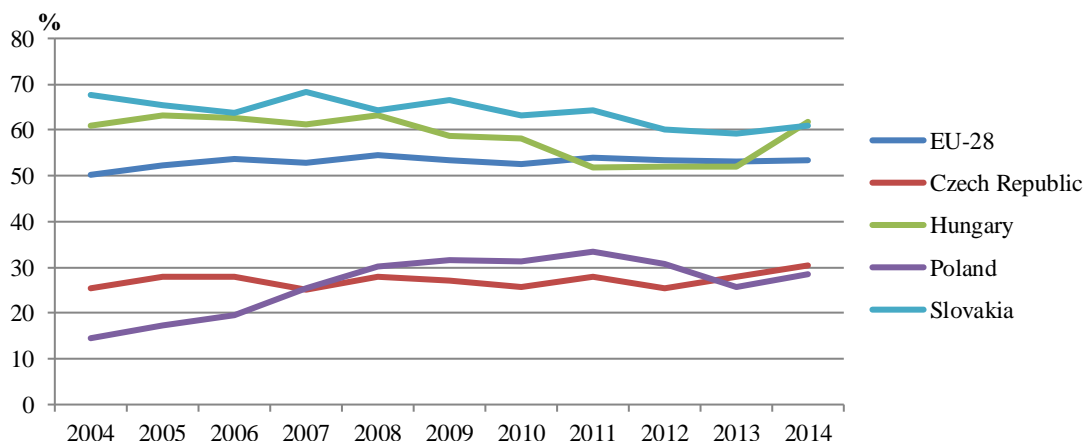
FIG. 1: The countries of the Visegrad Group



Source: (<http://www.wnp.pl>)

The issues of energy policy, and especially ensuring energy security are of vital interest to all countries of the Visegrad Group (Musil, 2011). The validity of the issue is determined, among others, rate of energy dependence, understood as the degree of the economy's dependence on energy imports to meet energy needs. The indicator is calculated as net imports divided by the sum of gross inland energy consumption plus bunkers (Fig. 2).

FIG. 2: Energy dependence in the EU-28 and V4 in 2004-2014



Source: (<http://ec.europa.eu/eurostat/>)

Significant differences in rate of energy dependence arise from existing resources (energy carriers) and the energy intensity of economies of individual member countries of the V4. Energy security aspects of the Visegrad Group, understood as security of supply, economic and ecological, are inseparably associated with the subject of renewable energy sources. In the area of the V4 renewable energy includes energy from several sources: solar, water, wind, geothermal resources, as well as energy produced from solid and liquid biofuels and biogas. The development of renewable energy is important from the point of view of lowering the cost of imported energy, borne by the V4 countries, and at the same time would help to achieve the aims of reducing CO₂ emissions. The undoubted advantage is the fact that the power system based on renewable sources of energy is decentralized, which contributes to the reduction of transmission losses and enhancing the level of transmission (Paska, Surma, 2012; Piwowar, Dzikuć, 2016). The issue of CO₂ emissions from the energy sector is particularly important in Poland, which is associated with the dominant energy sources in this country being lignite and coal. Coal still plays a priority role in the Polish energy sector, which makes this country stand out among the European countries that use more efficient media for the production of energy (Dzikuć, Piwowar, 2016; Urbanski, Tarnowska, 2011). Based on the analysis, starting from 2020 Poland is under threat of penalties of at least 7.5 billion Euros, of which about 50% is related to emissions of CO₂ (Przybytniowski, Pacholar, 2015). On the other hand, the development of

renewable energy involves, from the point of view of economics, the high cost of commissioning and maintenance of machines and equipment and the problem of instability (Heal, 2010). Energy industry based on renewable sources in the European Union faces a number of barriers to development, in particular: financial and administrative barriers (Pach-Gurgul, 2014).

Directive of the European Parliament and the Council on the promotion of energy from renewable sources requires Member States to achieve the goal of a 20% share of energy from renewable sources in the overall energy balance of the European Union by 2020. This target was established in Directive 2009/28 /WE on the promotion of energy from renewable sources (Directive 2009). It established for individual countries limit the overall target share of renewable energy in gross final energy consumption (Table 1).

TAB. 1: Share of renewables in gross final energy consumption in 2014 and 2020

Specification	The share of RES in 2014 (%)	Target RES 2020 (%)
Czech Republic	13.4	13
Hungary	9.5	13
Poland	11.4	15
Slovakia	11.6	14
UE-28	16	20

Source: (<http://ec.europa.eu/eurostat/>)

Indicative targets designated for V4 member states are almost equal. Limit renewable energy targets for individual countries in the European Union depended on the baseline - the share of renewable energy in total energy consumption in 2005. For Poland, where the share of renewable energy in total consumption in 2005 was 7.2%, the planned participation in 2020 is 15%.

The aim of this study is the analysis of the development of the renewable energy in the area of the Visegrad Group against average values in the European Union. The basic range of temporal analysis covered the period from 2004 to 2014. Additional aim of the study was to determine the differences in the use of various types of renewable energy in each member state of V4.

1. Methods and sources of materials

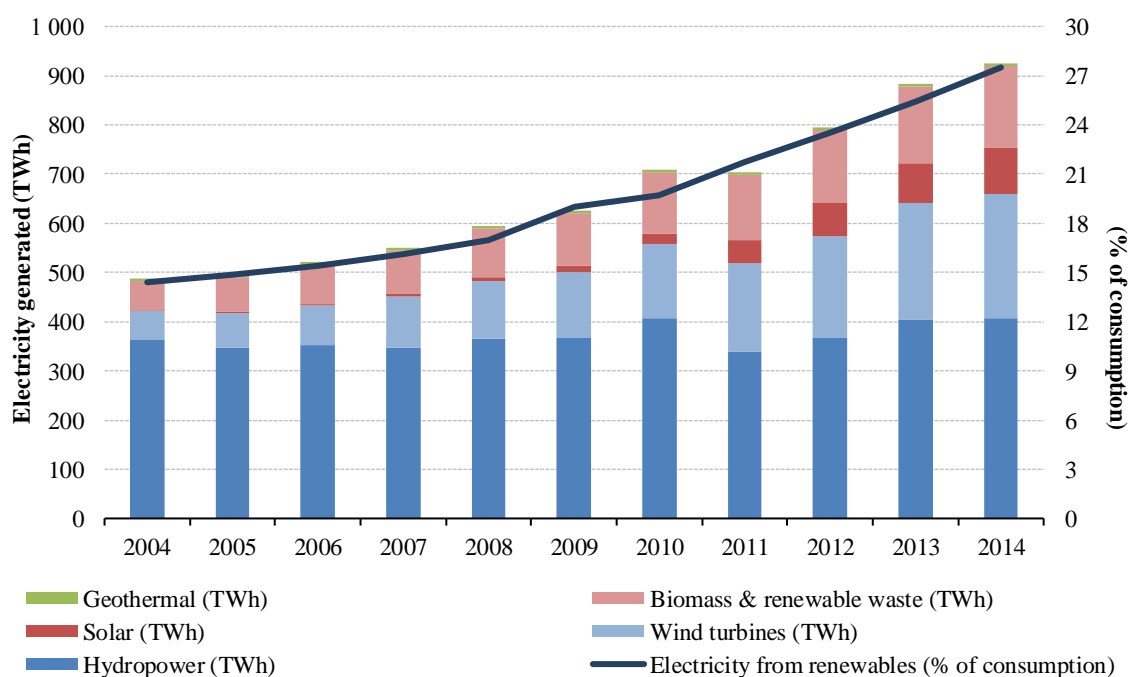
Study was performed with the use of the analysis of literature and statistical data on the status and structure in the area of the development of renewable energy sector in the Visegrad countries. The analysis was focused on production and consumption of renewable energy sources, in particular energy from: water, geothermal, solar, wind and biomass. Statistical data presented in the publication are taken from the Eurostat database.

For the analysis of trends in the field of renewable energy the authors used statistical measures to detect patterns and draw conclusions, among others, indicators of dynamics and structure. These measures, aimed at the description of the structure of phenomena, were used primarily to compare the selected elements (attributes) in spatial terms. The results of the analyses were presented in the form of tables and drawings, along with the verbal description.

2. Results and discussion

Implemented in the European Union energy policy is geared largely to support the development of renewable energy, which is reflected in the increase in the volume of energy from renewable sources (Fig. 3).

FIG. 3: Electricity generated from renewable energy sources in EU-28 in 2004-2014



Source: (<http://ec.europa.eu/eurostat/>)

In 2014 the production of electricity from renewable sources in the European Union amounted to 925 TWh, ie. 89.5% more than in 2004. Given the diversity of the sources of renewable energy it is worth noting that hydropower had the largest share in the volume of energy production by 2014 (43.9%).

The main objective of this paper is to analyze the diversity of renewable energy in the Visegrad Group. Figures for the original production from renewable energy sources in the V4 countries against the EU-28 are presented in Table 2.

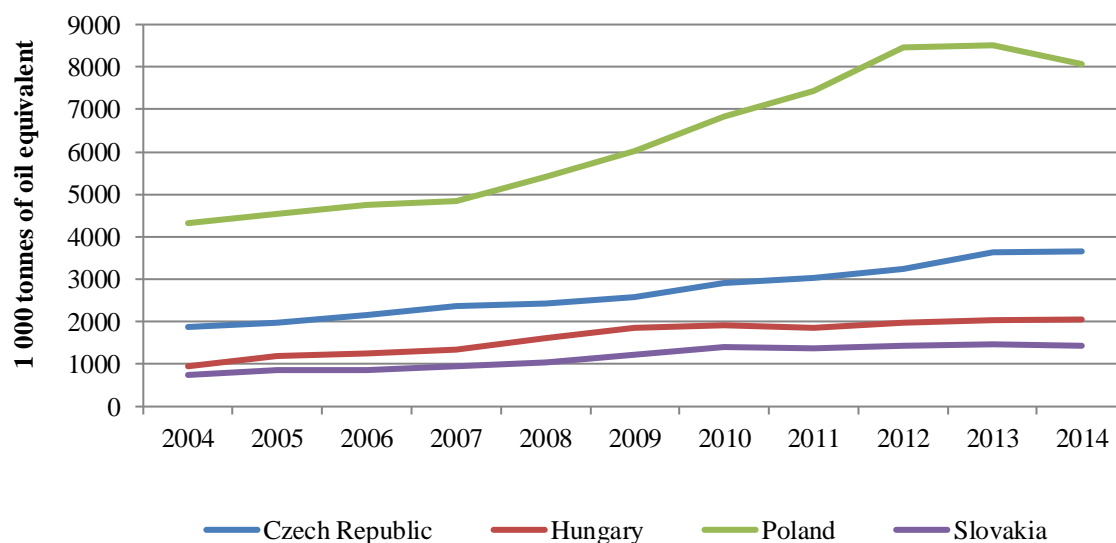
TAB. 2: Primary production of renewable energy in EU-28 and V4

Specification	Primary production (thousand toe*)		Dynamics (%)
	2004	2014	year 2004 = 100
EU-28	113134	195814	173
Czech Republic	1875	3656	195
Poland	4321	8054	186
Slovakia	745	1441	193
Hungary	950	2051	216

*toe - tonne of oil equivalent (contractual). Unit of measure of energy used in the international balance sheets. It means the amount of energy that can be produced from the combustion of one metric ton of crude oil. One tonne of contractual oil equals 41.868 GJ or 11.63 MWh

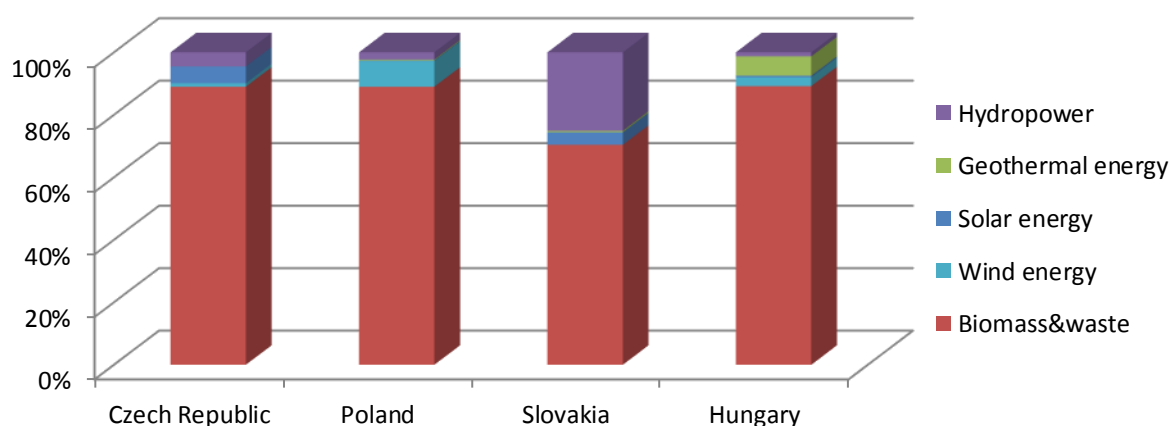
Source: (<http://ec.europa.eu/eurostat/>)

In 2014, the European Union acquired 195.8 Mtoe of primary energy from renewable sources, ie. 73% more than in 2004. It is worth noting that the growth rate of the volume of identical production in the V4 countries was higher in the period and amounted to 193% . The highest rate of growth of primary energy production from renewable sources in the studied years, among the V4 countries, was registered in Hungary (more than twofold increase in production). Important observation is that in the studied period, the share of primary energy produced in the V4 Group in the overall volume of EU-28 has increased (from 7% in 2004 to 7.8% in 2014.). Detailed information regarding the production of primary energy from renewable sources in the V4 countries in the years 2004-2014, is presented in Fig. 4

FIG. 4: Primary production of renewable energy in V4 in 2004-2014

Source: (<http://ec.europa.eu/eurostat/>)

As mentioned earlier, in each of the member countries of the V4 an increase in production of primary energy gained from renewable sources was recorded in the years 2004 to 2014. In the years 2012-2014 in Poland, the largest in terms of production of renewable energy state functioning of the V4 Group, reported a reduction in primary energy production from renewable sources. Fig. 5 presents the structure of the acquisition of primary energy from renewable sources according to their type in the V4 countries in 2014.

FIG. 5: Primary production of renewable energy in V4 by type in 2014

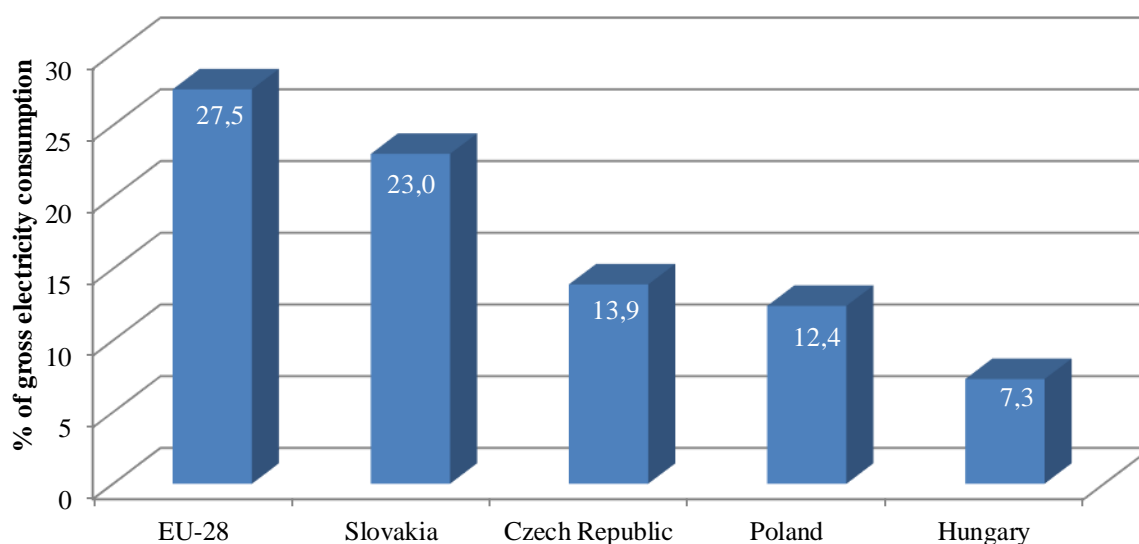
Source: (<http://ec.europa.eu/eurostat/>)

The structures of obtaining energy from renewable sources in the V4 countries differ considerably, primarily due to the country-specific geographical conditions and available resources.

Generally, in all V4 countries the main source of renewable energy is biomass. In 2014 in the structure of energy generation from renewable sources, the average share of energy from biomass in the European Union amounted to 63.1%. In each of the V4 countries, this share was higher (in Poland, the Czech Republic and Hungary this share was 89%). The lowest share of biomass in the production of primary energy from renewable sources was recorded in Slovakia. It should be emphasized that Slovakia had relatively very large share of hydropower in the structure of primary energy production from renewable sources. In Slovakia there are 25 large hydropower plants with a total installed capacity is 2,446 MW. The largest hydroelectric power plant is located in Gabčíkovo (with an installed capacity of 720 MW), which produced half of the supply of electricity in hydroelectric power plants in Slovakia (Szabó, Kiss, 2014). In Hungary there are many areas where geothermal energy is being used. This is due to the natural conditions in the geological structure (Árpási, 2002). Geothermal resources in Hungary is largely used for recreational purposes (Dej, Huculak, Jarczewski, 2013). In 2014., In the structure of obtaining energy from renewable sources in Hungary, geothermal energy had a 6.2% share.

Significant, from the point of view of this research, is the share of renewable energy in total electricity consumption (Fig. 6) and the fuel consumption in transportation (Fig. 7).

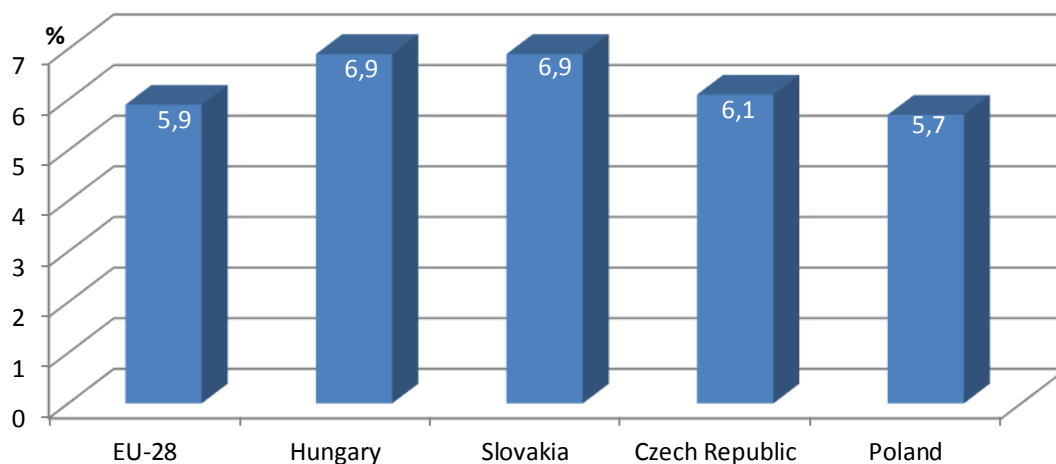
FIG. 6: Proportion of electricity generated from renewable sources in 2014



Source: (<http://ec.europa.eu/eurostat/>)

As follows from the analysis, the Visegrad countries are characterized by significantly lower than the EU average share of energy generated from renewable sources in gross electricity consumption. Particularly low rates in this regard was recorded in 2014 in Hungary.

FIG. 7: Share of renewable energy in fuel consumption of transport in 2014



Source: (<http://ec.europa.eu/eurostat/>)

In the countries of the Visegrad Group a relatively high (in relation to the average values in the European Union) share of renewable energy sources in the consumption of fuels in transportation was recorded.

Conclusion

Renewable energy in the Visegrad countries is subject to dynamic changes, determined mainly by the implementation of Directive 2009/28 /WE and the need to reduce greenhouse gas emissions. In the years 2004-2014 the share of primary energy produced in the V4 Group in the overall volume of EU-28 increased slightly. In the countries of the Visegrad Group the dynamics of rate of primary energy production from renewable sources are higher than the EU average. From the point of view of the fulfillment of indicative targets regarding renewable energy is worth noting that in the Czech Republic in 2014 reported a higher share of renewable energy in final gross energy consumption than planned to achieve in 2020. Visegrad Group is characterized by a great diversity of the environment, which creates conditions for development in the region, for most of the available technologies of energy production from renewable sources.

Conducted analyses allowed to make a number of observations and conclusions with regard to energy policy in the area of the V4. From the point of view of the common objectives of the Visegrad Group within the energy sector, it is important to work together and create connections within the framework of regional energy

infrastructure. Modernization of the system in this context, with different sources of renewable energy in the individual V4 countries, is consistent with the planned arrangements in the shape of the EU electricity market. The new system within the European Union is expected to bring greater coherence and cooperation between member states, the market liberalization and diversification of supplies.

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EVALUATION OF THE DEGREE OF PUBLIC SUPPORT OF REGIONAL DEVELOPMENT IN CULTURE

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culture – evaluation – index analysis – public resources – regional development

JEL classification: H23, R51, Z18

Abstract:

The article deals with the evaluation of the extent of regional development support from public funds during the programming period EU 2007-2013, and in culture, specifically into its parts, and in galleries, museums, memorials and monuments. Altogether in this area 12.2 billion CZK was invested, with 72% of the subsidies from public funds. Most of the public funds were invested in cultural offerings in the Central Region, the least in the Karlovy Vary region. The highest ability to elicit additional funds through public sources has been demonstrated in South Moravia. The framework of efficiency of expenditure of public funds can be evaluated on the basis of index analysis, which showed that on average 576 thousand CZK per visitor was invested and nearly 146 thousand CZK per employee from public sources.

Introduction

In the postmodern era, the greatest wealth of society is considered to be human capital and its quality. Culture contributes to its construction: education increases and encourages creativity, which, unlike natural resources, is inexhaustible. The cultural and creative environment then improves the quality of life of residents, attracting visitors (tourists) and investors.

The increasing importance of culture is also determined by global changes, such as: greater global mobility and interest in learning about different cultures, growth in the average age of the population in developed countries generally increasing the intelligence of humanity, building local identity and differentiation to counterbalance the uniformity and new technologies providing access to information on culture.

Especially in rural areas and marginal regions culture has great significance. Culture can be an engine for regional development (and vice versa development of the region may have a positive effect on the culture). Investing in culture diversifies the local economy,

preventing the exodus of young people to cities, helping to preserve local traditions and cultural heritage, build pride in local people of their culture and enhance the partnership between both the private and public sectors and between regions and nations.

1. Methodology

This article aims to analyze the degree of support for regional development through public resources in the fields of culture, or that part of the cultural sector which is associated with a high potential of its use by both residents and especially from visitors, both domestic and foreign. Partial goals are to compare the regions of the Czech Republic in terms of supply of culture and the extent of its support, the efficiency of public funds spent per visitor and per employee, and not least for the individual regions so to calculate the investment leverage from public sources.

Under the offer of culture, the article considers the number of galleries, museums, memorials and monuments freely accessible to the public, including all ancillary events taking place in their areas. Narrowing of the overall supply of cultural and creative sector is in terms of the local culture a definition of its distinctive attributes, because from the perspective of regional development having a higher value of the attributes of a bidding culture can motivate a wide range of visitors. Supporting increased traffic in regions creates a multiplier which supports the creation of new jobs, increases revenues from business activities (provision of accommodation, food, interpreters, guides, souvenirs, etc.) as well as increased revenues for public budgets (in the form of local taxes directly related to travel tourism).

The data needed for analysis were obtained from data of the National Coordination Authority of the Ministry for Regional Development (MRD), the Czech Statistical Office (CSO) and the Ministry of Labor and Social Affairs (MLSA). The amount of subsidies entering the analysis is known as "Certified expenditure". It means that the expenditure paid from public funds underwent an approval process or certification. The period in which subsidies were paid, was the period 2007-2015 according to the $n + 3$, respectively, in the last year $n + 2$ rule. From the CSO, data on the number of cultural objects and the number of visitors in the year 2015 were used. The MLSA provides data on employment in the Czech regions, respectively, of the number of people employed in sectors of the national economy. Data on the number of people employed relate to the category CZ NACE "R" - Arts, entertainment and recreation activities. On the lower level of differentiation, the necessary data is not available to us at the level of administrative regions.

To express an indicative measure of effectiveness index analysis and calculation of leverage in individual regions were used. Leverage has a multiplier effect, in other words, using the public finances. It answers the question concerning how much funding from private sources is caused by public support. In the case of this article, given the

legal status of applicants for subsidy from many purely private resources, but it is rather an additional source. To determine the dependencies between the monitored variables Pearson correlation coefficients were used.

2. Theoretical framework

The very definition of culture in economic terms is problematic because it usually involves different kinds of goods and services. In most scientific studies, it includes historic buildings and architecture, cultural events (e.g. exhibitions, theatrical or musical performances, festivals) and street art (sculptures and live performances). Some of these manifestations of culture are freely accessible and consumption is noncompetitive - e.g. street art or external admiration of architecture and historic buildings. These are therefore pure public goods. Others are private goods - e.g. private galleries or theaters, where admission is charged. But culture also provides services that can be characterized as positive externalities - increased general education, higher sensibility and a positive contribution contact with beauty, mental rest and recovery, strengthening social cohesion and a sense of personal identity, reducing aggression and crime. These externalities are both individual and societal benefits. This benefit is economically difficult to quantify accurately. Other services related to culture are quantifiable: the creation of jobs; the possibility of expanding the sources of financing of municipalities, cities and larger territories; direct and indirect revenues (revenues from tickets, direct and indirect revenues from additional costs incurred when traveling for culture such as transport, catering, buying memorabilia, etc.).

Given that the majority of cultural objects (castles, museums, galleries, etc.) and cultural events are unable to fully cover the cost of their operations by direct revenues, and because they operate in the public interest, culture is subsidized. A subsidy is defined as a monetary gift or monetary payment by the state or public entity (region, municipality and district). The subsidy reduces the price for a culture that would otherwise have been very high for the great majority of the population and it would thus be inaccessible to these people. It also ensures the continuous care of monuments and cultural heritage.

The Czech Republic in the field of culture is highly competitive: a dense network of cultural monuments, which counts about 900,000 cultural heritage sites, over 40 000 properties (of which 236 national cultural monuments and 12 sites are inscribed as UNESCO World Heritage Sites), 586 conservation areas and conservation zones. There are over 2,000 castles and approximately every tenth castle is open to the public. In 2007, 16 557 cultural events were held at these monuments (e.g. theater and fencing performances, concerts and exhibitions). Furthermore, in the Czech Republic there are approximately 500 museums and galleries, which annually arrange for over 1,800 exhibits and nearly 4,000 shows. Annually, around 15 thousand cultural and educational events are organized (Raabová, 2010)

Culture itself is seldom included in studies of regional competitiveness, partly because it is difficult to measure, and partly because it is seen as essential to relocation decisions. In doing so, the ability to attract people to the fact that the site offers a good quality of life is crucial for regional competitiveness. When studying the attractiveness of regions, it is important to consider not only what makes people move to a certain location or region, but also what makes people want to stay there. (OECD, 2009)

A study of Florida and Tinagliho (2004) revealed that culture is one of the main factors that are considered (along with the quality of housing and employment opportunities) in deciding the place of residence and especially for people with higher education, especially in the arts. People from all creative fields (which can be artists, but also developers and tech innovators) are sensitive to the quality of the place, which is defined as the atmosphere of openness, diversity (interesting local art scene, nightlife, ethnic, district and local gastronomy) and then the quality of the environment. These factors are relatively immaterial but for creative people are probably more important than the traditional cultural institutions.

Culture must be strategically planned, developed and managed. Only quality management of culture will allow municipalities, cities or regions to benefit from adequately inherited and developed cultural assets. According to an OECD study on culture and local development (2005), these factors are particularly important: longevity of cultural activities, community involvement, the ability of localities to produce all the goods and services demanded in the context of cultural events and activities, ensuring strong links to create a synergistic effect.

Specific management in the cultural sector can take various forms, from centrally controlled national policies and programs to autonomous decision-making, which are drivers of initiatives by private individuals and volunteers or, in other words, the civil society. The concept of development of culture should be part of the local development plan.

3. Results

The cultural sector during the period 2007-2013 is considered a priority topic, but even so, the area gets into other so-called priority axes. Most often it was the priority axis focusing on tourism and development of towns and villages. Funds to support cultural offerings mostly flowed from the regional operational programs (thus not included in the analyses of the capital of Prague) or the Integrated Operational Programme, from which was financed the area "the presentation and promotion of cultural and natural heritage, cultural industries and services using tourism at the national level "(MRD, 2014). But it has a nationwide application or meaning. The analysis, which takes into account the use of subsidies to individual regions, enters data from regional operational programs.

Among the regional operational programs for the improvement or enhancement of cultural objects specified above, 12.2 billion CZK was spent, of which 8.8 billion CZK consisted of public funds. The total amount of financial assistance under the regional operational programs makes up around 6.8% of this support. Larger subsidies were given to modernize transport networks, rehabilitation of urban and common areas, sewage treatment plants, schools, health care and tourism (mostly in the construction and upgrading of accommodation facilities).

If we look at a fundamental analysis of available data over a defined area of culture and input, indicators show high variability, where the indicator of the number of galleries, museums and monuments is within a variation range of 97 (24; 121) and the number of monuments is within a variation range of 36 (10; 46). Even greater variability, however, is presented in a power indicator of the number of visitors who have visited monitored objects, where the variation range is up to 2876 (542; 3418). Already these basic statistics can show the significant differences between individual regions of the Czech Republic in the area of supply and demand in the cultural sector.

Even more interesting is the analysis of public funds that were invested in culture within the EU programming period 2007-2013 for regional operational programs. The total resources amounted to 12.2 billion CZK, of which 8.8 billion CZK came from public sources. These public resources involve 7.1 billion CZK from EU sources. There were also added to the public sources 3.4 billion CZK of additional resources from the private sector. On average, into the region to create cultural offerings in CZK 938.5 million were invested. However, deeper regional analysis shows large disparities among different regions.

If we look at the distribution of public funds to support regional development through the promotion of culture, then the Central Bohemia Region was the region that decided to invest the most in promoting the culture of its operational program. This fact is fully linked with the potential of Central Bohemia in terms of culture that is the highest number of objects we tracked and the highest number of visitors in 2015. In addition, the average number of visitors to a cultural object is the highest in the region, namely 20,470. Public money was then spent per visitor, that being 505.7 thousand CZK. The surprising result was the investment of the Usti Region, which in the volume of public funds is in second place, even though the traffic to cultural objects, or the ability of the region to attract visitors to their cultural objects was the second worst with 10.82 thousand visitors to one object. From the perspective of public investment, the total comes to a record 1.4 million CZK for visitor uses cultural offerings in the Usti region. Of course, it cannot be neglected that the other the roles of culture in regional development other than for tourism. The lowest average number of visitors per object and the second highest cost per visitor is in the Vysocina region. The lowest priority was the culture in the Karlovy Vary region, with total public funding of 86,878,631 CZK. It is the smallest region in terms of size, but also in the number of galleries,

museums, memorials and monuments. Cost-effectiveness, however, is the highest and the ability of the region to attract visitors to its cultural offerings is quite high (8th place out of 13). Table 1 provides complete data.

TAB. 1: Evaluation indicators

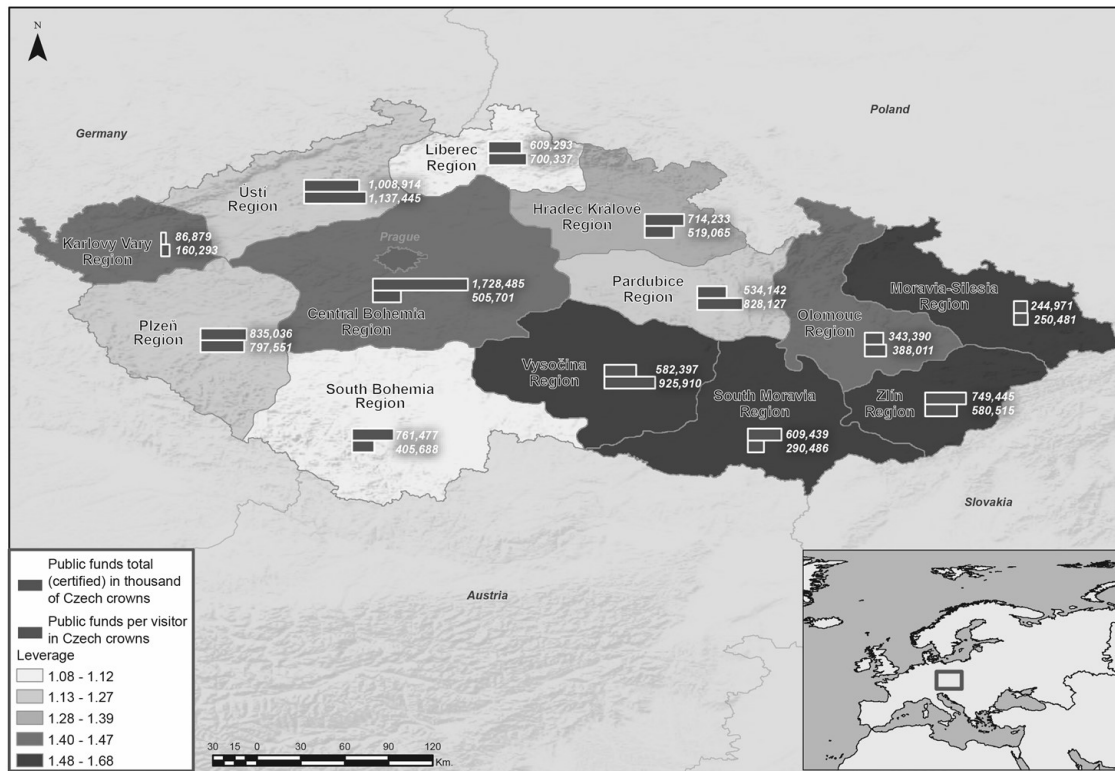
Region	Total Public Funding (certified)	Volume of public funds per visitor	Number of employed people (thousands) CZ NACE "R"	Volume of public funds per employee
South Bohemia Region	761 477 301	405 688	4.4	173 063
Pilsen Region	835 036 300	797 551	2.8	298 227
Central Bohemia Region	1 728 485 410	505 701	10.6	163 065
Carlsbad Region	86 878 631	160 293	2.4	36 199
Usti nad Labem Region	1 008 913 627	1 137 445	3.6	280 254
Liberec Region	609 293 173	700 337	3.1	196 546
Hradec Kralove Region	714 233 073	519 065	4	178 558
Pardubice Region	534 141 949	828 127	1.4	381 530
Vysočina Region	582 397 241	925 910	2.3	253 216
Olomouc Region	343 390 170	388 011	2.8	122 639
Moravia Silesian Region	244 970 693	250 481	8.7	28 158
Zlín Region	749 445 094	580 515	3.8	197 222
South Moravia Region	609 439 437	290 486	10.5	58 042
TOTAL	8 808 102 101	576 123,90	60.4	145 830

Source: Own based on the data of CZSO, MRD and MLSA

What will determine priorities in their program documents (of course, traceable to the National Strategic Reference Framework CR 2007-2013) are at the discretion of the regional councils. Part of the analysis is the dependency ratio using the Pearson correlation coefficient between input and output indicators, the number of employed persons in the category CZ NACE "R" and invested public funds in culture. Leaving aside the logical dependencies between objects and the number of visitors, then it shows that the volume of spent public resources to promote regional development through investment in the bidding culture is strong in direct relation to the number of cultural objects in the regions (correlation coefficient $r = 0.853$). The correlation with the number of objects is greater than with the number of tickets (number of visitors), where r reaches 0.771. Public investment is more dependent on input indicators rather than performance indicators. Both these dependencies are statistically significant at a confidence interval of 90%. There is a weak direct correlation between the number of people employed in the sector and the amount of public funds, which is statistically insignificant.

The leverage was calculated for each region, thus how great the ability to have public investment induces investment from other, private sources. The area of culture in the Czech Republic in general is significantly funded from public sources and incentives to induce investment from other sources; it is a very interesting indicator for the entire cultural sector, especially for regional assemblies. On average CZK 1 brought 37 cents of investment from other sources¹. At least this effect the South Bohemia Region managed to use and conversely with the best results in South Moravia. Regional comparisons are shown in the following map.

FIG. 2: Map - regional comparison of the certified public funds invested in bidding culture in each region, amount of public sources per visitor and the leverage of these investments



Source: Own based on the data of CZSO, MRD and MLSA

¹ Given that there was no control group (investment entities which did not apply for a subsidy or demanded unsuccessfully, yet had the intention in practice), the resulting leverage would be overstated - the final leverage would overwhelm the outputs of the control group.

4. Discussion

Within the closure of the operational programs of the EU, the competent public authorities processed evaluation studies and reports. However, as already mentioned, the culture was not a priority in the setting of operational programs for the 2007-2013 periods, and so there are no evaluation studies concerned with this topic. The weakness for evaluating investments in the cultural sector as a whole is poor availability of data at the regional level. From this perspective, we consider this analysis as being exceptional, although it does not capture the cultural sector in its entirety. In the current programming period, culture has a place within the Integrated Regional Operational Programme called "Thematic objective 6: Preserving and protecting the environment and promoting resource efficiency", which supports cultural heritage.

Conclusion

Support for regional development from public sources has been above average in recent years, thanks to funding from the European Union Structural Funds. This applies both to the terms of funding in this area in previous years, as well as relative to other countries, where the Czech Republic was able to negotiate one of the highest levels of support among the so-called "New EU members". Regional development is a long-standing priority of EU cohesion policy and for this purpose the European Regional Development Fund has been previously established. The aim of the funding for regional development in the EU is to reduce inter-regional disparities in the European area.

The cultural sector was not included in the EU programming period 2007-2013 among the priorities of the Czech Republic, but even so it managed to invest a total of 12.2 billion CZK, and the 8.8 billion CZK from public sources (the certified expenditure to 6 / 2016). Regional analysis shows that the Central Bohemia region chose to support specific cultural offerings at the highest level (galleries, museums, memorials and monuments), whereas the lowest level was in the Karlovy Vary (Carlsbad) region. The ability of public resources to induce investment from other sources averaged 1.39, i.e. for every CZK 1 invested from public sources an added 39 cents came from other sources. Some regions of the Czech Republic, such as the Usti Region, decided to invest in cultural offerings to a greater extent than that which corresponds to the potential of "economic" recovery mostly through tourism. Culture also has another role, as in regional development, as well as its social role.

Acknowledgment:

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DYNAMIC LINEAR IS-LM MODEL

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Keywords:

dynamics – equilibrium – IS-LM model– simulation – stability

JEL classification: E12, E40, C62

Abstract:

The aim of the present paper is to introduce an analytical version of IS-LM model. Compared with classical exposition of IS-LM model which depends on graphical tools this paper develops a model based on difference equations. This approach allows us to look for a dynamical behaviour of the model. To simplify considerations as much as possible the model is formulated as a linear discrete dynamical system. Instead of the accurate analysis we mainly concentrate on simulation of targeting the economy unit towards its equilibrium.

Introduction

Model IS-LM belongs to traditional Keynesian model that is taught in both elementary and advanced macroeconomic courses. This model, which is based on the assumption of the existence of closed economy and fixed price level, deals with the mutual equilibrium on goods and services market and financial market. The model is usually presented as a static one. Moreover graphical tools are used to analyse it, in particular a lengthy geometric construction of both IS curve and LM curve is used. In this paper we introduce its analytical linear discrete dynamic version for economy without public budgets. The given model can be used for study of economic agent behaviour close to the equilibrium. As we use a range of assumptions which simplify the problem, it may not be suitable for explanation of all phenomena that can be discussed in the framework of this model. Instead of the full analysis of the introduced mathematical model we concentrate on simulation of the path of the economy towards its equilibrium.

1. Methods, literature overview

The framework of IS-LM model was developed in (Hicks, 1937) and (Hansen, 1949). Although this model is not based on microeconomic foundations it still belongs to valuable macroeconomics models, see among others (Blanchard, 2003), (Lowell, 2004) and (Mankiw, 2009) The model is especially use to explain some short period lasting phenomena. There are its several dynamical versions, see e.g. (Shone, 2002) or (Kodera, 2001). In our exposition we will use difference equations, for details see (Prazak, 2013),

(Prazak, 2015) that allow us to construct linear dynamical IS-LM model. The equilibrium of the model can be then found as a constant solution of the developed system of difference equations.

2. Model

We will separately deal with goods market and financial market. Model IS-LM will be then constructed in three steps that follow.

2.1. IS Relation and Goods Market

First let us consider a situation on goods and services market. Aggregated demand Z for goods is given by the sum of consumption C and investment I . Thus in each time period $t, t \in N_0$, we can write

$$Z(t) = C(t) + I(t). \quad (1)$$

As public sector is not considered, it can be assumed that between consumption C and domestic product Y in the period t the following linear formula can be introduced

$$C(t) = C_0 + c \cdot Y(t), \quad (2)$$

where $C_0, C_0 > 0$, is autonomous consumption and $c, c \in (0,1)$, is the constant propensity to consume. The entrepreneurs often get necessary funds for purchase of their investment by borrowing money. The costs for borrowing money are expressed by interest rate $i, i \in (0,1)$, and the entrepreneurs realise their investments provided that the expected net yield from the given investment is higher or at least equals the costs for borrowing money. As the rate of investment yields gradually decreases the demand for investment is a decreasing function of interest rate, see e.g. (Mankiw, 2009). If a linear relation is considered then for each period $t, t \in N_0$, it is possible to write

$$I(t) = I_0 - b \cdot i(t), \quad (3)$$

where $I_0, I_0 > 0$, are autonomous investments, i.e. investments that are dependent neither on the amount of product nor on the interest rate and $b, b > 0$, is the coefficient of the sensitivity of exchange rate change.

If in the period t the demand for goods and services on the market equals the domestic product $Z(t) = Y(t)$, this market is in equilibrium. In case that there is a time period where this equality is not valid, the market is not balanced and it necessary to consider some motion to change where the market will head for. If in the period t the demand is higher than the supply, i.e. $Z(t) > Y(t)$, it is necessary to increase the product in the next period $t + 1$. To make such change effective it must be more significant for larger deviations than for minor deviations. Thus we will consider that it is proportional to the

difference $Z(t) - Y(t)$, which makes the disturbance of the equilibrium. A similar situation can happen in the case when $Z(t) < Y(t)$. For the product adjustment to the demand it is therefore useful to consider the following relation

$$Y(t + 1) - Y(t) = \alpha(Z(t) - Y(t)), \quad (4)$$

where α , $\alpha > 0$, is the coefficient of adjustment rate. Let us notice that for $\alpha = 1$ the relation $Y(t + 1) = Z(t)$ is valid. It means that the product in the following period of time is determined by the current demand on the goods market. Using (1), (2), (3) and substituting them into (4) then after arrangements one gets

$$Y(t + 1) = \alpha(C_0 + I_0) + (1 - \alpha s) \cdot Y(t) - \alpha b \cdot i(t), \quad (5)$$

where $s = 1 - c$, $s \in (0, 1)$ is the constant propensity to save. If the goods and services market are in equilibrium the production and interest rate are constant. The set of all such accessible pairs (Y, i) for which the given market is in equilibrium is called IS curve and is determined by the equation (5). It means that IS curve in the coordinate system with horizontal axis i and vertical axis Y is given by the equation

$$Y = \alpha(C_0 + I_0) + (1 - \alpha s) \cdot Y - \alpha b \cdot i. \quad (6)$$

Using this equation we can find the following explicit relation for interest rate

$$i = \frac{C_0 + I_0}{b} - \frac{s}{b} \cdot Y. \quad (7)$$

2.2. LM Relation and Financial Markets

Now let us deal with the situation on the financial market. Let us suppose that the money supply (real money assets) M^s is constant over time domain

$$M^s(t) = \frac{M}{P}, \quad (8)$$

where M is the nominal money reserve, P is the price level of the given economy and $t \in N_0$. The Keynesian theory assumes that the demand for money (real money assets) M^d is made of two different ways; partly by the transaction demand L_1 for money and further by demand for assets L_2 where we assume, cf. (Kodera, 2001) that the following additive relation is valid

$$M^d = L_1 + L_2. \quad (9)$$

Transaction demand L_1 expresses the need to own money in order to pay for purchase of goods and services in various periods of time. The growth of real incomes goes hand in hand with the real value of goods which we purchase. We will then presume that the

transaction demand is an increasing function of the product and that for the each period of time t holds true

$$L_1(t) = k \cdot Y(t), \quad (10)$$

where $k, k > 0$, is the coefficient of sensitivity of the demand for product change - its value expresses the change of demand for money that is caused by the change of product by one unit.

The demand for assets L_2 expresses the need to save the value of money and its value depends on the interest rate i . The higher the interest rate the higher the costs for possessing the money. It means that the demand for assets is a decreasing function of the interest rate. Thus for the period t we can write

$$L_2(t) = -h \cdot i(t), \quad (11)$$

where $h, h > 0$, is the coefficient of sensitivity of money demand to the interest rate change. If we make use of the stated relations then we can write the money demand (real money assets) in the period of time t

$$M^d(t) = L(Y(t), i(t)) = k \cdot Y(t) - h \cdot i(t). \quad (12)$$

If in the period t holds true $M^s(t) = M^d(t)$, the money market is in equilibrium. If in some periods of time t this equality is not valid then the market is not in equilibrium and it is necessary to consider transition where the market will be directed towards the equilibrium. If in the period of time t the demand is higher than the supply, i.e. $M^d(t) > M^s(t)$, it is necessary to increase the interest rate i in the following period of time in order to decrease the money demand. A similar situation can happen also in case that $M^d(t) < M^s(t)$. Taking into account the given considerations it is possible to assume that the money demand reacts to the amount of product $Y(t)$ immediately, however the interest rate, which balances the money demand with money supply, reacts slowly and that one period of time passes before it settles in equilibrium, cf. (Kodera, 2001). These observations can be formally written as

$$M^s(t) = L(Y(t), i(t+1)). \quad (13)$$

If we use (8), (12) and substitute them into (13), after the arrangement we gain

$$i(t+1) = \frac{1}{h} \left(k \cdot Y(t) - \frac{M}{P} \right). \quad (14)$$

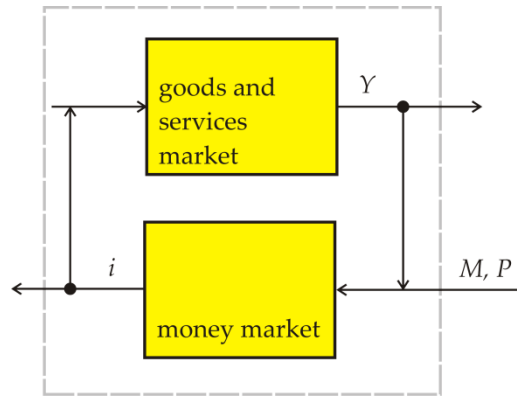
If the money market is in equilibrium, the values of product Y and the interest rate i are constant. The set of all such available pairs (Y, i) for which the market is in equilibrium is called the LM curve and is given by the equation (14), i.e. by the equation

$$i = \frac{1}{h} \left(k \cdot Y - \frac{M}{P} \right) \quad (15)$$

2.3. Goods and Financial Markets

The system of equations (5), (14) describes the dynamics of the output Y and the interest rate i in IS-LM model. The given relations between the goods and services market and money market are also depicted in fig. 1.

FIG. 1: Block diagram of IS-LM model



Source: (own arrangements)

3. Results and Discussion

The constant solution (Y°, i°) to system (5), (14) represents the mutual equilibrium on both the goods and services market and the money market. These stationary values Y° and i° are represented by the intersection of IS curve and LM curve. Coordinates of the equilibrium can be found as the solution to equations (7), (15). In this way we find

$$Y^\circ = \frac{1}{bk+hs} \cdot \left(h \cdot (C_0 + I_0) + b \cdot \frac{M}{P} \right) \quad (16)$$

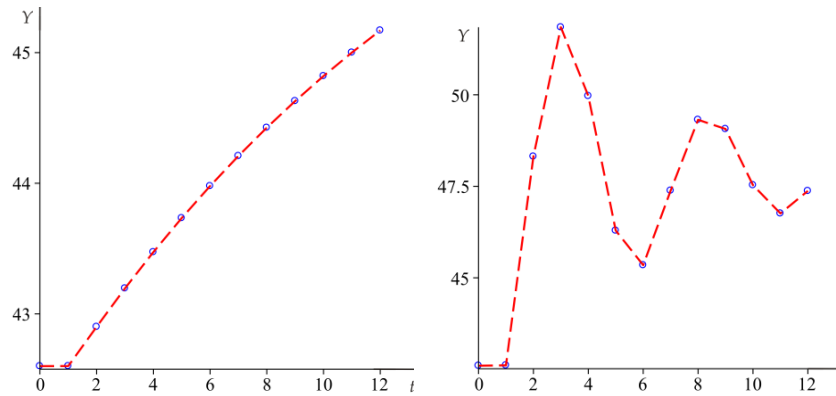
and

$$i^\circ = \frac{1}{bk+hs} \cdot \left(k \cdot (C_0 + I_0) - s \cdot \frac{M}{P} \right). \quad (17)$$

On the base of difference equations (5), (14) and the knowledge of equilibrium (16), (17) we can now look for typical qualities of the model of a closed economic unit. Such analysis requires further knowledge of difference equation, see (Prazak, 2013) and (Prazak, 2015). Here we mainly concentrate on partial analysis on the base of simulation for certain parameter values. Let us assume that $c = 0.6$, $b = 150$, $k = 0.25$, and $h = 50$. This settings results in $s = 1 - c = 0.4$. Let us also set $C_0 = 15$, $I_0 = 10$, $P = 1$. Further we discuss a situation denoted by A, particularly we consider that nominal money reserve of central bank is $M = M_A = 8$. On the base of the selected

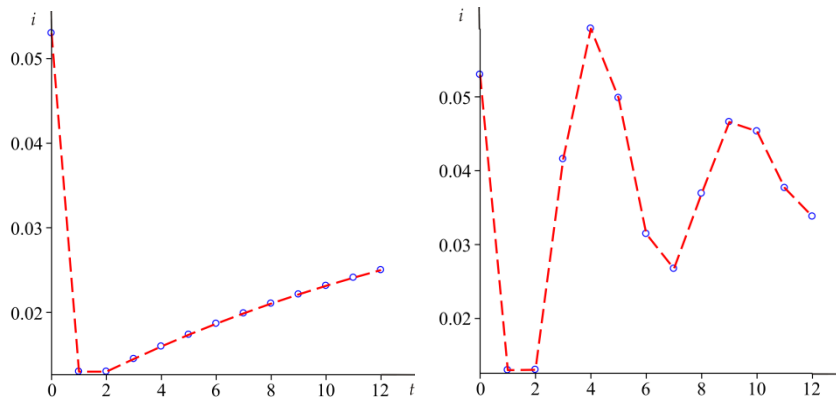
value of parameter and (16), (17) we find the equilibrium $(Y_A^\circ, i_A^\circ) = (42.61, 0.053)$. Now we switch to another situation denoted by B. Let us assume that $Y(0) = Y_A^\circ$ and $i(0) = i_A^\circ$ and let us ask how the new equilibrium on the markets is setting provided that the central bank increases the nominal money to value $M = M_B = 10$. The new equilibrium is $(Y_B^\circ, i_B^\circ) = (47.83, 0.039)$. To be able to proceed with the simulation, it is necessary to specify the value of parameter α that represents the speed of adjustment of the output Y to the given demand Z within the model of a closed economic unit. For comparison we will consider two different values of this parameter: at first the dynamics for a small value $\alpha = 0.05$ is investigated and secondly the dynamics for larger value $\alpha = 0.95$ is introduced. Now (5), (14) can be used to perform calculations. These computed values allow us to construct graphs, see fig. 2, 3 and 4, where the dynamic behaviour of system (5), (14) with different values of coefficient α can be compared. All left panels of these graphs belong to smaller value $\alpha = 0.05$ and all right panels correspond to bigger value $\alpha = 0.95$.

FIG. 2: Time development of output Y for different values of α .

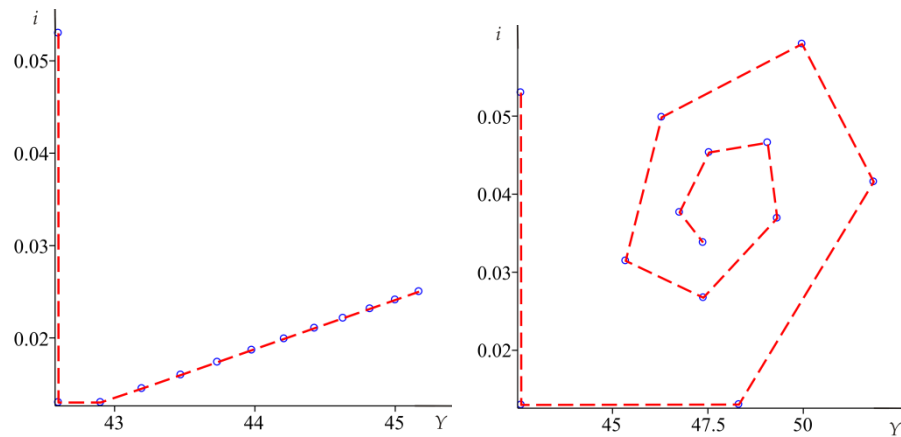


Source: (own computations and arrangements)

FIG. 3: Time development of interest rate i for different values of α .



Source: (own computations and arrangements)

FIG. 4: Orbits in phase diagram (Y, i) of IS-LM model for different values of α .

Source: (own computations and arrangements)

The graphs show that in the economy, in which the output Y adapts to demand Z slower (i.e. the speed α of adjustment in equation (5) is smaller), the output gradually and without fluctuations approaches equilibrium. Such an economy is characterized by a kind of inertia and rigidity. However, if the economy responds to changes more efficiently and quickly (i.e. the speed α of adjustment in equation (5) is larger), the output can develop in cycles and gradually approaches equilibrium.

Conclusion

The developed model (5), (14) can be considered as an alternative to the classical model introduced in mainstream macroeconomic textbooks, (Blanchard, 2003), (Lowell, 2004) and (Mankiw, 2009). It has been shown that difference equations can be considered as a good methodological tool for modelling different dynamic economic phenomena. Moreover the dynamic model (5), (14) can be considered as a starting point for deeper study of IS-LM model that concerns monetary and fiscal policy, stability of the adjustment and readjustment process leading to the equilibrium state. As this state is given by several exogenous variables there is a question how it can change when these exogenous variables change. This is the problem of comparative statics. All the above mentioned ideas will be subject of our future work based on the introduced model (5), (14).

Acknowledgement:

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NOTE ON USING INPUT-OUTPUT TABLES IN EXAMINING THE STRUCTURE OF THE CZECH ECONOMY AND THE ECONOMIC IMPACT OF INDIVIDUAL SECTORS

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Klíčová slova:

IO tabuľka – produkčný multiplikátor – poľnohospodárstvo – základné kovy – stavby

Keywords:

IO table – output multiplier – construction – agriculture – basic metals

JEL classification: D57

Abstract:

The countries of V4 have come a long way and have become stronger. Their economic growth is faster than the EU average. Exports of V4 countries grew three times faster than exports of countries of old EU15. Openness of the economy has also led to the internal development of the countries, transfer of know-how is remarkable. However, we are focused on the internal structure of the economy. We analyzed only one of the V4 countries - the Czech Republic. The aim of our paper is to assess what is the contribution of selected industries and agriculture in the Czech economy.

Introduction

As reported Kotian (2014), the V4 countries joined the EU in 2004 as rather weak economies, but with huge growth potential. About 12 years later, the V4 countries are the fastest growing economies with a stable and strong position among exporters of Europe, the income gap between the V4 countries and the old EU members has narrowed by one third. And the Czech Republic is part of the V4. Its performance is to the average of the V4 countries. In absolute indicators, such as economic growth, export volume, and the growth of potential output, is ranked up to Poland or Slovak. Today, the Czech Republic is a highly industrialized country and is, according to the World Bank, one of the world's thirty most developed countries.

Therefore, we focused on the industry, which are among the largest contributor to the value added in the economy. It is mainly the field of Basic metals and Construction. At the same time we, as a counterpart, included agriculture in the analysis. The Czech Republic has never belonged to important agricultural-oriented countries. The share of agriculture in total GDP is, compared to services and industry, almost negligible.

Despite everything, agriculture is an area that is vital to the survival of the population and therefore must be monitored. The aim of paper was to analyze and assess the role of the agricultural sector, Basic Metals and Construction and their economic contribution in the national economy, using input-output analysis of the Czech economy.

1. Methodology

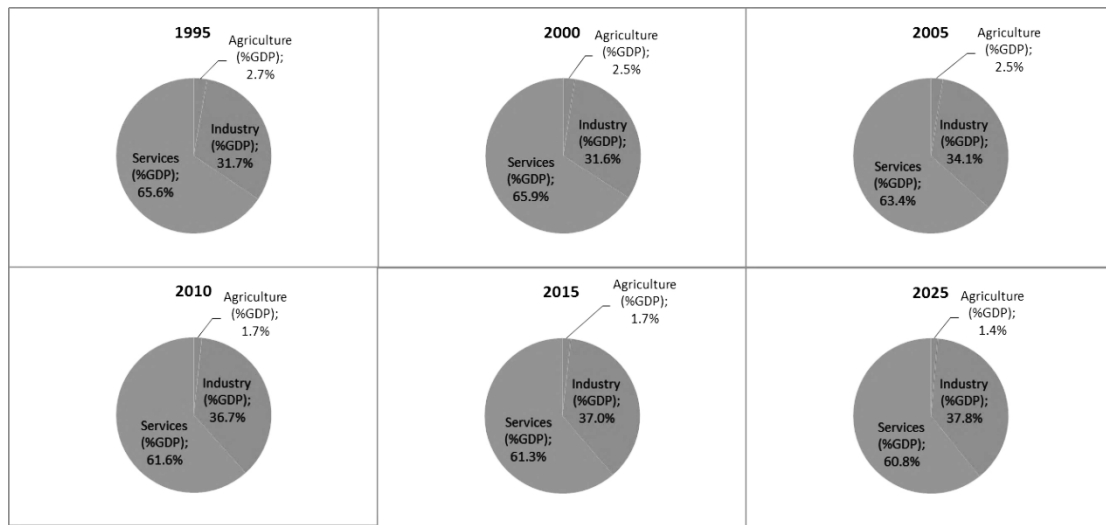
We used annual data from the database Oxford Economics database (Oxford Economics, 2016) when calculating and analyzing data series. The reference period was 1995 - 2011 with an estimated development in 2015-2016 and 2025. We used data on value added for individual sectors and the whole economy in the selection process of analyzed industries. We used data on value added for individual sectors and the whole economy in the selection process industries analyzed. We focused on industry, Basic metals and Construction, as sectors with a significant contribution to the creation of added value in the Czech economy as well as to the creation of the total GDP. We made an estimation of the future development of individual industries by using data from Oxford Economics database (Oxford Economics, 2016).

For the analysis of sectoral developments, we used the input-output tables from the OECD database. The tables have character industry - by - industry tables. As reported Bednářiková (2012), input-out model combines production theory and general equilibrium theory of Walras. The actual table provides a picture of the distribution of the output of one industry among other sectors, and also shows the output of one industry as inputs to other sectors. (Miernyk, 1965)

To measure the economic importance of individual sectors, we used simple calculation output multipliers. As reported by Miller&Blair (2009), the initial output effect on the economy is defined to be just initial dollar/euro's worth of sector „j“ output needed to satisfy the additional final demand. Then, formally, the output multiplier is the ratio of the direct and indirect effect to the initial effect alone. In the calculation was used Leontieff matrix inversion of the original production of individual industries.

2. Results

Although the Czech economy is highly industrial economy, the largest share in generating GDP has the service sector. As shown in Fig. 1, there is a slight increase in the share of industry in the Czech economy, particularly at the expense of the share of services, in the last 17 years. On the other hand, the share of agriculture fell almost to half the rate of 1995 over 17 years and, according to estimates, this decrease will continue. However, at the same time it will gradually increase the share of industry, although growth will be very slow.

FIG. 1: Sector's Share In GDP

Source: own graph, data source (Oxford Economics, 2016)

Industry will be further represented by sectors: Basic metals and Construction. Using Leontieff approach, we calculated how large the demand for sector output was and how big the volume of production should be made in the sector in order to meet the demand. (EMIOT, 2008). (Note: 2016 and 2025 represent an estimate of future development).

TAB. 1: Final demand, need, total output in period 1995-2011, 2016, 2025 (mil. usd)

Sector	Factor	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agriculture, hunting, forestry and fishing	Final Demand	2201.8	2115.8	1933.2	1959.5	1 871,00	1780.1	1852.2	2010.1	2405.2	2 848,00
	Need	3149.5	3017.9	2763.5	2715.3	2572.3	2440.8	2548.1	2709.0	3237.9	3871.5
	Total output	6013.1	6 453,00	5602.5	5 635,00	5 023,00	4756.2	5196.2	5608.3	6439.2	7608.4
Basic metals	Final Demand	2280.9	1842.4	1 888,00	2053.1	2053.1	1659.1	1794.5	1772.5	1896.4	2520.3
	Need	4658.3	4168.6	3709.3	3833.4	3833.4	3003.3	2828.4	3021.9	3275.4	4720.2
	Total output	5445.3	5261.3	5018.4	5165.8	5165.8	4 067,00	3768.4	4163.2	4246.4	5527.2
Construction	Final Demand	8637.3	10326.1	8918.6	9024.3	7919.9	8158.7	8095.5	10 114,00	12173.8	13788.4
	Need	10955.3	12785.9	11538.2	11914.2	11163.9	10618.8	11243.0	13990.3	17451.8	19359.4
	Total output	13393.7	15442.9	13983.1	14 374,00	13473.5	12367.3	13350.8	16747.9	21173.7	24240.1
Sector	Factor	2005	2006	2007	2008	2009	2010	2011	2016*	2025*	
Agriculture, hunting, forestry and fishing	Final Demand	3660.2	3480.9	4230.7	5263.4	4261.2	4420.5	7667.5	9348.8	13850.7	
	Need	4660.1	4685.1	5772.1	6759.0	5347.4	5609.0	10658.8	12856.3	19431.1	
	Total output	8088.5	8598.1	10123.5	12486.1	9523.3	9452.4	13 277,00			
Basic metals	Final Demand	3683.7	5343.8	6715.8	8165.8	4297.5	6170.2	7845.1	4406.7	6.903077512	
	Need	7118.6	9165.8	11398.3	13906.4	6911.1	10278.5	12779.9	8357.4	15104.7	
	Total output	8621.2	11032.3	12758.8	15523.9	8233.3	10330.1	12854.7			
Construction	Final Demand	15601.9	17923.7	22135.3	25451.7	21427.3	21151.5	22174.9	30339.1	58805.7	
	Need	21855.8	26241.9	32193.1	38705.9	31855.7	31559.8	32926.5	44638.9	86260.2	
	Total output	27404.5	33593.3	41379.4	50334.2	42 232,00	41686.6	43050.4			

*forecast

Source: own calculation

As we can see, the biggest final demand throughout the seasons was recorded in the construction sector. In all sectors, it is possible to observe how the demand and the product was affected by the crisis and subsequent recovery in 2007, respectively 2008 and 2009. It is also possible to see how the short recession at the turn of 2010 and 2011 demonstrated. The third variable in Tab. 1, the production volume of the sector, had to be produced to meet basic demand. As we can see, each year the demand was satisfied, but it is also true that demand was sufficiently supplied through imports. It began to increase especially in the post-crisis years.

Assuming that the technical complexity of production will not change, we can make an estimate for 2016, the 2025th. Demand, of course, change. Looking forward, it is important to note that if we assume an increase in demand is necessary to increase the volume of production. Our calculation shows how hard it will be necessary to increase production volume. The increase is significant in all three sectors.

Another step was calculation "simple output multipliers". An output multiplier for sector „j“ is defined as the total value of production in all sectors of the economy that is necessary in order to satisfy a dollar's worth of final demand for sector j's output. (Miller & Blair, 2009) When evaluating the multiplier - the higher the value is, the better for the economy. It is a signal example. for government agencies, where it is good to allocate public resources. The higher the multiplier, the more effective it is for the economy.

TAB. 2: Simple Output Multiplier 1

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003
Agriculture, hunting, forestry and fishing	1.3441	1.3292	1.3399	1.3298	1.3282	1.3051	1.3275	1.2552	1.2633
Basic Metals	1.6321	1.4582	1.4467	1.4688	1.4986	1.2763	1.299	1.3466	1.5074
Construction	1.3987	1.4016	1.4228	1.423	1.4859	1.3819	1.4887	1.473	1.5256
Year	2004	2005	2006	2007	2008	2009	2010	2011	
Agriculture, hunting, forestry and fishing	1.3027	1.2581	1.3054	1.3208	1.2651	1.2504	1.2803	1.3643	
Basic Metals	1.5845	1.5565	1.4991	1.5041	1.5291	1.4201	1.5215	1.5343	
Construction	1.5087	1.4841	1.5364	1.5213	1.5805	1.5253	1.5318	1.5273	

Source: own calculation

As shown in the Tab. 2, the largest multiplier in the period reached either Basic Metals or Construction. It was never Agriculture. Nevertheless, we can not say that the links of agriculture sector to the economy are weak. In the years 2000 - 2001 Agriculture had an even stronger impact on the economy than Basic Metals.

From Tab. 3 it is clearly seen when individual sectors had the strongest and weakest impact on the economy.

TAB. 3: Simple Output Multiplier 2

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003
Agriculture, hunting, forestry and fishing	1.3441	1.3292	1.3399	1.3298	1.3282	1.3051	1.3275	1.2552	1.2633
Basic Metals	1.6321	1.4582	1.4467	1.4688	1.4986	1.2763	1.299	1.3466	1.5074
Construction	1.3987	1.4016	1.4228	1.423	1.4859	1.3819	1.4887	1.473	1.5256
Year	2004	2005	2006	2007	2008	2009	2010	2011	
Agriculture, hunting, forestry and fishing	1.3027	1.2581	1.3054	1.3208	1.2651	1.2504	1.2803	1.3643	
Basic Metals	1.5845	1.5565	1.4991	1.5041	1.5291	1.4201	1.5215	1.5343	
Construction	1.5087	1.4841	1.5364	1.5213	1.5805	1.5253	1.5318	1.5273	

Source: own calculation

For the industrial sectors was the weakest year 2000. On the contrary, it was 2009 for agriculture. Industry had the strongest impact in 1995 (Basic metals) and in 2008 (construction), agriculture has experienced its small peak in 2011.

3. Discussion

Thanks to the calculation we get the answer to which of the surveyed sectors has economic strength, and to which it pays to invest public resources. Scope for more detailed analysis in this area appears to be in connection with the growth in demand. This will lead to an increase in entries into these industries. Increasing touches both inputs of capital and labor. What is needed is a more detailed analysis of sectoral relations within the country and outside the country. Analysis of the impact industry on economic growth has taken a number of economists by model Input-output tables. Depth study offers a study SPEA (2012), which analyzed the internal and external relations in EU countries in the field of sport. The authors created a single model IOT tables and then calculated multipliers for production and employment. Then they derive the relationship to economic growth of the country. IOT model also used Bednaříková (2012). For the selected region calculated output and employment multipliers. She has focused primarily on the area of agriculture. As she conclude, by using her model can be identified limitations in the economy, leading to a loss of efficiency. The same view came from Jones (2010), who states that the misallocation of resources at the micro level can aggregate up to look like differences in total factor productivity. This can lead to the differences in wealth.

We conclude that meet demand in recent years was only possible due to increasing import. In the context of increasing import volume opens the question of openness of the economy and its involvement in foreign trade. At the same time there is a need to analyze the impact on economic growth of the country. Similar studies have dealt with in their work also Alam & Awan (2015), who analyzed openness as one of the main factors of economic growth. Their research focused primarily on agriculture. In their

conclusion, in particular, amount of value added, as well as the higher level of trade openness affect economic growth in the country.

Conclusion

Through the use of IOT method, we analyzed the position of the three sectors in the economy of the Czech Republic. Our findings showed that in the demand for Basic metals and Agriculture was no significant difference in the first half of the review period, but about the impact of these industries on the economy, there industrial-sector had closer ties. Among the industrial sectors was a significant difference in demand in output, but on the impact on the economy, we did not find significant differences. However, it is necessary to proceed with further analysis not only selected sectors, but the overall structure of the economy and its impact on economic growth and development.

Acknowledgment:

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HISTORICAL DEVELOPMENT AND CURRENT PROBLEMS OF CZECH HOUSING SECTOR

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Keywords:

real estate market – mortgage interest rate – mortgage banks – monetary policy

JEL classification: E44, E52

Abstract:

This paper is focused on housing sector of Czech economy since 1998. First, the history of housing market is described using time series which covers a period between 2006:Q1 and 2016:Q1. There are mentioned key structural breaks on real estate market and how these have changed the housing sector and business cycle relationship. Second part shows current states on the Czech real estate market: (i) heating the market (ii) transition from rents to real estate purchases (iii) higher household indebtedness. Simultaneously, the policy of mortgage banks is outlined; specifically, how they set mortgage interest rates and loan to value ratio (LTV) in accordance with expansionary monetary policy.

Introduction

Housing market represents still small but evolving part of Czech economy playing significant role in different transmission mechanisms. The market attracts an attention of economists, as changes in house prices generate important effects on real economy. Last decade shows how an uncontrolled growth of house prices can result into heating of the economy. Typical example is 2008 American mortgage crisis, when the price increase has led to economic fluctuations not only within the country, but also across other states and continents (Cesa-Bianchi, 2012). House price growth was also observed in countries of the former Eastern Bloc, where mortgage market is still evolving. Generally, economies with developed real estate market are less inclinable to unexpected shocks than those in which the market is still in progress. Unfortunately, even developed real estate market does not guarantee stable house prices (Cesa-Bianchi et al., 2015).

After a relatively stable period of 1998 to 2005 have Czech real estate prices started to rise in 2006 (Hlavacek & Komarek, 2009). The reason was higher demand for property caused by “easy” availability of funds guaranteed by decreasing mortgage interest rate level (Iacoviello & Minetti, 2003 or Reichel & Hlousek, 2016). Gradual decline of the rate has been recorded since the beginning of the functioning of mortgage banks and

was interrupted only between years 2007 and 2009 due to global economic crisis. Downward trend occurred in 2008 again after basic interest rate level reduction conducted by the Czech National Bank (CNB). Overall, mortgage interest rate fell from nearly 15% to minimum of 2% since mortgage banks have started to operate in Czech Republic and according to CNB's estimates it is expected to continue falling. Lower mortgage rate reduces the cost of money and motivates households and entrepreneurs to borrow. As monthly rent was now comparable with mortgage payment, people living in rental flats moved into their own properties.

The other issue in housing sector is real estate value. Higher demand boosts real estate prices which households and entrepreneurs have to pay for properties. As a result the house prices grow faster than the rent which would households or entrepreneurs pay for the same property.

Previous text suggests the existence of automatic stabilizers leading the economy (with a time delay) to market equilibrium. The question is if authorities' interventions can mitigate fluctuations in economic variables and de facto reduce negative impacts on social welfare resulted from the rapid rise of house prices.

1. Data and Methods

We use nine macroeconomic variables for description of housing market development in Czech Republic: number of new mortgages, volume of new mortgages (mil), average mortgage amount (mil), mortgage installment CZK 1 million for 20 years, offering price of flats, number of newly started and finished buildings, housing loans to households and mortgage interest rate. The data were obtained from the Czech Statistical Office (CZSO), Czech National Bank (CNB) and financial hypindex databases (FH) and subsequently processed into several charts covering period 2006 – 2016. More detailed description is quoted in Table 1.

TAB. 1: Data description

Description	Variable	Data source	Frequency
Offering price of flats	<i>HP</i>	<i>CZSO</i>	quarterly
Number of newly started buildings	<i>Bn</i>	<i>CNB</i>	quarterly
Number of finished buildings	<i>Bf</i>	<i>CNB</i>	quarterly
Housing loans to households	<i>HL</i>	<i>CNB</i>	quarterly
Mortgage interest rate	<i>Mr</i>	<i>FH</i>	monthly
Mortgage instalment CZK 1 million for 20 years	<i>Mi</i>	<i>FH</i>	monthly
The average mortgage amount (mil)	<i>Ma</i>	<i>FH</i>	monthly
The volume of new mortgages (mil)	<i>Mv</i>	<i>FH</i>	monthly
The number of new mortgages	<i>Mn</i>	<i>FH</i>	monthly

Source: Authors' construction

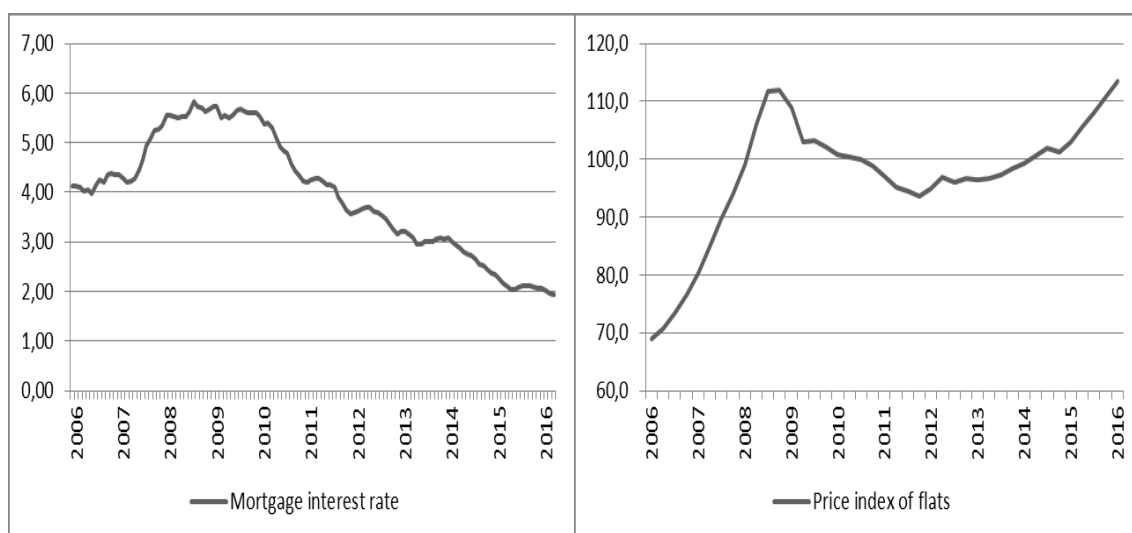
2. Housing sector history

Czech real estate market has started to develop in the second half of 90's. This period is characterized by growth of real estate prices, declining mortgage interest rates level and gradual entry of mortgage banks to the market. The emerging market was typical by acyclic behavior, when it comes to the economic business cycle. However, Brůha and Polanský (2015) based on data of housing sector of Czech economy, calculated procyclical relations between years 2005 and 2015. Therefore, we are going to describe time series just after 2005, the year when the Czech real estate market has started to have character of developed, modern markets.

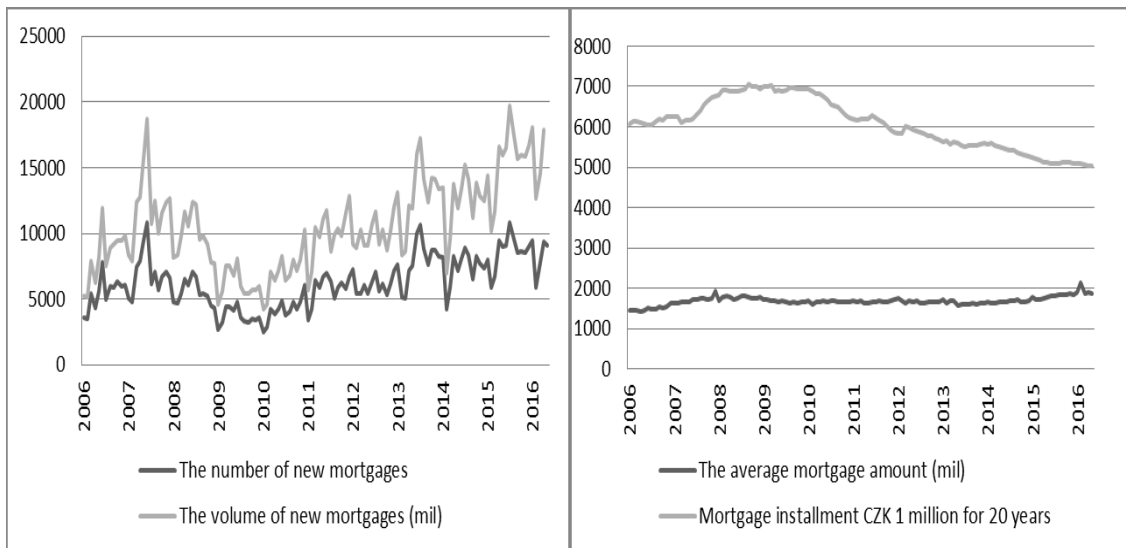
Thanks to lower interest rates in 2006 willingness of households to borrow increased. This change in behavior had an influence on real estate market, as demand for mortgage loans went up and positively hit a demand for real estates, what subsequently caused growth of real estate prices. Figure 1 right shows that flat price index skyrocketed in 2007 and continued to rise until to the global crisis, which hit the world in 2009. Transmission mechanism was also supported by the law on rent deregulation approved in 2006. Gradual increase in prices of regulated rents motivated households and entrepreneurs to purchase their own housing.

Generally, the number of mortgages rises along with house price growth. Figure 2 left also indicates strong correlation between the number and volume of new mortgages. On the Figure 2 right we can see, that mean of mortgage installments was around 6200 CZK between years 2006 and 2008 and the average mortgage amount has been rising.

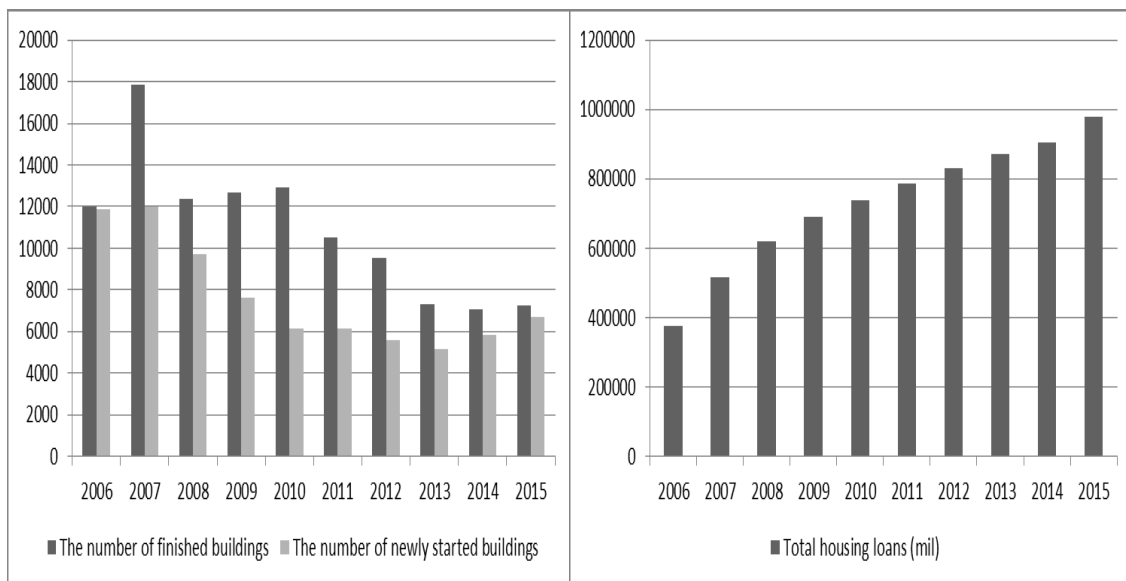
FIG. 1: Mortgage interest rate and Price index of flats



Source: Authors' construction

FIG. 2: Mortgages' key variables I

Source: Authors' construction

FIG. 3: Mortgages' key variables II

Source: Authors' construction

Figure 3 left compares the number of finished and newly started buildings. During the period of 2007-2009 more than 30,000 flats were started and around 40,000 were finished, which is about twenty thousand flats more in comparison to previous period of 2003-2006, when the Czech economy faced stagnation. The Czech National Bank, followed by mortgage banks, reacted on this temporary boom by increasing mortgage rate in order to suppress overheating of the economy. The results of this monetary restriction indicate a procyclical behavior between house prices and housing sector.

In 2009 house prices fell due to the global financial crisis. Share of newly started buildings dropped by 14% and continued to decrease till 2011, while the portion of newly finished houses stayed still slightly higher than in 2008. This can possibly be explained by rigidities on labor market, as firms are not able to reduce the number of employees in a short time. Companies reacted by reallocation of resources (workers) from newly started constructions to existing ones (Reichel, 2016).

Likewise, there was apparent decline in offered number of mortgages together with volume of new mortgages from the beginning of the crisis. Average mortgage amount was around two million CZK in this period. The impact of crisis is also noticeable on volume of installments for mortgages which increased from 6000 CZK between years 2006- 2008 to 7,000 CZK between 2009- 2011.

The period of years 2012 and 2013 is characterized as “after crisis time”. House prices were stable, with an upward tendency later. Construction industry is experiencing a revival, first time after crisis are time series of newly started buildings increasing. Mortgage interest rate decreased (from 3, 65% to 3%) and has been falling for whole next time period (under 2% in 2016). This decline allowed to economic agents to borrow relatively cheap, which was reflected in growth of number and volume of new mortgages. The average mortgage amount went up and the average mortgage installments declined from 6000 to 5500 CZK till 2013 and to 5000 CZK later. There is also observable slightly slower (after 2008) but ongoing growth of total housing loans.

3. Current problems

The above mentioned implies several problems on real estate market: (a) heating of the market (b) transition from rents to real estate purchases and (c) higher household indebtedness.

a) heating the real estate market

As was mentioned, thanks to very low interest rate have real estate prices in Czech Republic been rising for a long time (more on the transmission mechanism in Lyziak et al. (2012) or Iacoviello (2000)). Indeed, house prices slightly overvalued expected levels estimated by CNB (around 5% by the end of 2015) and the baseline scenario indicates further increase in price overvaluation of apartments in the next two years (CNB, 2016).

The CNB carried out some interventions against excessive pumping of mortgage loans and high house prices by reducing the LTV ratio. Maximum "recommended" LTV value has already dropped from initially 100% to 95% (10/1/2016) and is going to drop to 90% later (4/1/2017). Any higher value of mortgage and credit risks specific to it will have to be considered by CNB with higher capital cover required.

The CNB also recommends to institutions to apply the LTV at a maximum rate of 60% in case of loan application of investment type with higher level of risk (CNB, 2016).

b) transition from rents to real estate purchases

Because of extremely low mortgage repayments people are moving out of flats in a rental property. This behavior is expected, as monthly mortgage installment is now comparable with payments of monthly rent for housing (5000 CZK per month mortgage installment on 20 years, 6400 CZK per month mortgage installment on 15 years). However, there is a risk associated with possibility of interest rates increase in the future debilitating the ability of low-income households to repay.

c) higher household indebtedness

Interest rate growth and resulting higher inability of households to pay off allure people to borrow more money. In order to reduce household debt Central Bank may provide monetary restriction and increase interest rate to prevent insolvent borrowers to run up more debts. Such growth, however, decreases income of households getting them into financial troubles what ultimately can lead into economic stability disturbances.

Conclusion

The aim of this work was to briefly introduce development of Czech housing sector after 2006 and outline some of its current issues. The recent history of real estate market has been divided into several phases discussed on the basis of time series of selected variables.

The paper is descriptive and serves as a motivational basis for modelling the real estate market in an environment of small open economies. In the following research we are going to model the impact of transmission mechanism of monetary policy on the housing sector by using a structural vector autoregression model (SVAR) and dynamic stochastic general equilibrium model (DSGE).

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CURRENT TRENDS IN PERSONNEL STRATEGIES

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Keywords:

personnel strategy – talent management – diversity management – age management

JEL classification: M1, M5

Abstract:

Personnel strategy refers to the basic document which, apart from others, specifies priorities in human resource management. Our objective was to establish whether personnel managers need such a document, and if so, what the current trends are in the strategy priorities. We established a statistically significant difference in the approach to personnel strategies among respondents as to the size (number of employees) of an enterprise. Talent management, understood as a complex concept comprising both performance and personal components, is becoming a priority for personnel strategies.

Introduction

The current changes on the labour market reflect the condition of our growing economies. Human resources, respectively their current shortage on the labour market, make them a priority. We could therefore expect that the situation will be reflected in personnel strategies of individual employers. Igielski draws attention to the importance of personnel strategies as well as the fact that strategies should be customized to the turbulent 21st century (Igielski, 2015).

Demands placed on personnel have been changing with the changing external environment – i.e., their qualifications, knowledge and skills, as well as behaviour in all areas and branches of business (Konovalova et al., 2012). Priorities should be set within the personnel strategy in terms of what areas will be given greater attention. Particularly talent management is becoming a priority of interest (Thakur, 2016; Kumar, 2016; Hejase et al., 2016; Creelman, 2015 and others), as well as age management (Egerová, 2012) and diversity management (Eger & Indruchová, 2014; Sood, 2016). The concept of diversity management differs significantly. It often includes the age aspect (i.e., it also includes age management). We established different approaches in individual countries. Japan focuses diversity management primarily on gender, however, the concept is wider in Germany since it includes the employment of foreigners, the 50+ age group and other factors as well (Kemper, Bader, & Froese, 2016). In some

countries, religious or cultural influences can play an important role (Cooke & Saini, 2010).

1. Methodology

The objective of our investigation was to identify whether attention is paid to one of the basic documents, i.e., defining a personnel strategy policy and how current trends are reflected in it.

Respondents were divided into two sets. The first set, hereinafter called the “Entrepreneurs”, was chosen based on a quota selection. The criteria for the selection were: legal form (natural person or limited liability company), yearly turnover (exceeding CZK 1 million), number of employees (up to 49), location (the whole Czech Republic). There were 325 respondents in total in this set. The second set, hereinafter called “Enterprises”, was chosen upon a quota selection as well: legal form (limited liability company or joint stock company), annual turnover (exceeding CZK 1 million), number of employees (above 50), location (the whole Czech Republic). The total number of respondents in this set was 227.

The selection criteria were identical, the only difference being in the legal form and number of employees. Our intention was to create two sets, whereas one would represent rather smaller employers and the second set medium-sized and larger employers. Small traders who usually have no employees were filtered using the criterion of minimum turnover.

We used the electronic questionnaires method, complemented by the CATI method (telephone calling), to have the data equally distributed for the whole Czech Republic. The questionnaire was sent to HR managers or HR directors.

The data were consequently processed in the MS Excel programme. The statistical method applied was the Person chi-squared test.

2. Results

The objective of our investigation was to establish whether there are significant differences among entrepreneurs and enterprises in terms of their approach to defining a personnel strategy policy. We also wanted to establish what the current trends are in this area, i.e., what personnel strategies are focused on.

2.1. Differences in the approach to determining a personnel strategy policy

We anticipated a statistically significant difference between entrepreneurs and enterprises in their approach to the personnel strategy policy. Since personnel strategy represents one of the basic underlying documents for human resource management,

enterprises with a greater number of staff (in our set more than 50), should pay greater attention to these issues than entrepreneurs who are expected to employ a smaller number of employees (in our set up to 49). (Note: one of the criteria for the selection of a set was specified minimum turnover – see the chapter - Methodology. We anticipate that by using this condition, we excluded "minor traders" who usually do not have employees).

TAB. 1: Comparison of the approach to personal strategy between entrepreneurs and enterprises

Do you have a personnel strategy policy?	ENTREPRENEURS (up to 49 employees)		ENTERPRISES (above 50 employees)		TOTAL	
	absolute frequency	%	absolute frequency	%	absolute frequency	%
Yes, we have a controlled document policy	34	10	83	37	117	21
Yes, we have it, but not as a controlled document	96	30	87	38	183	33
We do not have it nor do we need it	170	52	33	15	203	37
We do not have it but we are planning to create it	8	2	14	6	22	4
We do not have it, we need it but we do not have time to deal with it	17	5	10	4	27	5
Total sum	325	100	227	100	552	100

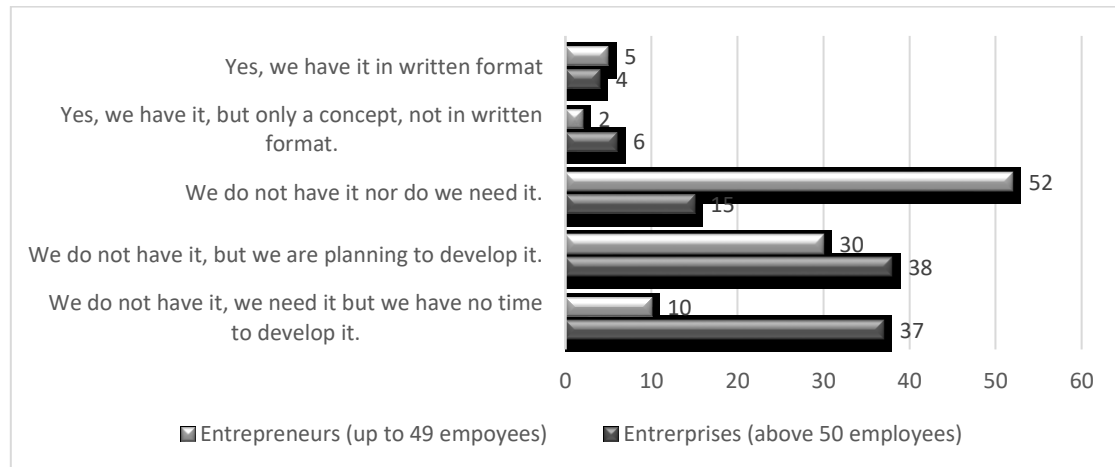
Source: Own resources

Table 1 above clearly shows that enterprises prioritize the existence of a personnel strategy policy more than entrepreneurs, they often have a written personnel strategy policy. We made a surprising finding that a relatively high number (38%) of enterprises state they do have a personnel strategy, but not in written format (only rather a “concept in the head”). However, a relatively high number of entrepreneurs (30%) chose the same response.

Since all prerequisites of the chi-squared test were met to assess the homogeneity of the sets, we wanted to find out whether there is a statistically significant difference in the overall approach to the personnel strategy. We measured whether there is a difference between the sets considering a positive result (i.e., they have a written personnel strategy policy) or negative, i.e., they do not have any personnel strategy (for whatever reason). The ascertained value $p = 5.6E-16$ shows that there is a statistically significant difference between both sets, i.e., even at 1% level of significance. Hence, our prerequisite proved that there is a difference between enterprises and entrepreneurs in their approach to personnel strategy.

We also examined whether there is a statistically significant difference between the responses between specific options (see Fig. 1), and we established value $p = 2,65E-21$. This shows that the difference is even more conclusive and we negate the hypothesis of response compliance of the two sets, i.e., entrepreneurs and enterprises.

FIG. 1: Differences in the approach of entrepreneurs and enterprises



Source: Own resources

We anticipated that the greater part of entrepreneurs would not have a personnel strategy policy or they would even consider it unnecessary. However, it is rather surprising that some companies (15%) even stated they do not have any personnel strategy policy in place, nor do they need any. Approximately the same number of entrepreneurs and enterprises state that they do not have any personnel strategy policy in place but they need it. They merely lack the time to develop it.

2.2. Current priorities of personnel strategies

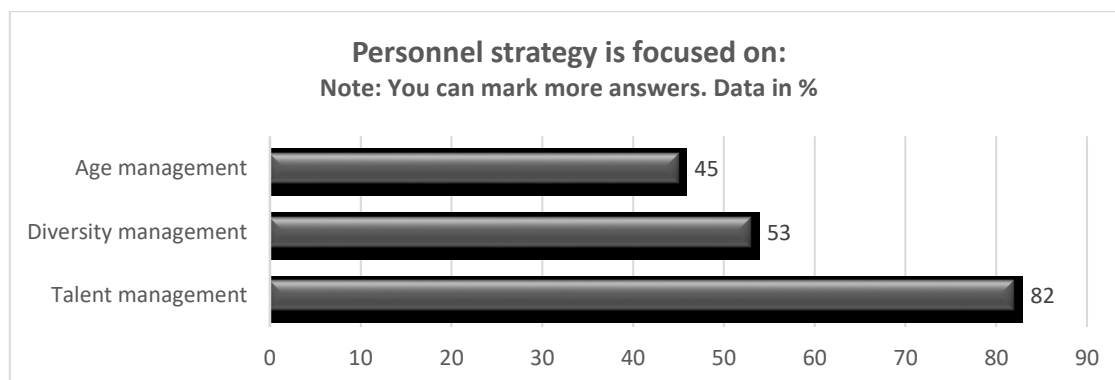
In the next part of the article we will focus on the trends of the personnel strategy content in detail. Further questions were put only to those enterprises which stated they had a personnel strategy policy (either in written format or not). We could select more areas, i.e., by selecting the submitted possibilities (talent management, diversity management and age management), and free completion of other areas and topics.

Figure 2 shows that currently the greatest attention is paid to the issues of talent management (marked by 82% of respondents). Diversity management (53%) and age management (45%) also show high representation.

Respondents were allowed to add any comments or notes to any question. The diversity management and age management categories showed an explanatory comment, particularly if the item was not marked as a priority. It particularly refers to situations where the character of the work results in restrictions on gender and/or age. One literal

example of the received responses: "Since our company employs 90% men below 30, the strategy of diversity and age management do not come first." However, this was a unique case.

FIG. 2: Priority area of personnel strategies



Source: Own resources

Respondents were free to add further options, i.e., priorities within the personnel strategy. Considering the current situation on the labour market, we expected that many personnel strategies would be focused on obtaining and stabilizing employees. A surprisingly small number of respondents chose this option - only 6 (Note: in total, 170 respondents answered this question).

3. Discussion

Many authors have written about talent management issues recently. Talent management can bring a competitive advantage (Lazorko & Zajac, 2014). Competition and shortage of highly qualified and talented personnel make it a priority for employers to look for staff and keep them (Hejase et al., 2016). Egerová et al. deal with talent management implementation within Czech enterprises in Bohemia and Slovakia. They established, apart from others, that employees appreciate it if they have an opportunity "to become a talent", so this aspect is very motivating. However, the authors draw attention at the beginning of their work to the fact that the terminology in this area is not fully clear (Egerová et al., 2015).

We put HR managers the following complementing question within our investigation: "who is considered a talent at your work?" In this question, we offered two options - either selection of a given option, or they could specify the term in their own way. The responses show that this issue is approached differently both in the academic area and in practice. 22% of respondents stated a talent is a worker who has good ideas; the same number, i.e., 22% thought it was a colleague who had been performing well; 18% a colleague who would be difficult to replace; 14% a committed employee full of

initiative, 12% a young graduate; 3% of respondents consider all employees talented. The remaining part stated they did not consider such things.

Even the open responses show that the “talent” concept differs a lot. To illustrate, we would like to give few literal statements on what respondents understand by “talent”: “It is a colleague with the potential to grow, who gives a very good performance, has initiative and, at the same time, who has potential and wants to use it”. A colleague who gives high performance, behaves in conformity with the company values, has initiative and is committed.” “For us, a talent is anyone who has achievements, has initiative and is committed, is willing to move on and grow, and has important skills.” “Combination of all crossed boxes.” Two basic ideas follow from the above-stated. Talent management is understood as a complex set of partial attributes, hence, it cannot be reduced or limited to just a few words. The second finding is that not only are performance and results important in current corporate practice, but also the conduct of employees (engagement, conduct in conformity with corporate values).

Conclusion

Personnel strategies represents one of the basic pillars by way of which an enterprise determines its priorities in such an important area as human resource management. Our objective was to identify whether this document is considered important or whether it plays a marginal role in practice. We established that 75% of respondents of the “Enterprises” and 40% of respondents of the “Entrepreneurs” have a personnel strategy, but its format differs (written format or just a concept). However, there is a statistically significant difference between both sets. Since the basic difference between both sets lies in the number of employees, this result was expected. On the contrary, it was surprising that a relatively high representation of small enterprises also deal with the issues of personnel strategy. This shows that even enterprises with a lower number of employees (up to 49) realize the importance of human resources and their influence on the results of their business.

We also wanted to identify current trends, i.e., what areas are prioritised within personnel strategies. We came to the conclusion in this part in conformity with the latest worldwide research that talent management issues were in the foreground of interest. Although this term is not completely clearly and explicitly specified, respondents understand its content as a complex term that includes both performance (has achievements, has ideas, is difficult to replace), and personal factors (is committed, has initiative, behaves in conformity with corporate values).

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AN ANALYSIS ON GREEN TOTAL FACTOR PRODUCTIVITIES OF CHINESE MANUFACTURING INDUSTRIES

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Keywords:

metafrontier – MML

JEL classification: O44, C46, L10

Abstract:

Using the method of DEA (Data Envelopment Analysis), this paper measures the GTFP (Green Total Factor Productivity) of 27 Chinese manufacturing industries within the context of carbon emission constraints from 2000 to 2014 on the basis of radical and non-radical EBM directional distance functions. According to the research, frontier catch-up effect promotes the overall growth of GTFP in manufacturing industry and the key point of improving Chinese manufacturing industries' GTFP is to ameliorate the production efficiency of the high-end technology manufacturing industry.

Introduction

As the largest carbon emitter around the world, in order to cultivate the new economic growth momentum, China should concentrate on enhancing GTFP under the background of supply-side structural reform. Stimulated by the demand management policy, Chinese economy develops rapidly under the influence of investment demand expansion, while it also leads to a series of economic and social problems, such as overcapacity, environmental pollution, growth momentum recession and lack of innovation. Intending to cope with the challenges of the new normal, Chinese economy needs to rebuild the economic growth momentum from the supply side, and the economic growth impetus of the supply side could be attributed to TFP. Manufacturing industry is the principal part of the national economy and the strategy of “Made in China, 2025” has become the guideline for the government to reach the target of manufacturing power. The improvement of TFP would determine the growth potential of Chinese economy and also China's position in the worldwide competition. After the implementation of the reform and opening up policy for more than 30 years, China has become the second largest economic entity in the world, while this position was achieved at the great expense of resources and environment. Hence, on the basis of Framework Convention on Climate Change, China submitted its Intended Nationally Determined Contribution to the United Nations in 2015 which declared that the amount of carbon dioxide emission would get to its peak around the year of 2030 and the

emission load of per GDP (gross domestic product) would decline by 60% to 65% compared with the number of 2005. Carbon dioxide emission mainly comes from energy consumption, especially coal, and the manufacturing industry is the primary sector of energy consumption. In 2014, the energy consumption of manufacturing industry accounted for 57.55% of the total energy consumption of China, of which the consumption of coal in manufacturing occupied 42.75%, so in order to achieve the dual goals carbon emission reduction and manufacturing power in 2025, it's necessary to improve the GTFP of manufacturing industry.

1. Methods and Analysis Results

1.1. Inter-industry TGR analysis

By adopting the EBM directional distance function based on metafrontier, this paper measures the GTFP of several kinds of Chinese manufacturing industries. TGR (Technological Gap Ratio) is the core indicator which is used to depict the differences between meta-frontier efficiency and group efficiency. At first, this paper analyses the developing trend of three groups' TGR. The TGR of the low-end technology manufacturing industry maintained at the highest level unexpectedly with less volatility from 1999 to 2014. It reflected that the practical productivity of the low-end technology manufacturing industry was much closer to the potential productivity, reaching 99.6% in average. Besides, the technical level of the low-end technology manufacturing industry stayed more stable during the sample period. The TGR of high-end technology manufacturing industry was lower than the one of the low-end technology group and its advantages in technology weren't manifested in the actual production. The meta-frontier efficiency of high-end technology manufacturing industry took up 78.4% of the group efficiency averagely, so the industrial efficiency still got a large room to cover. The change of TGR of the high-end technology manufacturing industry appeared to be similar to the inverted shape of the letter "U", which showed that the TGR was on the rise during 1999 to 2002, reaching its peak in 2002 and then declined continually away from the potential technology frontier. In 2014, the industrial added value of the high-end technology manufacturing industry accounted for 53.2% of the total industrial added value of manufacturing industry, so high-end technology manufacturing industry should be the best starting point to increase the general efficiency of manufacturing industry. The middle-end technology manufacturing industry's TGR was the lowest among those three categories, and on average, its practical productivity was only 44.6% of the potential productivity. During the years from 2001 to 2002, TGR of the middle-end technology manufacturing industry showed a successive declining tendency and the TGR of groups fell from 55% in 1999 to 44.5% in 2014. The changing tendency of the middle-end and the high-end technology manufacturing industry was roughly the same, but after 2002, the efficiency gap between these two sorts of technology manufacturing industry widened continually. It should be pointed out that most of the middle-end

technology manufacturing industries are characterized as energy-intensive, so energy conservation and emission reduction must be the focus of productivity promotion.

Then, looking at the TGR of particular industries, it can be seen that the practical productivity of tobacco industry, leather, fur, down feather and its manufacturing, furniture manufacturing as well as printing and recording medium duplicating industry belonging to the low-end technology manufacturing industry, and computer, communications and other electronic equipment manufacturing industry in the category of the high-end technology manufacturing industry all reached the level of potential productivity in the entire sample period. The TGR of chemical fiber manufacturing industry and the manufacture of rubber in the middle-end technology manufacturing industry were the lowest, and the practical productivity of these two industries occupied only 40.5% and 45.9% in potential productivity respectively. It's worth noting that medical manufacturing industry, as a kind of high-end technology manufacturing industry, only got 68.7% for TGR which was comparatively low. Hence, the productivity of medical manufacturing industry should be improved substantially.

TAB. 1: The classification of 27 manufacturing industries

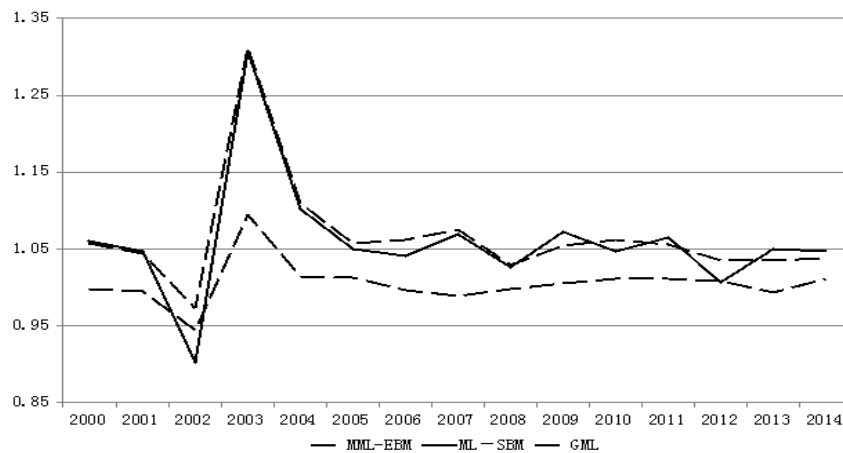
High-end technology manufacturing industry (1)	Middle-end technology manufacturing industry (2)	Low-end technology manufacturing industry (3)
Chemical raw materials and chemical products manufacturing industry (I13); medical manufacturing industry (I14); general equipment manufacturing industry (I22); special equipment manufacturing industry (I23); transportation equipment manufacturing industry (I24); electric apparatus and equipment manufacturing industry (I25); computer, communications and other electronic equipment manufacturing industry (I26); instrument and meter manufacturing industry(I27)	Petroleum processing, coking and nuclear fuel processing industry(I12); chemical fiber manufacturing industry (I15); manufacture of rubber(I16); manufacture of plastics (I17); manufacture of non-metallic mineral products (I18); ferrous metal smelting and rolling processing industry (I19); non-ferrous metal smelting and rolling processing industry (I20); manufacture of metal products	Food processing and manufacturing(I1);beverage manufacturing(I2);tobacco industry(I3);textile industry(I4);garment manufacturing industry (I5); leather, fur, down feather and its manufacturing (I6);wood processing and grass bamboo rattan palm manufacturing (I7); furniture manufacturing (I8); paper-making and paper products industry (I9); printing and recording medium duplicating industry(I10); stationery and sporting goods manufacturing industry(I11)

Source: own arrangements

1.2. Inter-industries GTFP analysis

In order to ensure the robustness of the results, this paper measures and calculates the MML (MML-EBM, MML-SBM) index based on EBM directional distance function and SBM directional distance function, and the GML (Global Malmquist-Luenberger) index as well (see Fig.1). From 2000 to 2014, the GTFP of manufacturing industry measured by MML-EBM productivity presented the inverted shape of “N”, which fell at first, then went up, declined and remained relatively stable in the end. The GTFP of manufacturing industry rose and fell by a wide range during 2002 to 2003, while after 2006, it turned out to be more stable. Combining with the analysis of TGR, this paper holds the opinion that China’s accession to WTO in 2002 was the reason why TGR fluctuated dramatically in the period of 2002 to 2003. On the one hand, the entry into WTO exerted positive external impact on Chinese economy and the GTFP of manufacturing industry rose temporarily; on the other hand, Chinese economy became more integrated into global economy. The advantage of cheap labor in the low-end technology manufacturing industry made China become the “world factory”, while because the improvement of technical efficiency in the middle-end and the high-end technology manufacturing industry came to no end, plus the inadequate international competitiveness, the efficiency gap between the middle-end as well as the high-end manufacturing industry and the low-end manufacturing industry widened continually.

FIG. 1: The developing trend of three productivity indexes of manufacturing industry from 2000 to 2014



Source: own arrangements

The average productivity of 27 industries was 1.04 in the period of 2000 to 2014 (see Table 2), which reflected the overall ascending developing trend of GTFP of manufacturing industry. From the decomposition of TFP, the average efficiency change ratio was less than 1, while the technological change ratio was greater than 1, which showed that the frontier catch-up effect was the principal cause of the increase of GTFP,

and inversely, pure technology catch-up effect impeded the augmentation of GTFP. Looking through all these industries listed above, the GTFP of 15 manufacturing industries grew, 11 industries dropped and the productivity of the tobacco industry stayed unchanged. Except for medical manufacturing industry, general and special equipment manufacturing industry, the GTFP of the rest 5 industries in the high-end technology manufacturing industry, triggered by TCR, all went up. The GTFP of 8 middle-end technology manufacturing industries increased, and the growth of 6 industries' productivity was also determined by TCR. Among 11 sorts of low-end technology manufacturing industries, only the GTFP of food processing and manufacturing and paper-making and paper products industry promoted. Most low-end technology manufacturing industries are labor-intensive. By virtue of the unlimited supply of cheap labor, china's low-end technology manufacturing industry has already reached the efficiency frontier, so its potential for productivity promotion is delimited. With the analysis of TGR of three manufacturing industries, it can be concluded that reform and transformation is an inevitable approach to promote GTFP, and the technology and efficiency of the middle-end and the high-end technology manufacturing industry should be strengthened, especially the technical level of the high-end technology manufacturing industry.

TAB. 2: The GTFP of manufacturing industries and its decomposition from 2000 to 2014

Industry	ECR	TCR	MML-EBM	Industry	ECR	TCR	MML-EBM
I1 (3)	0.985	1.022	1.006	I15 (2)	0.997	1.044	1.041
I2 (3)	0.985	0.967	0.953	I16 (2)	0.985	1.046	1.030
I3 (3)	1.000	1.000	1.000	I17 (2)	0.976	1.047	1.022
I4 (3)	0.989	0.982	0.971	I18 (2)	0.991	1.036	1.027
I5 (3)	0.990	0.980	0.970	I19 (2)	1.007	1.075	1.084
I6 (3)	1.000	0.997	0.997	I20 (2)	1.008	0.996	1.004
I7 (3)	0.996	0.999	0.995	I21 (2)	0.984	1.079	1.062
I8 (3)	1.044	0.979	1.023	I22 (1)	0.994	1.005	0.999
I9 (3)	0.993	0.993	0.985	I23 (1)	0.998	0.998	0.997
I10 (3)	1.000	0.999	0.999	I24 (1)	0.997	1.019	1.017
I11 (3)	0.998	0.966	0.966	I25 (1)	0.999	1.015	1.014
I12 (2)	1.018	0.983	1.001	I26 (1)	1.000	1.009	1.009
I13 (1)	0.995	1.020	1.014	I27 (1)	0.988	1.018	1.005
I14 (1)	0.990	0.981	0.972	Average level	0.997	1.044	1.040

Source: own arrangements

Conclusion

Through the approach of EBM directional distance function, this paper measures and analyses the GTFP of 27 Chinese manufacturing industries based on metafrontier over the period of 2000 to 2014. The main conclusions are listed as follows:

The TGR of the low-end technology manufacturing industry was the highest among those three kinds of industries and also maintained a steady developing trend. High-end technology manufacturing industry's TGR stood in the middle ground and its advantages weren't fully manifested in practical productivity. Besides, averagely, the meta-frontier efficiency of the high-end technology manufacturing industry took up 78.4% of the group efficiency, which meant that the high-end technology manufacturing industry still got a large space for the growth of industrial efficiency. The TGR of the middle-end manufacturing industry was the lowest and its actual productivity occupied averagely only 44.6% of the potential productivity.

The GTFP of manufacturing industry appeared to be similar to the inverted shape of "N", which declined at first, then went up, declined, and remained relatively stable in the end. During the years of 2000 to 2014, the average production rate of 27 industries was 1.04. Frontier catch-up effect was considered to be the main reason of the GTFP increase, while the pure technology catch-up effect exerted negative impact on the growth of GTFP.

Acknowledgement:

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SEPA INFLUENCE ON THE CZECH BANKING MARKET

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Keywords:

SEPA project – SCT – SDD – cross-border payments – terms and conditions

JEL classification: G21, G23, K23,

Abstract:

The SEPA project is one of the most important activities in the field of payment and payment services of EEA countries. The paper deals with the application of the SEPA project in selected banks in the Czech Republic. Its aim is to show whether and how the implementation of SEPA products affected the offer of international payments. Using methods of description and comparison of observed facts and data analysis of selected banks is done, which should meet the set target. Author worked on the hypothesis that banks in the Czech Republic offer SEPA products that refill the offer of the international remittances.

Introduction

The intention of the SEPA project (originally called Single European Payment Area) has been considered after the formation the European Central Bank, i.e. after 1998 (ECB began its activity by June 1st., 1998 and replaced The European Monetary Institut, see Marková, (2002)). At that time EU directive has already been published, and which was the first in this area legally regulating payment system implemented within the EEA. It was a directive No. 97/5 / EC on cross-border transfers. At that time it regulated in particular:

- Transparency of conditions in the cross-border transfer of payment,
- Deadlines for implementation of payments (principle of "end to end"),
- Client's claim to obtain a refund in the event of non-execution of the client's payment order and the obligation to provide the compensation when the deadline for payments processing was not kept,
- Avoidance of "double charging",
- Using of the courses.

Vision of SEPA formed therefore in the end of 1999 and subsequently the European Payment Council (hereinafter "EPC") has been established, so far as the interest club of banks involved in the creation of SEPA. To this vision three basic payment products were inflicted:

SCT (SEPA Credit Transfer),
SDD (SEPA Direct Debit),
SC (SEPA Card).

1. Methodology, research

The SEPA project can be considered the third most significant domain in terms of regulation of selected financial market services, after Basel and MIFID. The submitted study aims to show the impacts of the SEPA project on the implementation of cross-border payments. A hypothesis has been set, which presumes that "Banks in the Czech Republic offer SEPA products that refill the offer of the international remittances". Methods of description and comparative have been applied to attain the set objective and to prove or disprove the stipulated hypothesis.

The SEPA project and cross-border payments have been covered by various authors including Pantůčková (2003), Machala (2006) or Chuchvalcová (2007), whose works have been presented namely through the "Bankovníctví" monthly journal. Lately the project has also been reviewed by academics, e.g. Polouček (2013), Soukal, Draessler (2014), Mejstřík (2014) or Schlossberger (2011, 2012, 2015), partly Jílek (2013), formerly Tomášek (1999). The most important foreign available information sources include in particular the webpage of the European Payments Council (EPC, 2015a) or, inter alia, Klímková (2008).

2. Cross-border Payments versus SEPA

After the introduction of the EUR the need for harmonization of payment systems has significantly increased, not only the Eurozone payment system, but also product portfolio, and different business practices yet. In this situation significant EPC initiative formed in the spring of 2002, (EPC meanwhile has been established as a legal entity under Belgian law), which clearly formulated the necessity of creating a so-called Single Euro Payment Area - SEPA by 2010. Its legal framework should be drawn up by banking market operators under the EPC supervision to eliminate the future external "political" interventions. The project should be managed on the principle of "self-regulation". The aim of the project remained unchanged with the intention to create an area in which citizens, companies and other economic entities will be able to make and receive within Europe payments in EUR - cross-border and domestic - under the same basic conditions, rights and obligations, regardless of their headquarters.

Creating a single area for EUR payments proceeded according to the schedule defined in the document "SEPA Roadmap" accepted by EPC in December 2004 (Kadorík, 2004).

The timetable set out the key terms for the period 2004-2010 in implementing of SEPA:

- 1) The preparatory phase / planning (2004-2005)
- 2) The implementation phase (2006-2007)
- 3) The stage of migration (2008-2010)

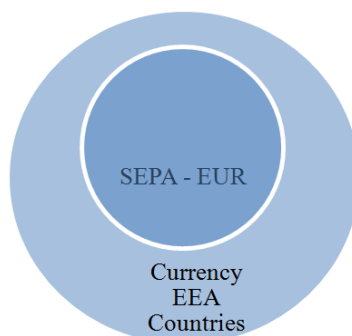
In the area of payments some new terms have appeared which were defined in the aforementioned European legislation. It was mainly about the term "cross-border payment" and from this we can deduce the category of „cross-border payments." Until then, practice and theoretical literature worked only with the term "international payments", "domestic payments", respectively "foreign payments" and "domestic payments".

Cross-border payment can be defined as "cross-border transfer", which is an operation executed on the initiative of payer via an institution or its branch in one Member State in order to transfer money to payee to institution or its branch in another Member State; payer and payee may be the same person (EU, 2001). Regulation in this case, therefore, characterized a cross-border transfer order as an order initiated by the payer, which is a form of reimbursement payments. Within the meaning of such regulation, however, the cross-border payment was limited on 12.5 thousand EUR, since 2006 then on 50 thousand EUR. Above this limit the definition of cross-border payment didn't refer to it. Then it was a foreign payment. Application of this definition had an impact on the use of the payment instrument "payment order" within its implementation within EEA. If the payment was made in other currency than EUR, the regulation did not concern it.

Definition changed partly by publications of other European norms, especially after the effectiveness of European Parliament and Council Regulation (EU) No. 260/2012, establishing technical and business requirements for reimbursement and direct debits in EUR and amending Regulation (EC) No. 924/2009 (hereafter "Regulation 260"), which characterizes cross-border payment as follows (EU, 2012):

"Cross-border payment transaction is a payment transaction initiated by the payer or payee, if the payment service provider of the payer and the payee are located in different Member States."

Relationship of cross-border payments and SEPA payments can be illustrated as follows:

FIG. 1: Cross-border payment

Source: own editing

SEPA payments can be expressed as a subset of cross-border payment, since it is the realization of payment transactions denominated in EUR only, while cross-border payments also implement payment transactions denominated in other currencies of EEA countries.

Since November 2009, then appear entirely new categories in payment area, such as provider of payment services, payment institutions, electronic money, payment services, money remittance, reachability, interoperability, information providing, access to information etc. From the above terms it is appropriate to emphasize considering the others further term as reachability and interoperability.

"Reachability" can be characterized as follows: the payee's payment provider which is reachable for domestic credit transfer or direct debit under the payment scheme must be in accordance with the rules of Union-wide payment scheme reachable for credit transfer initiated by the payer or payee through a payment service provider located in any Member State. Practically this means that if the bank or other payment service provider will carry out credit transfer or direct debit payments under the domestic payment system it must be able to meet the settlement or collection within cross-border EUR payments.

Similarly, we can define the term "interoperability". It is a fact that payment schemes used by payee's payment provider to implement the credit transfers and direct debits are the same for domestic and cross-border payments within the Union and similarly for domestic and cross-border direct debit transactions. It means that the technical conditions for the implementation of settlements and collections are the same for cross-border payments as well as for domestic payments if they are implemented in EUR.

3. Organizational and legal conditions

The Czech Republic is not a member of the Eurozone which means that regulating of cross-border payments is concerned only partially. Nevertheless, the Czech Republic concerns appointment on the Reachability as to the above mentioned date the end of October 2016. Practically it means for payment service providers in the Czech Republic that even if they do not participate in the SEPA project they will have to ensure any response to payment or direct debit under cross-border payments in EUR. Regarding interoperability (see definition above), then according to the interpretation of attendant of Regulation 260, the Czech Republic does not directly relate to, because in the domestic payment system interbank payments are not implemented in EUR, but in Czech crowns only.

Table 1 shows the current number of entities who have signed up to provide products based on the SEPA SCT and SDD.

TAB. 1: Number of entities in SEPA project in CR

Produkts	SCT	SDD - core	SDD – B2B
No. of Banks	14	4	2

Source: EPC. [on-line] [20. 5. 2016]. Own editing, Available at: http://epc.cbnet.info/content/adherence_database

To support the implementation of SEPA at the national level coordination committees were established in different countries of the EEA. Even in the Czech Republic was set up the National Coordinating Committee for the introduction of SEPA (SEPA NCC). National Coordination Committee for the introduction of SEPA in the Czech Republic was established by a decision of the Presidium of the CBA in 2008. Its main objectives include:

- Monitoring the development of SEPA (including major regulatory and self-regulatory measures accepted or recommended by the European institutions),
- Checking and monitoring the implementation of SEPA in the Czech Republic,
- Coordination of transformation processes in the payment for SEPA services,
- Communication aimed at increase the awareness about SEPA,
- Ensuring the preparation of the National SEPA Implementation Plan for the Czech Republic (CBA, 2016).

To facilitate the organizational and administrative issues connected with the accession of payment service providers to SEPA systems so-called National Adherence Support Organization (NASO) has been established in SEPA countries. In the Czech Republic this feature to its member institutions meets the CBA. CBA NASO ensures control of

documents submitted by the members of the Czech Banking Association for accession to the SEPA systems (CBA, 2016).

In October 2013 a framework implementation plan for the introduction of the SEPA project in the Czech Republic was admitted, which characterizes the SEPA project and puts it into the context of the Czech environment with regard to the requirements of Regulation 260 of the reachability and interoperability.

During implementation of SEPA products it is therefore necessary to provide by clients:

- When sending payments in EUR within a Member State and beyond it within SEPA the payment account identifier in the IBAN format must be used,
- by batch processing of SEPA payment orders, the client must (unless the consumer or small business / micro-enterprise) use XML format.

Banks, respectively other payment service providers are required to:

- use IBAN identifier when processing SEPA payments,
- use fixed format (XML) when sending EUR transactions to other banks within EEA, pass precisely defined data which payment providers must give among themselves and make available to its clients,
- sent the series of mandatory data with request for direct debit (i. e. Recipient's bank must provide BIC to payer's bank in case of direct debit, BIC of payer's bank, name / name reference of payer's party, identification code of reference payer's party and other information contained in Annex to Regulation 260),
- not require from 1 February 2016 BIC from clients for SEPA transactions,
- provide if the bank is in case of direct debit in role of payer's bank, to payer unique reference of the mandate to make direct debit, recipient identifier, name / name of the recipient, the collected amount, identification code of the payment scheme or additional information.

Providers of payments must also ensure that:

- Recipient of direct debit along with the first direct debit and one-off direct debit and with each following transaction has provided a unique reference data to authorized direct debit and recipient's identifier,
- payer has given a consent to both – recipient and the payer's bank,

- payer of direct debit (consumer) could limit direct debit to a certain amount and periodicity, payer of direct debits (consumer) could block all direct debits from his account (CBA, 2016a).

4. Analysis of offers of foreign payments and SEPA position in them

It was made a simple analysis of the current product offering SEPA (excluding credit cards) at selected banks in the Czech Republic. For this analysis they were selected banks which offer SCT (as shown above in Table 1), there are currently 14, 5 of them were examined - Komerční banka, UniCredit Bank, Czech Savings Bank, the Czechoslovak Commercial Bank and Raiffeisen Bank). Banks' Terms and Conditions show that individual banks classify SEPA payments to the list of foreign payments. In each of tariffs will not occur the term "cross-border payment", but merely "SEPA payments" (incoming and outgoing) and even "SEPA up to 50 thousand EUR". The discovered facts are shown in Table 2.

TAB. 2: Offer of selected products of foreign payments at bank samples

	UCB	ČSOB	KB	ČS	RB
Incoming payments					
SEPA payment up to 50 000 EUR	200 CZK	150 CZK	145 CZK	100 CZK	200 CZK
SEPA payment over 50 000 EUR	N/A	1 %, min. 150, max. 1 000 CZK	1 095 CZK	N/A	N/A
Foreign payment	0, 9 %, min. 200, max. 1 500 CZK	1 %, min. 150, max. 1 000 CZK	0, 9 %, min. 225, max. 1 095 CZK	1 %, min. 100, max. 1 000 CZK	1 %, min. 300, max. 1 200 CZK
Outgoing payments					
SEPA payment up to 50 000 EUR	250 CZK	250 CZK	195 CZK	220 CZK	220 CZK
SEPA payment over 50 000 EUR	N/A	0, 7 %, min. 250, max. 750 CZK	1 500 CZK	N/A	N/A
Foreign payment	0, 9 %, min. 250, max. 1 500 CZK	1 %, min. 250, max. 1 500 CZK	0, 9 %, min. 250, max. 1 500 CZK	1 %, min. 220, max. 1 500 CZK	1 %, min. 300, max. 1 500 CZK
Other charges					
Surcharge for payments with our fee	800 CZK	1 %, min. 300, max. 2 000 CZK	800 CZK	N/A	450 CZK
Surcharge for paper form	300 CZK	250 CZK	300 CZK	250 CZK	300 CZK

Source: The respective bank Terms and Conditions, own editing

From the above facts it can be stated as follows:

- Banks that are listed in the ECB Clearing as providers of SCT in the Czech Republic provide truly this product to clients in the Czech Republic.

- ČSOB differentiates SEPA pricing policy up to 50 thousand EUR and over 50 thousand EUR. The respective SEPA SCT (Rulebook) rules, however, such distinction do not know.
- SEPA payments are charged by a favorable fee than foreign payments. Banks in the Czech Republic are not obliged to charge SEPA payments as domestic payments, as domestic payments are not made in EUR.
- The banks' tariffs are missing item "cross-border payments", which are included within the tariff of "foreign payments ". It would be better than in this case to include them into "international payments".

5. Discussion

From the above simple analysis we can discuss the question of why the banks did not include a separate tariff heading of "cross-border payments" and include them into the „foreign payments. " The fact that banks charge GBP or HUF transfers as foreign payments is justified because the fees regulation is subject of payments in EUR only and even in Eurozone countries, eventually in other countries which apply the same policy (Sweden, Romania). According to the author's opinion, however, this classification is arguable, because "distorts" the regulation of cross-border transfers in terms of ZPS, as mentioned above. In particular there is a duty to provide, possibly to pass information before and after the implementation of such transaction and then to respect deadlines in the payment system provided by law.

Similar considerations must be kept within banks (in our case CSOB), that for price application differentiate SEPA payments up to and over 50 thousand EUR. First, SEPA payments have never been so divided, they concerned only the cross-border payments in EUR, but the limit was canceled in 2012 by Regulation 260. The implementation of all cross-border payments without regard to their amount is to be classified under the PSA.

Only for foreign payments may apply different conditions than those specified in ZPS, if the provider, a bank, agreed with the client.

Conclusion

The aim of the paper was using the description and analysis method to show whether and how the implementation of SEPA products affected the offer of international payments. The author based on the hypothesis that banks in the Czech Republic offer SEPA products that complement the offer of international transfers of means. This hypothesis was confirmed based on the research, but analysis showed that the sample of selected banks doesn't present their products to clients in accordance with valid regulations.

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APPLYING ELEMENTS OF GREEN MANAGEMENT IN SELECTED ACCOMMODATION FACILITIES IN THE PÁLAVA PROTECTED LANDSCAPE AREA ON AN EXAMPLE OF MIKULOV TOWN

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Keywords:

accommodation – eco-friendly accommodation facility – green management – service

JEL classification: L83, Q56

Abstract:

Green management implementation is one of the characteristic trends in accommodation services. Many hotels and guest houses are turning green at an increasing rate due to an unprecedented reason, which is not directly based on profitability, longevity, or sustainability. The paper deals with an application of green management elements in selected accommodation facilities in the Pálava PLA on an example of Mikulov town. Moreover, we focus on the accommodation facilities and their use of environmental measures. We used the methods of scientific work; and i.e.; the analysis method, mathematical, and statistical methods. Surveyed accommodation facilities have the best results with compact fluorescent lamps and LED lamps and sorting containers. Based on the ascertained facts, we state that accommodation facilities in the Pálava PLA should definitely invest in the green initiatives.

Introduction

Environmental issues of the world have become the key topic of everyday conversation. There has recently been much discussion about the question if business in Western society can be transformed into environmentally responsible accommodation facilities (Rojšek, 2001). Businesses, especially accommodations facilities are becoming more environmentally focused, and interaction between their core processes is essential in adopting a sustainable approach. With the movement towards a greater emphasis on the 'green', world infrastructure and technology now has the incentive, momentum and occasionally obligation to adapt according to its associated trends (Collins & Junghans, 2015). Applying the elements of green management is one of the characteristic trends in accommodation services. Accommodation facilities realize that the importance of environmental protection is necessary and in addition use this concept as a useful marketing tool to differentiate from the competition (Scholz, 2014). Great pressure is directed mostly towards the hospitality which is considered to be one of the main sources of pollution (Rojšek, 2001).

1. Methods, literature overview

The aim of this paper is to analyze applying elements of green management in selected accommodation facilities in the Pálava PLA on an example of Mikulov town. There were used primary data collected by questionnaire survey and secondary data. The questionnaire survey consisted of twelve questions. They were mostly closed and some were half open questions. At the end of the questionnaire there were three segmentation questions and respondents had space for their views and comments. The primary survey was conducted in the Pálava PLA in the Czech Republic.

We used PAPI, CAPI, and CAWI methods. Paper and pencil interviewing (PAPI), data obtained from the interview is filled in on a paper form using a pencil. Computer-assisted personal interviewing (CAPI), this method is very much similar to the PAPI method, but the data is directly entered into a computer program instead of first using paper forms. CAPI was developed to reduce the time needed to collect and process survey data, to improve the quality of the information collected, to reduce survey costs, and to implement more complex questionnaire designs than are possible with paper and pencil (Baker, 1992). Computer-assisted web interviewing (CAWI) is an Internet surveying technique in which the interviewee follows a script provided in a website. The questionnaires are made online for creating web interviews (e.g. google, survio, vyzplnto). The website is able to customize the flow of the questionnaire based on the answers provided, as well as information already known about the respondent. It is considered to be a cheaper way of surveying since one does not need to use respondents to hold surveys unlike computer-assisted telephone interviewing (Reips, 2000). The survey was conducted since November 2015 until March 2016. There are 69 accommodation facilities in Mikulov. We contacted these 44 accommodation facilities; 79% of them answered willingly. There was created a sample of 39 accommodation facilities after sorting out incomplete or incorrectly completed questionnaires. We focused on hotels and guest houses only and used the methods of scientific work; and i.e. the analysis method, a method of generalization, mathematical, and statistical methods.

A number of measures to protect the environment is focused on reducing energy (Chan & Lam, 2003; Khemiri & Hassairi, 2005; Ali et al., 2008; Scholz, 2014), water (Deng & Burnett, 2002; Charalambous, Bruggeman & Lange, 2012; Gössling et al., 2015; Reddy & Wilkes, 2015), chemicals, office supplies, reduction of waste (Wie & Shanklin, 2001; Chan & Lam, 2001), increasing the proportion of natural materials, aestheticisation environment, reducing noise and emissions (especially carbon emissions), etc. (Patůš & Gúčík, 2004; Hillary, 2004; Bohdanowicz, 2005; Mensah, 2006; Chen & Hsieh, 2011; Scholz & Linderová, 2016). It is necessary to focus on waste separation and reuse of recycled material, energy and water savings (table 1).

TAB. 1: Green management elements

<i>Area</i>	<i>Elements</i>
<i>Economic and social activities</i>	<ul style="list-style-type: none"> - purchase of raw materials and products in the region, - support local infrastructure, - use of public transport and bicycles, - employment of local population.
<i>Communication and education of employees and guests</i>	<ul style="list-style-type: none"> - workflows and their control, - promotion of ecological program to the public, - compliance with environmental principles by guests and employees.
<i>Management</i>	<ul style="list-style-type: none"> - implementation of ISO 14001, Eco-Management and Audit Scheme, - purchase larger volumes and minimizing packaging, - purchase products that really need accommodation facilities, - purchase products from suppliers in the region, - purchase quality and truly useful products, - purchasing of environmentally friendly products, - measuring guests' satisfaction.
<i>Waste management</i>	<ul style="list-style-type: none"> - waste separation in the background of hotels, - sorting bins for plastic, paper, etc. in each room, - reuse recycled materials, - composting organic waste.
<i>Energy savings</i>	<ul style="list-style-type: none"> - utilization of geothermal energy and waste heat, - regulating heating and air conditioning, - compact fluorescent lamps, - appliances min. class A (A +, A ++), - low energy technologies, - thermal insulation of buildings.
<i>Water savings</i>	<ul style="list-style-type: none"> - installation of single-lever mixers and perlators - installation of energy-saving shower heads, - installation of two-stage flush toilets, - gray-water reuse, - rainwater harvesting.

Source: Processed under Belešová, 2014; Scholz, 2014.

Accommodation facilities tend to apply differently in the selection of saving measure. Some hotels and guest houses are decided according to what is currently the most urgent; others focus on measures that will bring the biggest savings at the lowest cost. A lot of accommodation facilities invest financial resources into the lighting, where they can attain significant savings. Incandescent bulbs are most often replaced with the compact fluorescent lamps. They reach about 80% less energy consumption compared to the incandescent lamp for the same light flux and also significantly lower power dissipation.

Accommodation facilities are major water consumers because people tend to use more water when they stay at hotels than they do at home (Charalambous, Bruggeman, & Lange, 2012; Gössling et al., 2015). A lot of accommodation facilities are focused on reducing water consumption. One of the main reasons for high water consumption in the hotel industry is guest behavior. Hotel guests tend to have a “pleasure approach”

to shower or bath, using more water than they normally would at home (Eurostat, 2009). Overall, it is the tendency of greater water consumption in accommodation facilities with a higher standard of accommodation. Higher values of water consumption indicate Bohdanowicz & Martinac (2007) in accommodation facilities which offer the spa services and large swimming pools. Higher consumption values of water also bring laundry services per person in a day. Water consumption is also influenced by the quality of textiles and weight of clothes, including very large towels for accommodation facilities which dispose wellness services or a beach. Generally, a global average is noted that international tourists consume approximately 222 l/day (Gössling, 2005). Besides installation of energy-saving shower heads, perlators, and two-stage flush toilets, some accommodation facilities use waterless urinals, too. They work without a supply of water and electricity and each waterless urinal will save an average of 115.000 l of water per year. According to the findings of a study, conducted by the University of California in Los Angeles, are water-free urinals absolutely comparable with traditional water urinals in terms of hygiene aspects. These urinals have several advantages: no connection to the water system, significant cost reduction, eliminate the spread of odors, fully hygienic operation, easy cleaning, eco-friendly, resilient diaphragm valve with a 6 month lifetime, and worldwide patented technology (ecostep.cz).

2. Results

Accommodation facilities that utilize elements of the green management have a certain competitive advantage. Their goal is to apply the different elements of green management and contribute to the environmental protection. Our sample consisted of 11 hotels (10 in the Standard class, 1 in the First Class) and 28 guest houses (6 in the Tourist class, 7 in the Economy class, 13 in the Standard class, and 2 in the First Class).

All of selected accommodation facilities had the best results with reducing energy (on average 100%) and water (on average 76%). If we focused on environmental measures, accommodation facilities achieved outstanding results with compact fluorescent lamps and LED lamps (on average 98%) and with sorting containers (on average 96%). We were surprised that more than 3/4 of accommodation facilities had individual heating control installed in the rooms. If the room is not occupied by the hotel guests, it is not environmentally friendly to use the air conditioning or heating in the room. It is completely sufficient if the heating or air conditioning is turned on a few hours before the expected arrival of the guests. More than one half of the surveyed accommodation facilities used windows thermal insulation. The worst results were found in the informing of guests about environmental efforts in the Tourist class (0%) and Standard class (9%), preference for eco-friendly products in the Tourist class (17%), Standard class (13%), and First Class (33%). In our opinion, very substandard results were noticed in the First Class, especially with the friendly cleaning products and laundry detergents (33%). All surveyed classes noticed better

values with mentioned measures. It is interesting that some of the measures are required by Act No. 79/2015 Coll. on Waste and the Amendment of Some Other Acts, e.g. sorting containers in the Standard class not reached 100% (table 2).

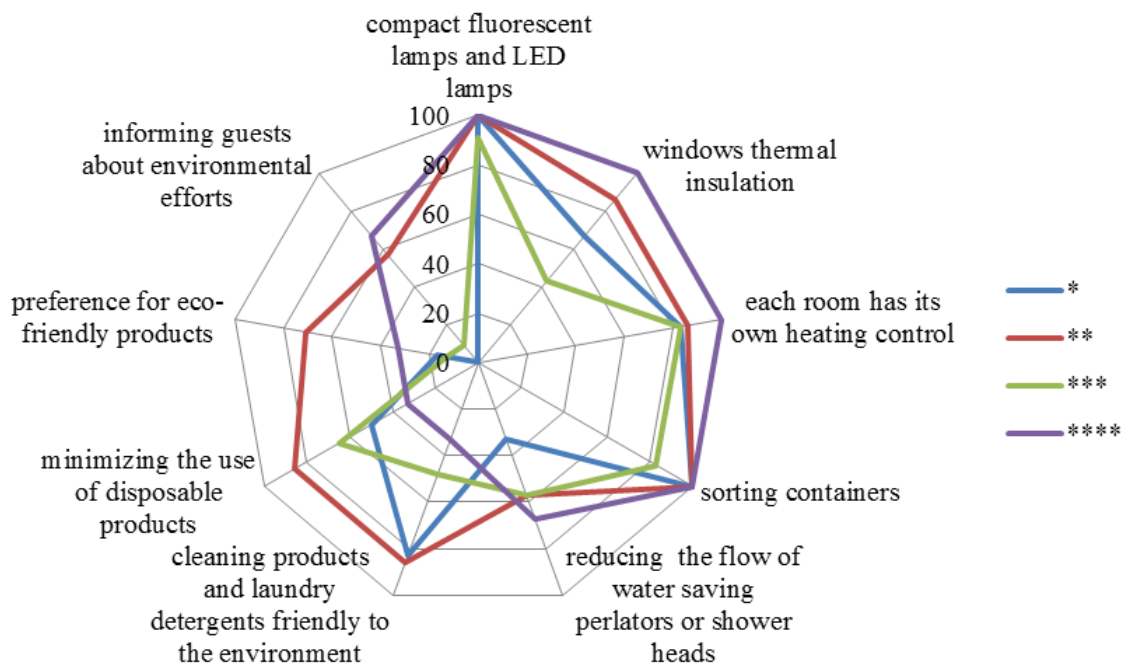
TAB. 2: Environmental measures used in selected accommodation facilities (%)

Environmental measures/Class	*	**	***	****
compact fluorescent lamps and LED lamps	100	100	91	100
windows thermal insulation	67	86	43	100
each room has its own heating control	83	86	83	100
sorting containers	100	100	83	100
reducing the flow of water saving perlators or shower heads	33	57	57	67
cleaning products and laundry detergents friendly to the environment	83	86	48	33
minimizing the use of disposable products	50	86	65	33
preference for eco-friendly products	17	71	13	33
informing guests about environmental efforts	0	57	9	67

Source: Own elaboration, 2016.

Generally, we state that the surveyed accommodation facilities in the First Class reached very good results, sometimes there were found even outstanding results. Of course, these results are also linked to the price of accommodation, quality of provided services, a wide range of offered services, etc. On the other hand, there were noticed substandard results with some environmental measures (figure 1).

FIG. 1: Environmental measures used in selected accommodation facilities (%)



Source: Own elaboration, 2016.

We can recommend to accommodation facilities mainly in the Tourist class and Standard class invest funds to water saving perlators and water saving shower heads. Water saving perlator can save up to 70% reduction in water consumption sinks and kitchen sinks without sacrificing user comfort. Water saving shower head reduces the consumption by 40% i.e. at 12 to 15 l/min. compared to classic traditional shower head, in which is the water consumption about 20 l/min. Funds in these facilities is not high, the costs are altogether approximately 20 €.

3. Discussion

If we focused on the Tourist class, results are adequate. We must take a note that accommodation facilities in this class offer only accommodation without additional services. In spite of these accommodation facilities reached better results in some measures comparing of Standard class (compact fluorescent lamps and LED lamps, windows thermal insulation, sorting containers, eco-cleaning products and laundry detergents, and prioritising of eco-friendly products) or even First Class (windows thermal insulation, eco-cleaning products and laundry detergents, and minimizing the use of disposable products).

Conclusion

Nowadays, we are living in a society where small and large companies are judged on their business ethics, socio-economic awareness, financial results as well as corporate social responsibility. This worldwide trend guides accommodation facilities to move in a green direction. Based on the ascertained facts, surveyed accommodation facilities reached good results, sometimes there were found even excellent results, especially with compact fluorescent lamps and LED lamps and sorting containers.

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SELECTED ASPECTS OF THE DEVELOPMENT OF THE VOLUME OF CURRENCY IN THE CZECH REPUBLIC

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currency – money – interest rate – denomination – banknote

JEL classification: E40, E41, E50

Abstract:

Currency is an economic category whose importance is often debated. Many experts are speaking about the end of cash in the near future. Regardless - we have seen a steady increase in currency in the last twenty years in the Czech Republic. The using of cashless forms of payment, primarily associated with the development of payment cards, has been increasing permanently in last years, but the volume of money in circulation has not dropped. There are more reasons for this situation. A number of factors are affecting the amount of money in circulation in the economy. The development of interest rates and the fact that the currency is the most liquid form of money that is always in demand by economic entities when they feel threatened belong to the most significant factors dealing with money in circulation.

Introduction

CNB decided to build a branch network at the end of the last century. One of the main tasks of this network of offices was to provide currency processing in the Czech Republic. Expected amount of cash in the near future was among the arguments for opening the new processing places. None of the experts, who decided to build the network at that time, did not believe in such increase in cash in the next twenty years. Cash has still been continuing to grow (and it is not just in our country, but it is a worldwide phenomenon). On the one hand, we can see massive development of non-cash forms of payment, on the other hand, central bank statistics has been recording an annual increase in number of banknotes and coins in circulation.

There are more causes of this development which are possible to observe in many world economies, large and small, in Europe and beyond our continent. Some of the factors that may contribute to the growth in the number of banknotes and coins in circulation in the Czech Republic will be presented in the following sections of the article. Some papers that deal with that particular issue will be given as examples. The author's own opinion on potential impact of two factors - the impact of interest rates on the amount of

currency and the impact of crisis situations on the use of currency as the most liquid forms of money will be presented subsequently.

1. Cash and interest rates, cash as a response to the crisis

Issue of cash as a form of money is engaged in a number of scientific studies. The demand for money (represented by the amount of money held by individual economic agents - households, firms, state) is affected by the motives that these entities have for the holding of cash. These motives are based on three basic functions of money:

- a) medium of exchange – intermediation of purchase and sale of goods
- b) unit of account - expression of the price of goods
- c) store of value - money as a form of property

The deposit of money in the bank provide premium - the interest. The motive for people to keep cash on hand is to dispose of this amount (preference for liquidity). Interest is therefore cost of holding money - if interest rates are high, money holding is expensive. It suggests the hypothesis: if interest rates in the economy grow, the amount of money in circulation fall and vice versa.

The impact of interest rates on the amount of currency in circulation is a question, which is recently discussed, especially in connection with the introduction of negative interest rates by series of central banks. As Internet server www.zlato.cz (2016) proved, huge demand for cash occurred in Japan after the interest rate cut at -0.1%. Similar concerns are appearing by some European economists, although they still anticipate that the negative interest rates will not spill over into the area of population deposits in commercial banks.

Another motive for holding cash may be the fact that cash is very liquid. The owner of cash have money available for using immediately and without large transaction costs. Specific reason for the preference of cash can be found in fact that the owners have money just in time in case of problems with the functioning of standard banking services. As Cimburek and Řežábek (2008) proved and then applied (2013), the problems with the functioning of the banking infrastructure after significant natural disasters caused an increase of demand for cash in the USA. Increasing demand occurred in the period after the collapse of Lehman Brothers in 2008, as again Cimburek and Řežábek (2013) proved. As Skaunic (2010) confirmed, there was also the higher interest in cash in the Czech Republic after the fall of IPB Bank in 2000.

2. Results of research

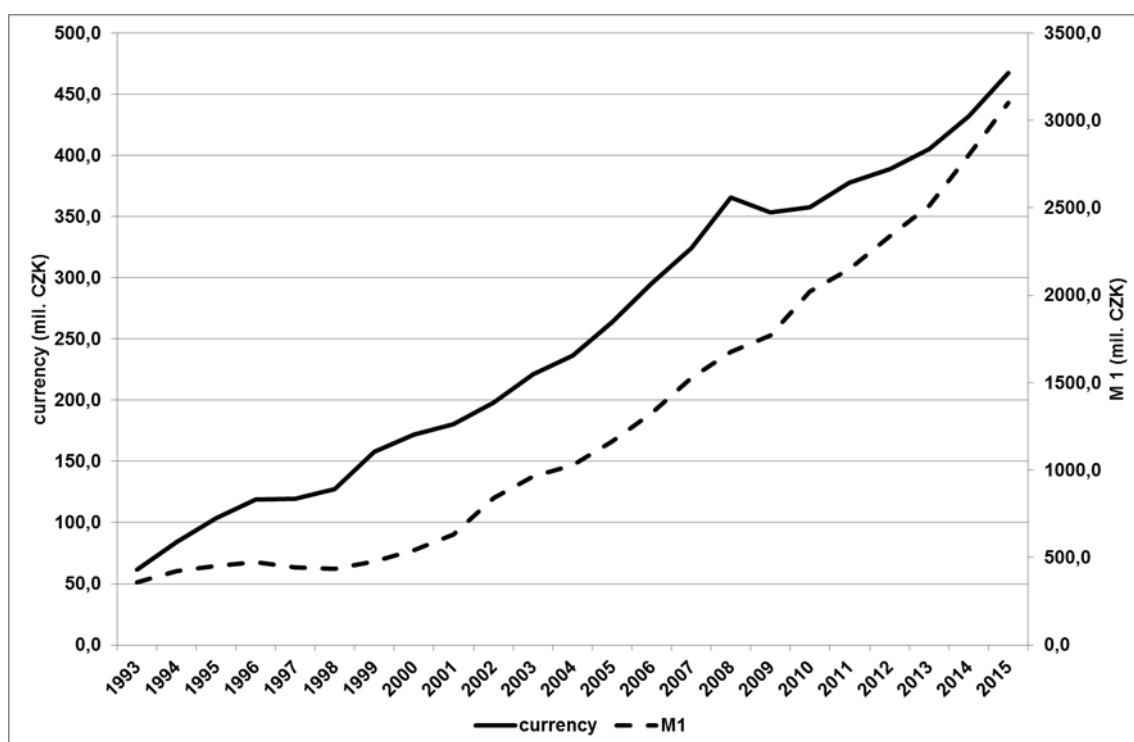
In the next chapter an evaluation of the development of currency in the Czech Republic over the past twenty years will be performed. The overall data about currency in

circulation will be evaluated in the first part of the chapter, its structure will be surveyed in the second part.

2.1. Development of currency in the Czech republic 1996 - 2015

The first graph (FIG. 1) shows a comparison of evolution of currency compared with development of monetary aggregate M1. This comparison is done in current prices and shows that the rate of growth of both indicators is approximately the same. The share of currency to M1 is steadily decreasing (with regard to the difference between the absolute level of both indicators). It demonstrates the growing role of non-cash payment instruments. On the other side - the role of cash in the Czech Republic is still very important, because the absolute level of currency in circulation is permanently growing.

FIG. 1: Comparison of development of currency and M1 (mil. CZK)

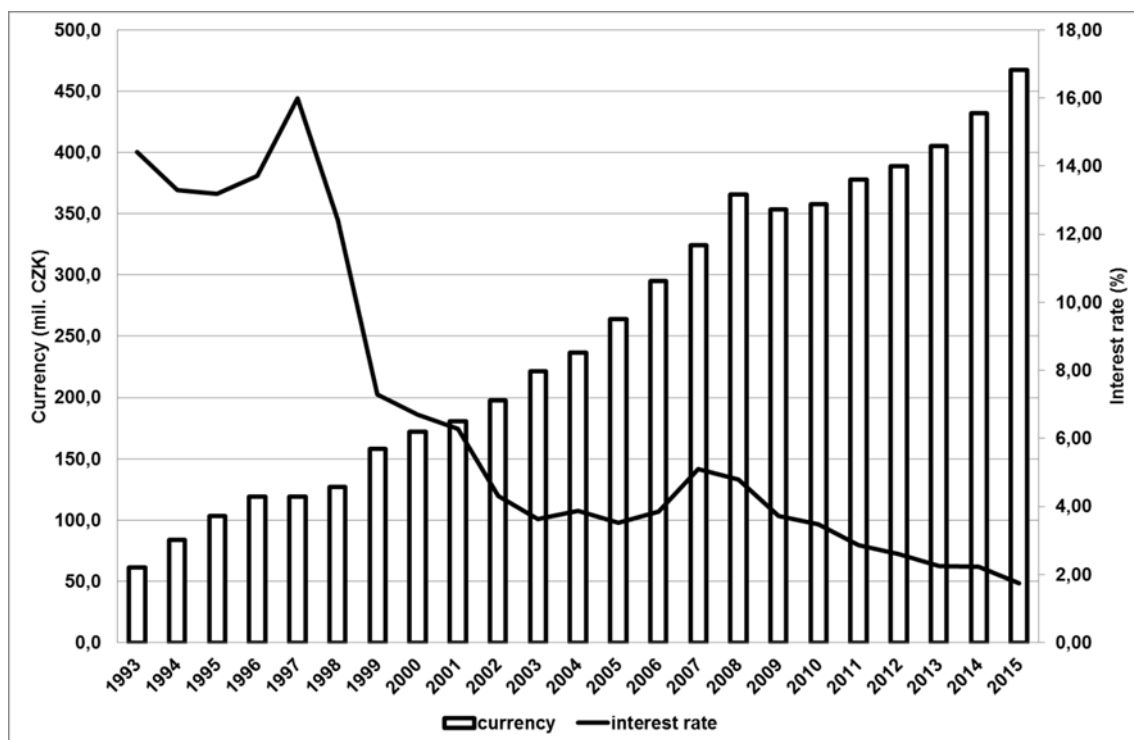


Source: <http://www.cnb.cz/cs/statistika/>

A comparison between the development of currency (data by the end of each year) and the level of interest rates on newly granted loans in the last quarter of the year is shown in the second chart (FIG.2). This interest rate was chosen with regard to its availability from 1993, i.e. the year when the independent Czech koruna was established. A few moments on the chart should be possible to notice. In times of economic crisis in the years 1996 - 1998, when interest rates rose to a record level in the modern Czech history, cash in circulation decreased significantly (as expected). An increase of interest rates is not visible in the period of crisis after 2008, when the cash relatively stagnated

until 2011, while economic growth restarted again. The influence of the monetary policy (declined basic interest rates) could be found as a reason for this development. The development of cash in 2008 is worth mentioning. Cash was pumped extremely rapidly from banks as a response to the expected crisis in the banking system.

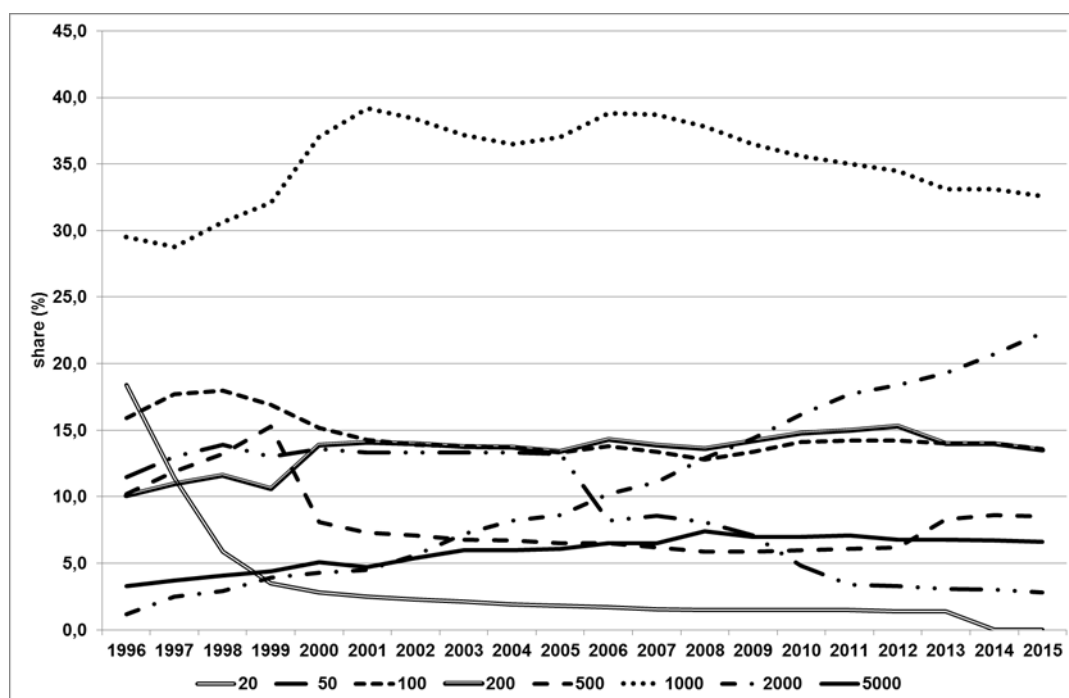
FIG. 2: Comparison of the development of currency and the level of interest rates



Source: <http://www.cnb.cz/cs/statistika/>

2.2. Development of structure of currency in the Czech Republic in 1996 - 2015

Development of the structure of Czech banknotes from 1996 to 2015 is shown in the following chart (FIG.3) as it is reported by the Czech National Bank statistics. A series of facts can be read out in the chart. These facts suggest that behaviour of banks and consumers influence the amount of currency in circulation. The basic influence on the amount of currency in circulation has the market - demands of consumers, businesses, and ultimately banks determine decision of central bank - how much and which denominations will be emitted to the circulation. The proof is for example the amount of banknotes with denomination 5000 CZK in circulation. It decreases only very slowly after a sharp rise in 2008. The central bank's decision affects the structure of banknotes with respect to the requirements of efficiency. These measures are clearly visible for example in case of banknotes 20 CZK and 50 CZK which were replaced by coins. The consequence of the activities of the banks is an opposite trend in development of the number of banknotes with denomination 200CZK and 500 CZK. Banknotes 500 CZK were confused as preferred banknotes in ATMs in 1999.

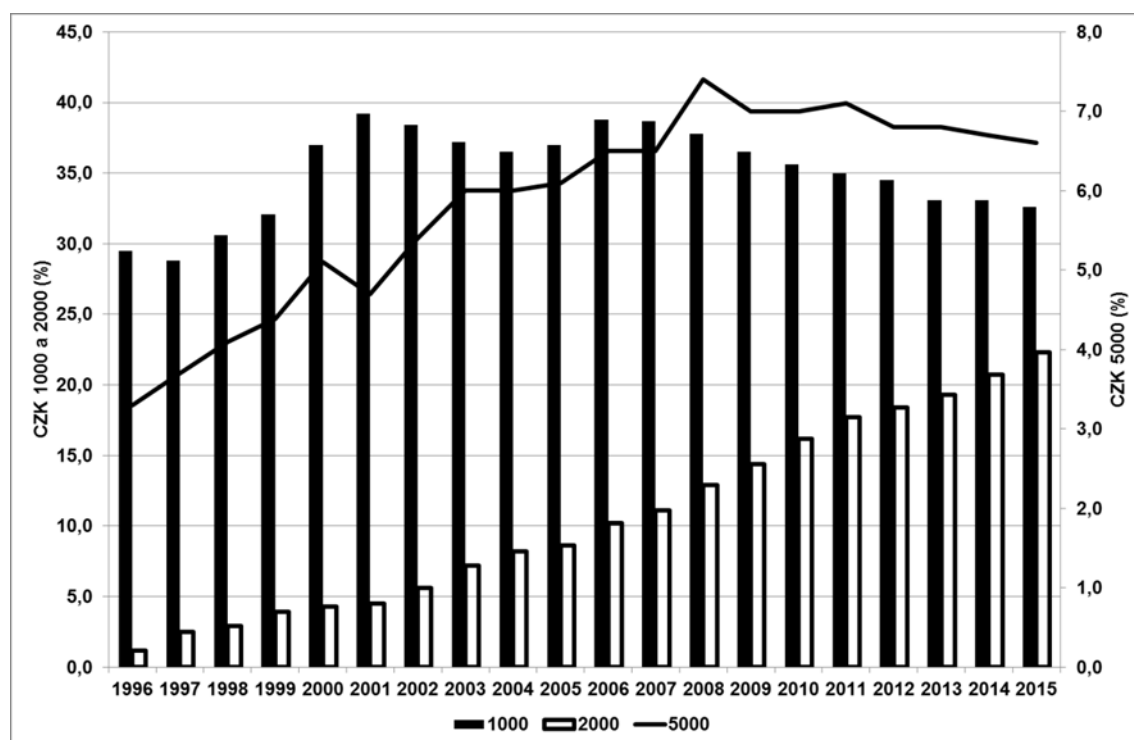
FIG. 3: Share of individual denomination in the total number of banknotes

Source: <http://www.cnb.cz/cs/statistika/>

More detailed look to the evolution of the number of banknotes with a denomination which has a decisive share in the total value of currency is shown in the graph no. 4 (FIG.4). It is possible to make some conclusions after reading this chart. The central bank is trying to replace the most frequent banknote in circulation CZK 1000 by banknote, which significantly contributes to increased efficiency of cash circulation - banknote with denomination CZK 2,000. The public, which likes rather lower banknote denominations, puts against this effort and CZK 2,000 banknote is accepted as a necessary evil. The banknote CZK 5000 after a jump in 2008 (when it was applied as a means to preserve the value that was stored in safe deposit boxes to defend it against depreciations of deposits above the limit of deposit insurance and as a means of protection against the collapse of cashless payments) occurs only very slowly back to the central bank vaults.

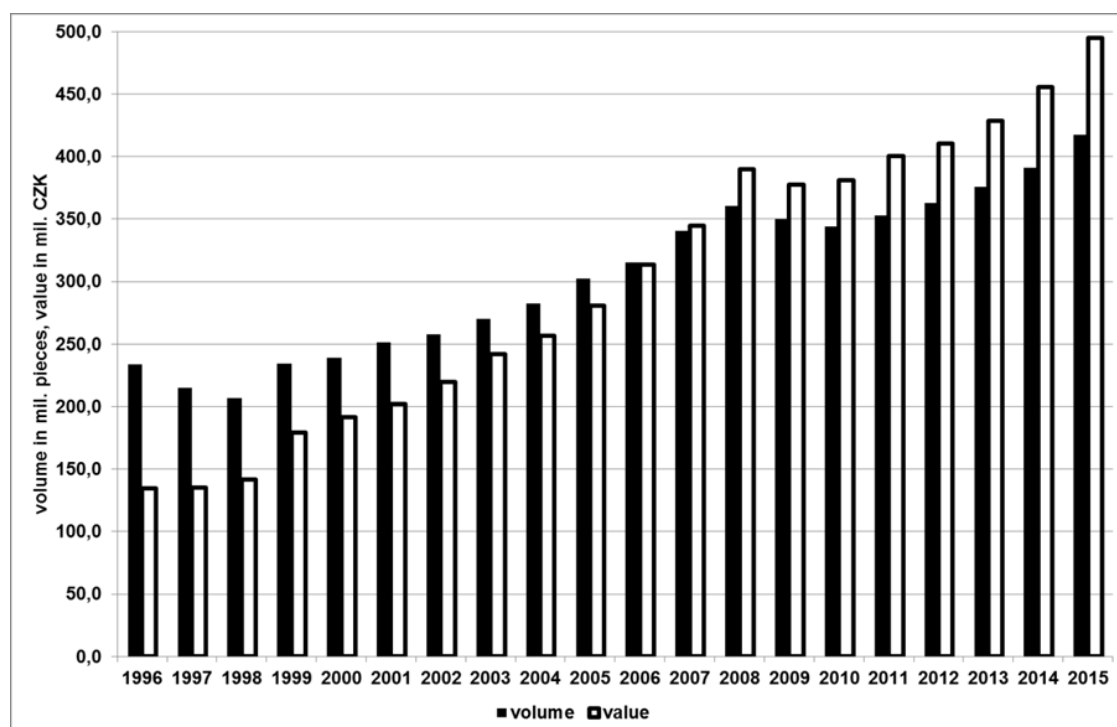
The last chart (FIG. 5) shows the evolution of currency in circulation due to comparison of the two indicators - the value in millions CZK and volume – i.e. the number of banknotes in circulation. An interesting thing is that until 2008 the volume of banknotes predominated over their value. The year 2008 brought changes - issuing of huge number of banknotes with high denominations changed the situation. The value of banknotes in circulation has outweighed over its volume since this year.

FIG. 4: Share of three highest denomination in the total number of banknotes



Source: <http://www.cnb.cz/cs/statistika/>

FIG. 5: Comparison of volume and value of banknotes in circulation



Source: <http://www.cnb.cz/cs/statistika/>

3. Discussion

The results of the research which was presented in the second chapter revealed the expected outcome and confirmed the conclusions of the authors cited at the beginning. The value of currency in the economy is affected by many factors, among which the level of interest rates is included undoubtedly. This is confirmed primarily on the example of development in the mid-nineties. Commercial rates were influenced in the first decade of this century more by central bank monetary policy. Cash was then probably more affected by another factor - economic stagnation. This factor has not been studied in the article. Therefore, it offers the possibility to focus on the mutual influence of currency and development of GDP in the economy in the next period. The last two graphs of the article confirmed dependence regarding the impact of changes in the structure of currency to its amount. It will be interesting to examine these ties in much greater detail in the future.

Some conclusion in relation to the negative interest rates was not defined due to the lack of data - in addition, their occurrence in deposits of private clients of commercial banks is not in the current Czech conditions very probable - but for the future it may be one of more interesting topics to explore.

Conclusion

The use of cash is still present in the most economies in the world and building of cashless society is still rather distant vision of the future than the relevant task of the current generation. Amount of cash in circulation depends on many factors. This article considered only two of them - the level of interest rates and partial impact of structure of money in circulation on their quantity. In both cases, this dependency has been confirmed - rising interest rates have the effect of restricting the money supply and vice versa - falling interest rates lead to an increase in currency in circulation. Structure of currency has influenced its level in the past years in the Czech Republic especially as a result of post – crisis development after 2008.

Notice:

In this paper, there are published and presented the results of my own research and my personal views, which are not connected with the opinions and official positions of the Czech National Bank in any way.

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CZECH AGRARIAN FOREIGN TRADE RESTRUCTURING BETWEEN 2001 AND 2015

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Keywords:

agrarian foreign trade – commodity structure – competitiveness – Czech Republic – territorial structure

JEL classification: Q13, Q17

Abstract:

Czech agrarian foreign trade represents fast developing entity. Only within the last fifteen years agrarian trade value and structure recorded the significant changes. The value of trade multiplied several times. And the structure of trade operations moved to products having higher unit values. Czech agrarian trade has been suffering especially because of two weaknesses: very limited territorial structure focused especially on European countries, the second problem is limited competitiveness especially in relation to territories outside of the European Union, and the third problem is still very low added value generated by Czech agrarian sector. The aim of this paper is to identify the current state of comparative advantages distribution. On the base of provide analyses the following statements can be highlighted. The Czech agrarian trade comparative advantages are existing especially in relation to the following set of aggregations: Cereals, Live animals, Oil seeds, Tobacco products, Dairy products, Sugar, Vegetable oils, saps and plaiting materials, Milling products, Beverages and alcohol. In relation to the rest of the World (without EU28 internal trade) Czech agrarian trade is competitive especially in relation to the following commodity groups Live animals, Dairy products, Sugar, Beverages and alcohol, Oil seeds, Preparation of cereals, Milling products, Cocoa preparations, Vegetable saps and Tobacco products.

Introduction

The Czech agrarian trade represents only a minor part of total Czech merchandise trade performance. However its value is constantly increasing, its share in total trade is less than ten percent. The Czech agrarian trade is representing extremely specific part of Czech economy performance (Burianova, Belova, 2012). Especially in nineties the structure and value of Czech agrarian trade was affected by deep process of Czech economy restructuring. The key moment – news stimuli for Czech agrarian trade renaissance was decision to become EU member. Already in the period of Czech pre-accession period the Czech agrarian trade was affected by significant reduction of trade

barriers between Czech Republic and other European countries. The process of trade barriers reduction between the Czech Republic and other EU countries was unbalanced. The Czech Republic was opening its market for other European countries much faster than those countries opened their markets for Czech exports (Svatos et al., 2013).

The important event for the Czech agrarian market was the EU accession in May 2004. The period after the accession significantly encouraged not only the export, but also the import performance (Svatos, 2008). During the first years of Czech EU membership the import value was growing even faster in comparison to export value development. The result was constantly growing negative trade balance performance until 2011 (the record of negative trade balance reached at about 36 billion CZK). Negative trade balance was later stabilized at only 20 billion CZK (2015) and the share of negative trade balance in relation to total trade turnover was significantly reduced. While in 2001 the share of negative trade balance in relation to total agrarian trade performance was 17% and in relation to agrarian export performance even more than 40%, in 2015 it was only 4.7% and 9.9% respectively. The Czech foreign trade became extremely focused on cooperation to other European and especially EU countries. While in 2001 the share of those two groups of countries in Czech exports was about 83% respectively 88%, in 2015 it was more than 91% respectively 95%. In the case of imports the trends was very similar (2001 – cc 74% respectively 77% and 2015 – cc 85% respectively 85%).

1 Materials and Methods

The paper aims to identify changes which have occurred during the analysed time period especially in relation to Czech agrarian trade competitiveness (distribution of comparative advantages). The paper is focused on period 2001 and 2015. Territorial structure is analysed both in relation to the EU countries and also in relation to the “third countries”. Commodity structure is analysed especially in relation to comparative advantages distribution (Smutka et al., 2015). Commodity aggregations under the analysis: HS-01 Live animals, HS-02 Meat and edible meat offal, HS-03 Fish and crustaceans, molluscs and other aquatic invertebrates, HS-04 Dairy produce birds' eggs natural honey edible products of animal origin, not elsewhere specified or included, HS-05 Products of animal origin, not elsewhere specified or included, HS-06 Live trees and other plants bulbs, roots and the like cut flowers and ornamental foliage, HS-07 Edible vegetables and certain roots and tubers, HS-08 Edible fruit and nuts peel of citrus fruit or melons, HS-09 Coffee, tea, maté and spices, HS-10 Cereals, HS-11 Products of the milling industry malt starches inulin wheat gluten, HS-12 Oil seeds and oleaginous fruits miscellaneous grains, seeds and fruit industrial or medicinal plants and fodder, HS-13 Lac gums, resins and other vegetable saps and extracts, HS-14 Vegetable plaiting materials vegetable products not elsewhere specified or included, HS-15 Animal or vegetable fats and oils and their cleavage products prepared edible fats animal or vegetable waxes, HS-16 Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates, HS-17 Sugars and sugar confectionery, HS-18

Cocoa and cocoa preparations, HS-19 Preparations of cereals, flour, starch or milk pastrycooks' products, HS-20 Preparations of vegetables, fruit, nuts or other parts of plants, HS-21 Miscellaneous edible preparations, HS-22 Beverages, spirits and vinegar, HS-23 Residues and waste from the food industries prepared animal fodder, HS-24 Tobacco and manufactured tobacco substitutes (CZSO, 2016)

The paper applies the comparative advantages analyses (Balasa index, Lafay index and Trade balance index). Balassa index (Ballassa, 1965) estimates export flows of Russia and the world in general. Comparative advantage from observed data is named “revealed” comparative advantage (RCA). In practice, this is a commonly accepted method for analyzing trade data. The Balassa index tries to identify whether a country has a “revealed” comparative advantage rather than to determine the underlying sources of comparative advantage. Trade Balance Index (TBI) is employed to analyze whether a country has specialization in export (as net-exporter) or in import (as net-importer) for a specific group of products (Widodo, 2009). The next index used in the paper is Lafay index (Lafay, 1992). Using this index we consider the difference between each item’s normalized trade balance and the overall normalized trade balance. Unlike the above indexes, Lafay index does not take into account world variables. Using LFI index we can focus on the bilateral trade relations between the countries and the regions. Moreover, this index is more reliable on the over-time comparison of sectors within a country. The Lafay index helps us to understand how the comparative advantages over time and to compare strength of comparative advantage of individual products and product groups, for individual regions and countries.

2 Results and Discussion

If we compare the period between 2001 and 2015, it is possible to see the significant growth of export and import value performance in relation to all main territories representing the main Czech agrarian trade partners (see table 1).

TAB. 1: The Czech agrarian foreign trade value development between 2001 and 2015 in ths. CZK

2001	EU28	Other European countries	OECD	CIS	World without EU28	World total
Export	41 116 307	2 609 998	39 951 650	1 578 945	8 295 196	49 411 503
Import	51 181 539	1 789 837	55 267 004	281 304	18 043 402	69 224 941
Balance	-10 065 232	820 161	-15 315 354	1 297 641	-9 748 206	-19 813 438
Balance/Export	-24.48%	31.42%	-38.33%	82.18%	-117.52%	-40.10%
2015	EU28	Other European countries	OECD	CIS	World without EU28	World total
Export	185 235 908	7 023 111	181 291 061	3 746 814	16 831 159	202 067 067
Import	188 674 925	7 011 153	195 918 421	2 005 897	32 536 791	221 211 716
Balance	-3 439 017	11 958	-14 627 360	1 740 917	-15 705 632	-19 144 649
Balance/Export	-1.86%	0.17%	-8.07%	46.46%	-93.31%	-9.47%

Source: CZSO, 2016 and own calculations

Czech agrarian export growth rate even exceeded the import growth rate especially in relation to the EU28, OECD members and also in relation to non-European countries. The only regions that increasing their imports to the Czech Republic faster than the Czech Republic exporting to them are European countries without the EU and CIS members. The Czech Republic also significantly reduced its negative trade balance share both in relation to total agrarian trade turnover and export value. In this case the situation improved especially in relation to the EU28, other European countries and OECD members. During the last 15 years Czech agrarian trade became extremely concentrated. The concentration is not related only to territorial structure (focused especially on European region), but it is also related to its commodity structure. Only seven the most competitive groups of products according to HS2 system participates in Czech agrarian exports by cc 52%.

The specific feature of Czech agrarian foreign trade performance is its competitiveness. However the value of Czech agrarian exports is constantly increasing the Czech agrarian trade does not keep comparative advantages in relation to the total Czech merchandise foreign trade performance. The Czech Republic is an industrial country and its comparative advantages exist outside the agricultural sector. The missing comparative advantages related to Czech agrarian trade are illustrated in table 2.

TAB. 2: The Czech agrarian trade comparative advantages as a part of total Czech merchandise trade performance in relation to selected partners

	2001	2015	2001	2015	2001	2015
RCA ZO	CR vs. world		CR vs. EU		CR vs. third countries	
AZO/Total	0.506113398	0.62702	0.37633	0.477677	0.785143	0.329047

Source: own processing, 2016

All indices proved the existence of Czech agrarian trade comparative disadvantages both in relation to the EU28 and also in relation to the third countries. As total Czech agrarian trade does not keep the significant comparative advantages in relation to almost any territory. But on the other hand Czech agrarian trade probably is able to be competitive especially because of its constantly increasing trade performance.

The existence of comparative advantages is proved through the application of LFI and TBI indices taking in consideration only agricultural trade performance (Other sectors are not included into comparative advantages calculation). Comparative advantages are analysed only at the level of individual trade items only in relation to total agricultural trade performance. For details see the following table 3. The items in Group A represents aggregations having long term comparative advantages. Items in Group D do not have comparative advantages. To compare the situation in 2001 the Table 4 is also available below.

TAB. 3: Czech agrarian trade commodity structure in 2015 in ths. CZK (Group A – positive value of LFI and TBI, Group B – positive value of LFI and negative TBI, Group C – negative LFI and positive TBI, Group D – negative LFI and TBI)

Bilateral trade 2015									
B - 2015	Export	Share in export	Import	Share in import	A - 2015	Export	Share in export	Import	Share in import
					HS01	9 065 959	4.49%	1 994 175	0.90%
					HS04	19 165 187	9.48%	15 120 135	6.84%
					HS10	16 849 631	8.34%	3 677 325	1.66%
					HS11	3 730 080	1.85%	1 942 842	0.88%
					HS12	9 931 362	4.91%	5 858 834	2.65%
					HS13	1 452 177	0.72%	989 364	0.45%
					HS15	12 623 314	6.25%	10 997 655	4.97%
					HS17	8 899 942	4.40%	6 649 917	3.01%
					HS22	16 080 645	7.96%	15 496 438	7.01%
					HS24	18 401 326	9.11%	9 161 899	4.14%
					Total	116 199 623	57.51%	71 888 584	32.50%
D - 2015	Export	Share in export	Import	Share in import	C - 2015	Export	Share in export	Import	Share in import
HS02	6 323 092	3.13%	26 018 254	11.76%	HS14	97 969	0.05%	100 446	0.05%
HS03	3 127 611	1.55%	4 771 668	2.16%	HS16	5 599 773	2.77%	5 608 231	2.54%
HS05	1 452 582	0.72%	2 093 060	0.95%					
HS06	758 430	0.38%	4 455 031	2.01%					
HS07	3 032 620	1.50%	13 141 856	5.94%					
HS08	4 790 506	2.37%	16 939 155	7.66%					
HS09	11 325 160	5.60%	13 600 247	6.15%					
HS18	8 512 470	4.21%	11 267 243	5.09%					
HS19	12 202 108	6.04%	13 454 994	6.08%					
HS20	3 300 184	1.63%	8 202 001	3.71%					
HS21	13 170 766	6.52%	15 719 072	7.11%					
HS23	12 174 173	6.02%	13 951 874	6.31%					
Total	80 169 702	39.67%	143 614 455	64.92%	Total	5 697 742	2.82%	5 708 677	2.58%

Source: own processing, 2016

TAB. 4: Czech agrarian trade commodity structure in 2001 in ths. CZK

Bilateral trade 2015									
B - 2001	Export	Share in export	Import	Share in import	A - 2001	Export	Share in export	Import	Share in import
					HS04	7 794 864	15.78%	2 865 064	4.14%
					HS12	5 068 122	10.26%	2 010 447	2.90%
					HS22	5 659 678	11.45%	3 880 835	5.61%
					HS17	3 580 745	7.25%	2 446 516	3.53%
					HS11	1 946 892	3.94%	334 032	0.48%
					HS01	1 515 211	3.07%	357 419	0.52%
					HS13	390 892	0.79%	334 916	0.48%
					Total	25 956 404	52.53%	12 229 229	17.67%
D - 2001	Export	Share in export	Import	Share in import	C - 2001	Export	Share in export	Import	Share in import
HS14	3 573	0.01%	98 220	0.14%	HS24	3 261 999	6.60%	3 412 720	4.93%
HS03	1 128 174	2.28%	1 763 713	2.55%	HS02	2 252 145	4.56%	2 552 128	3.69%
HS10	883 010	1.79%	1 511 870	2.18%	Total	5 514 144	11.16%	5 964 848	8.62%
HS16	908 119	1.84%	1 730 194	2.50%					
HS05	280 746	0.57%	991 026	1.43%					
HS15	1 709 204	3.46%	3 206 392	4.63%					
HS18	1 894 667	3.83%	3 659 625	5.29%					
HS19	2 215 190	4.48%	4 246 759	6.13%					
HS09	583 028	1.18%	1 981 835	2.86%					
HS20	1 390 608	2.81%	3 326 390	4.81%					

HS06	157 586	0.32%	1 924 638	2.78%					
HS21	3 444 528	6.97%	7 189 005	10.38%					
HS07	570 434	1.15%	4 849 316	7.01%					
HS23	2 019 321	4.09%	7 019 661	10.14%					
HS08	752 767	1.52%	7 532 220	10.88%					
Total	17 940 955	36.31%	51 030 864	73.72%					

Source: own processing, 2016

Conclusion

Czech Republic recorded the significant changes in area of agricultural foreign trade performance during the last fifteen years. While in 2001 the share of TOP5 and TOP10 commodity items in total agrarian exports reached 52% respectively 76%, in 2015 it was 41% respectively 70%. Czech exports are extremely focused on European territory. Its competitiveness is based on cooperation with especially EU28, while the in relation to third countries Czech agrarian trade competitiveness is very limited. The significant weakness of the Czech agrarian trade is its inability to generate the added value. The Czech agrarian trade is still growing especially through the constant volume growth. While the value of Czech agrarian exports and imports increased 4.1 times respectively 3.2 times, the volume of Czech agrarian trade especially exports increased more than 6.35 times. The export volume is growing much faster in comparison to import volume (2.5 times). Only in monitored time period (2001 – 2015) the volume of Czech exports have increased by 16.5 million tonnes, while the import volume has increased by 4.6 million tonnes. The result is the significant disproportion between the Czech agrarian trade export and import unit price. While in 2001 the export and import unit prices reached 16.01 CZK/kg respectively 22.25 CZK/kg, in 2015 it was about 10.31 CZK/kg respectively 28.55 CZK/kg. The negative results are especially influenced by the high portion of unprocessed water and wheat in Czech agrarian export. If we exclude those two groups of items from our trade performance the difference between Czech export and import prices is marginal 28.5 CZK/kg vs. 30.3 CZK/kg.

The combination of especially TBI and LFI analyses proved the existence of comparative advantages in relation to the following aggregations: Cereals, Live animals, Oil seeds, Tobacco products, Dairy products, Sugar, Vegetable oils, saps and plaiting materials, Milling products, Beverages and alcohol. In relation to the rest of the World (without EU28 internal trade) Czech agrarian trade is competitive especially in relation to the following commodity groups Live animals, Dairy products, Sugar, Beverages and alcohol, Oil seeds, Preparation of cereals, Milling products, Cocoa preparations, Vegetable saps and Tobacco products.

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DOUBLE-EDGED SWORD EFFECT OF CULTURAL DIFFERENCE ON INTERNATIONAL ALLIANCE

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Keywords:

cultural difference – international alliance – system dynamics

JEL classification: F230

Abstract:

This paper reconciles the contradictory findings about the effect of differences in national cultures on international alliance performance. By using system dynamics with previous empirical findings, we built a dynamical model to simulate the behaviour of an international alliance. Simulations revealed that under the same differences in national cultures, high levels of communication quality, trust, flexibility, commitment, and technique efficiency for problem solving are required to make an alliance succeed while low level of any one of them will make an alliance fail. As these indicators are independent of differences in national cultures, it implies that international alliance in psychically closer countries cannot guarantee a higher probability of success.

Introduction

Research in 1980s supported that differences in national cultures have negative effect on international alliance performance because the more different partners are in culture, the more difficulty they have in communication. Similar cultural values can reduce misunderstanding between partners and culturally distant joint ventures experience greater difficulty in their interactions (Brown, Rugman, & Verbeke, 1989). The more culturally distant two firms are, the greater the differences are in their organizational and administrative practices, employee expectations, and interpretation of and response to strategic issues (Kogut & Singh, 1988). Accordingly, communications between culturally distant partners can be difficult, compounding the coordination problems that exist in any partnership, leaving such joint ventures vulnerable to managerial conflicts and early dissolution (Camerer & Vepsäläinen, 1988). Poor communication and mutual distrust can make the transfer of management practices and technologies very costly (Clegg, 1990).

However, Sirmon and Lane (2004) stated the contradictory findings about effect of differences in national cultures on international alliance performance. On one hand, they

stated the detrimental effect of differences in national cultures. On the other hand, they also stated the beneficial effect of differences in national cultures.

Given the same preconditions or external environment, if similar organizations exhibit quite different behaviour or performance, it is very likely that the different behaviour or performance is due to internal dynamics of organizations (Sterman, 2000). Therefore, it is possible to reconcile the conflicting effects of differences in national cultures by revealing the internal dynamics of international alliances.

1. Methods, literature overview

The purpose of this paper is to reconcile these conflicting findings by using system dynamics, which has been demonstrated an effective approach to reveal internal dynamics of organizations and further explain why organizations with the same internal structure can exhibit different behaviours under the same environment (Sterman, 2000). In the following sections, with evidence from various empirical studies, we use system dynamics to build a model, which can run simulations to explain why international alliances exhibit different performances under the same cultural difference. The simulation analysis shows that communication quality, trust, flexibility, commitment, and technique efficiency for problem solving play decisive roles in explaining the different performances under the same cultural difference.

The analysis of international alliance in this paper is built on premise of Type I and Type II inter-firm diversities (Parkhe, 1991). Type I diversity refers to inter-firm differences that facilitate the formulation, development, and collaborative effectiveness of international alliance, including reciprocal strengths and complementary resources furnished by alliance partners. Type II diversity refers to inter-firm differences that negatively affect the longevity and effective functioning of international alliances. A minimum level of Type I differences is a precondition for the existence of international alliance. If Type I differences do not exist, organizations will have no motivation to form international alliance. Simultaneously, the negative effect of Type II differences must be kept at an acceptable level to all partners; otherwise an international alliance will dissolve. When the negative effect of Type II differences are under control, Type I differences will improve performance of international alliances; otherwise the improvement in performance will be hindered or offset by the negative effect of Type II differences. Therefore, the analysis of this paper focuses more on the negative effect of Type II differences in national cultures because it is this type of differences that can make an international alliance fail.

Based on the premise above, we will build a system-dynamics model with empirical evidence to reflect behaviour of an international alliance. Usually the approach of system dynamics is composed of two steps (Sterman, 2000). The first step is to build up

a causal loop diagram. The second step is to build up a stock-and-flow model and simulate behaviour of the investigated system.

2. Results

2.1. Building Causal Loop Diagram of International Alliance

In this section, we are going to build a causal loop diagram to show the internal dynamics of an international alliance step by step. Previous studies revealed that cultural differences among partners continuously create problems due to the differences in their organizational and administrative practices, employee expectations, and interpretation of and response to strategic issues (Brown, Rugman, & Verbeke, 1989). Therefore, we created two variables with positive relationship in Figure 1 to reflect this fact: Creating Misunderstood Problems and Misunderstood Problems. Creating Misunderstood Problems are misunderstood problems that are created every period by differences in national cultures as international allied work goes on (Jemison & Stikin, 1986). When misunderstood problems are continuously created in each period, the second variable, Misunderstood Problems, will increase accordingly because Misunderstood Problems is a variable which accumulate problems from Creating Misunderstood Problems.

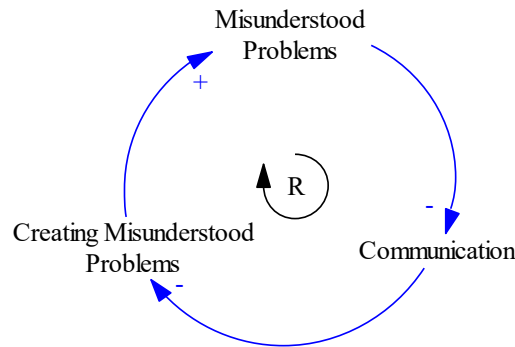
According to the argument of detrimental effect, a lack of shared norms and values, which leads to new problems continuously being created in each period and therefore an increase of Misunderstood Problems, may reduce effective communication (Rao & Schmidt, 1998). Therefore, when Misunderstood Problems increase, the third variable, Communication (Figure 1), will decrease. Communication may decrease due to more frustration among partners when Misunderstood Problems increase (Wysocki, 1990).

Poor communication and mutual distrust can make the transfer of management practices and technologies very costly (Clegg, 1990). This fact reflects in our model in a way that when Communication goes down, more misunderstood problems will be created as more problems can represent more cost, and this means that Creating Misunderstood Problems will increase. In other words, if Communication goes up, less misunderstood problems will be created because more communication will clarify more partners' expectations, unconscious beliefs, business traditions, and strategic intentions, which are roots creating new misunderstood problems in each period (Brown, Rugman, & Verbeke, 1989). Therefore, Communication is negatively related to Creating Misunderstood Problems in Figure 1.

Based on the explanation above, increase in Creating Misunderstood Problems will increase Misunderstood Problems, increase in Misunderstood Problems will decrease Communication, decrease in Communication will lead to increase in Creating

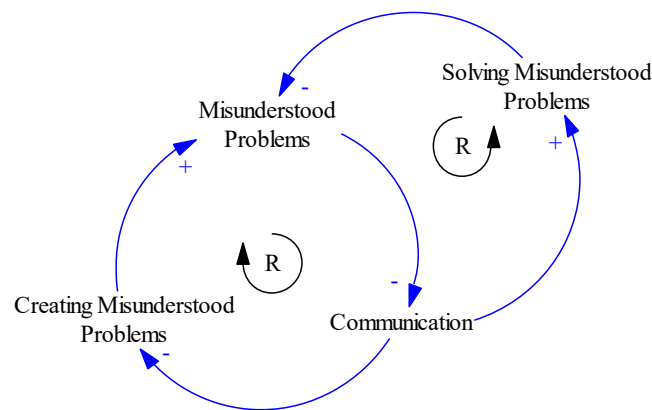
Misunderstood Problems. Therefore, increase in Creating Misunderstood Problems finally increases itself. This reinforcing behaviour is signified by an R in the middle of the loop.

FIG. 1: Creating Misunderstanding Loop



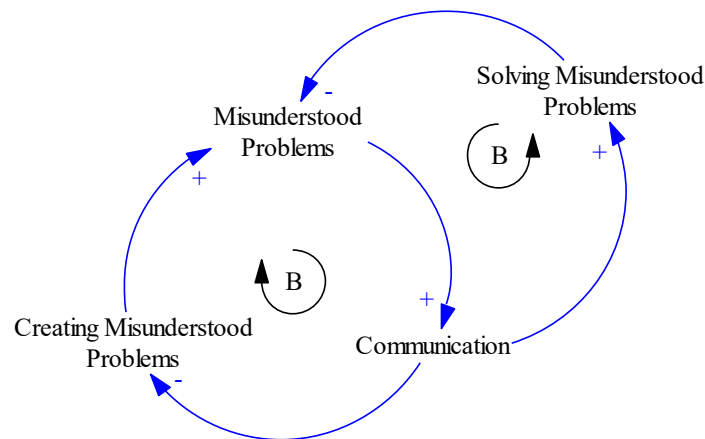
Source: own research

Following the same analysis of the effect of communication above, decrease in Communication will resolve fewer problems in each period because poor understanding of other partners' expectations, unconscious beliefs, business traditions, and strategic intentions will make it more difficult to resolve existing problems. This fact reflects in our model by adding the fourth variable, Solving Misunderstood Problems, to Figure 1, and then we get Figure 2, which has one more causal loop than Figure 1. As less communication leads to solving fewer problems or, in other words, more communication leads to solving more problems, Communication is positively related to Solving Misunderstood Problems, which represents the number of solved problems in each period. When Solving Misunderstood Problems decreases in each period, it subtracts fewer problems from Misunderstood Problems. This makes Misunderstood Problems increase because less communication simultaneously creates more new problems which flow into Misunderstood Problems. This means that Solving Misunderstood Problems is negatively related to Misunderstood Problems, and increase of Misunderstood Problems will decrease Communication further. As a decrease in Communication finally decreases itself, this is also a reinforcing loop.

FIG. 2: Creating and Solving Misunderstanding Loop (Detrimental Effect)

Source: own research

However, according to the argument of beneficial effect, when Misunderstood Problems increases, Communication will increase because differences in national culture can lead to high-level communication and more sustained collaboration (Park & Ungson, 1997). In this case, the correlation between Misunderstood Problems and Communication is positive as Figure 3 shows.

FIG. 3: Creating and Solving Misunderstanding Loop (Beneficial Effect)

Source: own research

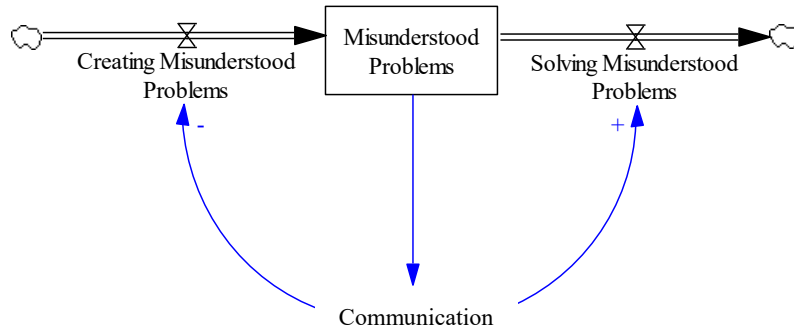
In Figure 3, when Misunderstood Problems increase, partners of international alliance will increase their Communication. It means that they will pay more effort to increase Solving Misunderstood Problems and decrease Creating Misunderstood Problems. As Solving Misunderstood Problems increase and Creating Misunderstood Problems decrease, Misunderstood Problems will decrease. An increase in Misunderstood Problems finally decreases itself. This is called balancing behaviour. Technically, any

increase in any variable of Figure 3 will finally decrease itself, and therefore, instead of having reinforcing loops, now we have two balancing loops, which are signified with B in the center of each loop.

2.2. Building Stock-and-Flow Model of International Alliance

Based on Figure 2 and 3, we build a stock-and-flow model in Figure 4. In this type of model, box represents stock (Misunderstood Problems), which increases by accumulating inflow (Creating Misunderstood Problems) and decreases through subtraction of outflow (Solving Misunderstood Problems). Communication is an auxiliary variable, which connects stock and flow variables. This type model runs period after period in order to capture the dynamic behaviour of investigated system. In this case, each period represents one month.

FIG. 4: Stock-and-Flow Model



Source: own research

Although we do not have real empirical data to run this model, we have empirical evidence to support the relationships between each pair of variables in this model. Before running the model, we need to set hypothetical parameters of each variable within reasonable ranges.

Regarding the relation between Misunderstood Problems (MP) and Communication (CM), it is reasonable to assume that when two or more companies start an international alliance, problems increase from zero; when problems increase, partners pay more effort to communicate in order to resolve and decrease problems to an acceptable level; but when problems increase beyond the maximum acceptable level, partners feel frustrated, pay less and less effort to communicate, and give up finally. This assumption reflects in the following equation:

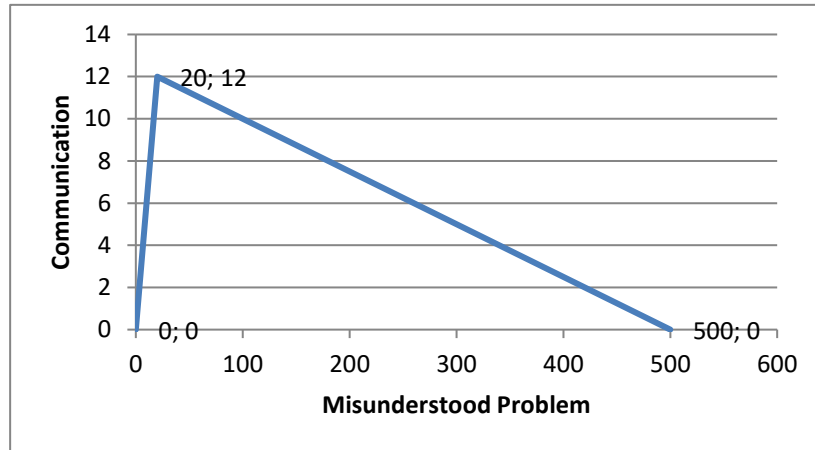
$$CM = \begin{cases} a * MP & 0 < a \leq 1; 0 \leq MP \leq x \\ b * MP + c & -1 \leq b < 0; x \leq MP \leq y \end{cases} \quad (1)$$

In Equation 1, CM is measured as communication effort paid by partners to decrease Creating Misunderstood Problems and increase Solving Misunderstood Problems.

When MP is between zero and x , which represents the maximum acceptable number of problems, effort will increase as MP increases. This reflects the positive relationship between MP and CM in Figure 3. However, when MP surpasses that maximum number, the effort will decrease by and by to zero when MP increases from x to y . This reflects the negative relationship between MP and CM in Figure 2.

Therefore, a stands for how much effort partners of international alliance are willing to pay for one problem. Each problem is assumed to have equal significance for theoretical simplification. Thus, the unit of a is effort/problem. The range of a is set between 0 and 1 because negative effort does not make sense in reality and we assume that one unit of effort can solve one problem at most for theoretical simplification. The unit of b is the same as that of a , but the range of b is between -1 and 0 because b measures the decreasing speed of effort when existing problems surpass the maximum acceptable level. For example, when $a = 0.6$, $b = -0.025$, $c = 12.5$, $x = 20$, and $y = 500$, the relationship between CM and MP shows in Figure 5.

FIG. 5: Qualitative Relationship between CM and MP



Source: own research

In Figure 5, the maximum acceptable problems for partners of this international alliance are 20. Before misunderstood problems reaching 20, the effort of partners to communicate will increase until 12 units of effort. However, after misunderstood problems surpass 20, effort to communicate will decrease as misunderstood problems keep increasing. When problems reach 500, partners totally give up and so pay 0 unit of effort to communicate.

The relationship between Creating Misunderstood Problems (CMP) and Communication (CM) reflects in the following equation.

$$CMP = d - e * CM \quad d > 0; 0 \leq e \leq 1 \quad (2)$$

Equation 2 shows the relationship that when CM increases, CMP will decrease, and this means that more effort to communicate will prevent more problems to incur as we have shown in both Figure 2 and 3. The symbol d is the new problems that day-to-day work will continuously generate as international alliance goes on (Jemison & Stikin, 1986). In our initial simulations, d will be set as a constant number of problems generated in each period, but we will relax this assumption at the final stage of simulation. The symbol e stands for how many problems can be prevented by one unit of effort, and thus the unit of e is problem/effort. The range of e is between 0 and 1 because negative problem does not make sense in reality and we assume that one unit of effort can prevent one problem to happen at most for theoretical simplification.

The relationship between Solving Misunderstood Problems (SMP) and Communication (CM) reflects in the following equation.

$$SMP = f * CM \quad 0 \leq f \leq 1 \quad (3)$$

Equation 3 shows the relationship that when CM increases, SMP will increase, and this means that more effort to communicate will solve more problems as we have shown in both Figure 2 and 3. The symbol f stands for how many problems can be solved by one unit of effort, and thus the unit of f is problem/effort. The range of f is between 0 and 1 because negative problem does not make sense in reality and we assume that one unit of effort can solve one problem at most for theoretical simplification.

The relationship among MP, CMP, and SMP reflects in the following equation.

$$MP(t) = CMP(t) - SMP(t) + MP(t-1) \quad t \geq 0 \quad (4)$$

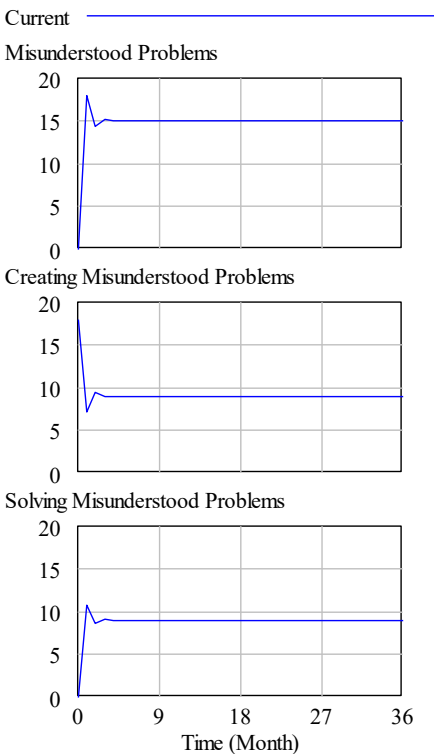
Equation 4 shows that MP accumulates net change of problems by subtracting SMP from CMP and misunderstood problems from previous period.

2.3. Simulation of Stock-and-Flow Model of International Alliance

After setting up each parameter with specific values in its full range and doing sensitivity analysis of simulations (Sterman, 2000), we found that parameters that decide the behaviour of the model are a , x , e , and f . In this section, we will explain how each parameter influences the behaviour of our model with simulations and the significance of each parameter in reality with empirical findings of various previous studies. It should be noted that in this paper although quantitative effect of those parameters on the model's behaviour can provide helpful information to explain the effect of each parameter, we pay more attention to the qualitative effect of those parameters on the model's behaviour, because that is critical to understand why differences in national cultures can be either detrimental or beneficial to international alliance performance.

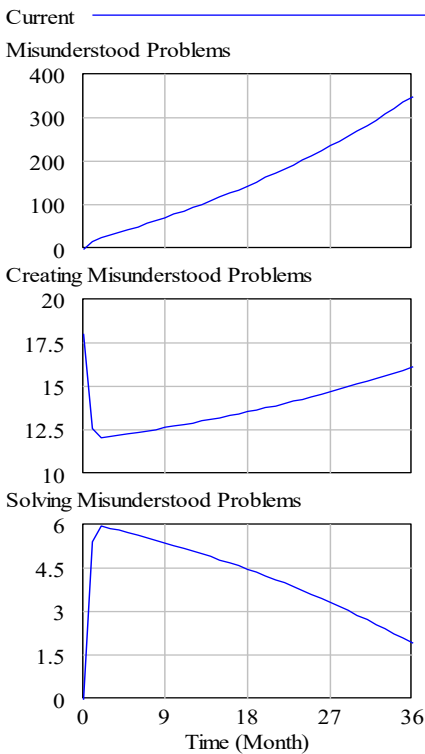
As previously defined, a is how much effort partners of international alliance are willing to pay for one problem, and the unit of a is effort/problem and the range of a is set between 0 and 1. Given specific values of all other parameters, increasing a from 0 to 1 will exhibit only two qualitatively different behaviours and a will have a specific tipping point (Rudolph & Repenning, 2002). When a is above this point, the model will exhibit behaviour as Figure 6a shows: although Misunderstood Problems increase fast initially and fluctuate a little, it stabilize at 15 as time goes on and never reach 20, which is the maximum acceptable problems for partners in this simulation of international alliance. When a is below its tipping point, the model will exhibit behaviour as Figure 6b shows: although Creating Misunderstood Problems decrease initially and Solving Misunderstood Problems increase initially, they change their direction when Misunderstood Problems surpasses 20, the maximum acceptable problems for the same alliance, and the Misunderstood Problems keeps increasing at exponential speed. At the end of 36th months, the Misunderstood Problems has reached 350, which is more than 17 times of the maximum acceptable problems. So this international alliance will fail sooner or later. The specific parameter values of Figure 6a are: $a = 0.6$, $b = -0.025$, $c = 12.5$, $x = 20$, $y = 500$, $d = 18$, $e = 1$, $f = 1$. The only difference of parameter values between Figure 6a and 6b is that in Figure 6b, $a = 0.3$. In this case the tipping point of a is 0.45. Further sensitivity analysis shows that, above the tipping point, the larger the a is, the lower the Misunderstood Problems will be kept.

FIG. 6a: Beneficial Effect



Source: own research

FIG. 6b: Detrimental Effect



In reality of international alliance, a is the counterpart of communication quality (Mohr & Spekman, 1994). Communication quality is measured by the accuracy, timeliness, adequacy, and credibility of information exchanged (Stohl & Redding, 1987). When partners try to improve the accuracy, timeliness, adequacy, and credibility of information exchanged to resolve a problem, they must pay more effort, which could be measured by either time or cost. Therefore, large a corresponds to higher communication quality while small a corresponds to lower communication quality. In our model, when a is below its tipping point, the negative effect of Type II differences will be out of control and lead to dissolution of an international alliance sooner or later; when a is above its tipping point, the negative effect of Type II differences will be under control and larger a will lead to lower level of misunderstood problems, which means that the satisfaction level of partners will be higher. As Mohr and Spekman (1994) found, communication quality is significantly related to the satisfaction of partners positively.

Similar effects happen to both x (trust, flexibility, commitment) and e and f (technique efficiency for solving problems). They all have tipping points, which can be used to predict the future of international alliances.

3. Discussion

The analysis above reveals the internal dynamics of an international alliance, which reconciles the contradictory findings of the effect of differences in national cultures on international alliance performance. Under the same differences of national cultures, two similar international alliances may exhibit opposite behaviours: success and failure. Successful international alliances are characterized by high communication quality (a), high trust, flexibility, commitment (x), and high technique efficiency for problem solving (e and f) while failed international alliances are characterized by low level of at least one of those indicators (a , x , e , and f) because if any one of them is below its tipping point, the misunderstood problems will increase without control. Comment and compare your results to other authors. You can outline a further research.

Conclusion

Therefore, although higher levels of cultural distance between firms are associated with a higher degree of conflict during the day-to-day post-acquisition integration period (Jemison and Sitkin, 1986), it is not necessary that higher degree of conflict will lead to higher probability of failure, because those internal decisive indicators (a , x , e , and f) are independent of cultural distance and conflict. Then it is not surprised to see that cultural distance had a positive effect on post-acquisition performance after controlling for year, industry, size, relatedness, post-acquisition strategy, and uncertainty avoidance of the acquirer (Morosini et al., 1998), and it is reasonable to see that duration of

international alliances was positively correlated with cultural distance (Park & Ungson, 1997).

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INTERNATIONAL DIMENSION OF NATIONAL TAX POLICY AND ITS IMPACT ON THE ECONOMIC SPHERE

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tax policy – tax competition – transfer pricing – relocation

JEL classification: F20, H25

Abstract:

In the paper, the author focuses the attention on the problem of the impact of the tax system exercised on economic activity of companies, both in the national and international terms. In this context, the issue of the interaction between the tax policy and the real economic sphere in the context of the intensification of economic activity and achieving competitive advantage on the international arena has been discussed. The conclusion states that low tax burden may constitute an important factor stimulating investments in a country with a mild tax regime, job creation and dynamic economic growth.

Introduction

Depending on the construction of taxes suitable for achieving desired effects, the stimuli can stimulate certain behaviour or demotivate, favour the formation of certain phenomena, increase their intensity or eliminate them. In pursuing a specific fiscal policy, public authority gives certain signals to the entrepreneurs who process them within the decision-making process in the company and then take concrete actions in the economic sphere. Any business entity operates within the strict framework of legal, institutional, economic, political and social structures of a given country. The efficacy of the actions carried out by the entrepreneurs on the market and achievement of successes largely depends on the flexibility to adapt to existing conditions and the ability to predict the existence of possible situations. These conditions of a broadly understood interior of a company are interacting therewith. In turn, due to the impact of external factors on the company, including fiscal and monetary policy, economic situation, actions of entrepreneurs can be less or more effective and the goals achieved by them more or less real. The task of public authority in this regard is to create regulations to make the external environment of the company as favourable as possible and support economically viable projects.

The aim of the paper is to present and evaluate the state's activities in the economic sphere observed over the last decade, aimed at strengthening the position of competitive economy and creating an entrepreneur-friendly climate with the use of specific fiscal policy instruments which can be a fairly effective tool of economic impact. Economic freedom is to play a major role in supporting the development and the level of competitiveness, while the role of the state should be reduced to guaranteeing the seamless framework for the conduct of economic activity, which can be boiled down to the construction of broadly understood institutions and the concern about the existence of adequate infrastructure, what constitutes the environment of enterprises, including fiscal environment. On the one hand, these actions are aimed at increasing investment involvement of domestic entities and, on the other hand, at encouraging foreign investors to relocate their businesses to the chosen location, thus providing a basis for the creation of sustainable jobs and increasing the activity of cooperating entities, resulting in accelerating economic growth and improving the quality of life of the population.

1. Tax policy in creating a competitive advantage

Globalization is a progressive phenomenon and free movement of capital and persons constitutes an additional enhancing the intensity thereof. Undisputed positive effects of globalization include: the transfer of new technologies between countries and thus the dissemination of scientific knowledge and acceleration of technical progress; an increase in trade (Thompson, 2007) based on comparative advantages, increase in cross-border investment; the development of institutions and competitiveness of both individual companies and entire economies; other effects resulting from more creativity in the world of disappearing barriers and borders which are sought by the societies, regions and counties. Creating incentives for investment is particularly important for countries undergoing economic transformation due to the significant impact of foreign direct investment (FDI) projects on this process (Sedmihradsky & Klazar, 2002). It is also important to stress that the transnational companies (Dicken, 1998) are mainly guided by the principle of keeping the tax burden on their companies as low as possible. Therefore, they will be largely sensitive to the level of taxation of such an activity in a given country (Devereux & Hubbard, 2000). For this reason, individual countries compete for investors, using fiscal policy instruments which are designed to raise the level of attractiveness of a given area as a potential or a current location of a specific economic activity. These instruments may be available to both local and central authorities, which depends on the specific nature and detailed solutions within the framework of both tax and administration system of a given country.

An example of a tax instrument used to stimulate investment projects in the relevant area and to strengthen the bargaining power of a country in attracting new capital in the form of FDI projects are special economic zones (SEZ). The idea of the creation thereof boiled down to the determination, in a strictly defined area, of particularly favourable

business environment in comparison with the rest of the country. As used herein, tax preferences are to develop both economically and socially desirable areas of economic activity, modern technologies and export-oriented investment projects as well as to create new jobs. Within SEZ, the investors can do business being assisted by public authorities, more precisely, obtaining regional aid in the form of exemption from income tax on income earned from doing business specified in the license obtained. The SEZ exemption may be used until the tax threshold is reached, but no longer than until the end of functioning of a given SEZ (in Poland it can be until 31 December 2026). The undoubted advantage of the activities carried out within a SEZ, in addition to the exemption from income tax, is the availability of attractive, developed land together with all the necessary infrastructure, the possibility of buying or renting the properties existing within a SEZ, the ability to take advantage of other investment incentives offered within a SEZ, i.e. property tax exemption, receiving a government investment grant, receiving a grant from the District Employment Office and support from EU funds as well as administrative support from the companies managing the SEZ in legal and organizational matters related to the implementation of the investment (media providers, local authorities, etc.) and the so-called post-investment care¹.

It should be emphasized that the European Union considers public aid in the form of reliefs and tax exemptions as one of the most harmful and recommends the reduction thereof and reorientation from selective to horizontal objectives. Of course, tax competition brings measurable benefits to the companies investing in a given country and doing their business there, which contributes to the economy of this country. It is also a stimulus for the growth of public finance discipline and can improve the efficiency of public spending through a better allocation thereof. Therefore, tax competition may be seen as a positive phenomenon and resemble – by analogy to the competition between companies – the perfect competition (Tiebout, 1956), where states or regions compete with each other mobile production factors and improve their efficiency. The existing tax competition shall be recognized as a manifestation of a kind of struggle for potential investors and capital for the development of a given country, since mobile factors of production (e.g. capital) can easily be invested in countries with low taxes, reducing the possibility to raise them (Zodrow, 2006). Healthy competition leads to streamlining the fiscal policies of competing countries and to the creation of a business-friendly atmosphere. The competition for investment capital is not a zero-sum game which must have its winners and losers, especially in long-term perspective.

¹ In Poland, there are 14 special economic zones located in 173 cities and 248 municipalities which covered a total area of 19.836 ha as at 31 December 2015, while the average level of their development is 59.5%. Since the beginning of the zones until the end of 2015 entrepreneurs conducting their business activities there incurred investment outlays in the amount of nearly PLN 112 billion, employed more than 312 thous. people, 72.2% of which were new jobs, i.e. created by entrepreneurs as a result of new investments after the day on which acceptance of the new investment is granted. At the end of 2014, more than 75% of the capital invested in the zones came from six countries: Poland, Germany, the USA, the Netherlands, Japan and Italy (*Informacja...*, 2016).

Tax competition is a phenomenon which consists in the governments' applying fiscal instruments to increase the competitive advantage of their territories by attracting or keeping the capital engaged in economic activity.

2. Business relocation and transfer pricing problem

The essence of tax competition is often a belief that a low tax burden is the main factor determining the development of a given territory and the perception thereof as an attractive location for investing. In the literature one can find three main causes of migration enterprise: 1) internal factors (status, ownership, size, age, employment growth, acquisitions, mergers,), 2) factors related to the location (location of company headquarters, the type of industrialization and characterization objects), 3) external factors (market size, labor market issues, government policies and general economic conditions) (van Dijk & Pellenbarg, 2000). While the list of internal factors is almost complete, knowledge about the external factors is not exhaustive. Full knowledge of these particular factors may be crucial to explain the reasons for the migration of enterprises (Brouwer, Mariotti and van Ommeren, 2002). It should be emphasized, that this strategy was used by the authorities in most industrialized countries since the 50s 20th century, mainly in order to reduce income disparities between regions and employment growth. Business relocation is a form of adaptation to a changing business environment, which is also shaped by government policy using instruments of a fiscal nature, e.g. grants, low taxes, reliefs, etc.

Among the motives prompting entrepreneurs to relocate the production to another country, tax burden is one of many factors and not the most important one. The main factor is invariably the cost and quality of labour, sales markets and proximity to major customers. The competitiveness of a country consists of a number of factors, among which is also the level of social benefits, transport costs, level of infrastructure and education, state of the environment (*Opinion of the Economic...*, 2002). Only the lack of differences in the field of non-tax factors makes the differences in tax burden particularly important. By comparing data on total tax rates with a ranking created on the basis of the Ease of Doing Business Index², it is easy to see that not only the level of taxation being a derivative of tax rates, but other factors (e.g. the efficiency of public institutions, transparency of actions of the public authorities, quality of the environment) contribute to the fact that a given country scores highly in the said ranking.

According to R.W. McGee, countries with the lowest tax rates are characterized by the highest economic growth, since lower taxes mean greater scope to operate for private capital, which generally operates more efficiently (McGee, 2004). However, it should

² Index determined i.a. on the basis of the number of taxes paid, hour spent on the preparation of tax declarations per year and the level of gross income constituted by the tax paid.

be noted that the level of income taxation is not the most important factor determining the competitiveness of a given economy. Countries with a high quality of infrastructure, a stable and transparent legal and tax system, a large share of highly skilled labour force, do not have to worry about the escape of investors without losing their investment attractiveness and maintaining a relatively higher level of tax rates. On the other hand, countries with a relative low level of development and less rich in capital by offering lower taxes somehow compensate the lack of infrastructure in order to be a relatively attractive place for investing.

It is worth noting that the total rates³ of gross profits has decreased in the period 2005-2015 in most OECD countries (the OECD-wide average total rate went down by 4.3 percentage points). The biggest absolute *in minus* changes concerned Denmark (almost 39 p.p.), while the smallest decrease in rates was observed in Germany (1.5 p.p.). In the same period a part of the OECD countries recorded an increase in taxation (the biggest *in plus* change took place in the USA – 22.4 p.p.) (see: Table 1). It should be kept in mind that a comparison of total tax rates (instead of CIT rates) in order to assess the level of tax burden is more correct. This is because individual countries use different methods for determining the tax base. Differences may consist in: determining the scope of expenditures being a tax deductible cost, amortization write-offs, making provisions, clearing the loss or using both tax deductions and exemptions, etc. Only differences in the effective level of taxation can be a basis for decisions concerning relocation of operations to countries with lower tax burden.

From the comparison of the total tax rates offered and the ranking of economies by their competitiveness (see: Growth Competitiveness Index – GCI) it can easily be inferred that it is not the tax burden (resulting from the effective tax rate), but other factors like the efficiency of public institutions, the transparency of public management or the quality of natural environment that secure any country's high position in the attractiveness ranking. As you can see, there is no simple relationship between the reduction of tax rates and the change of competitive position of the country. During the 2005-2015 period Canada, despite a significant reduction in total tax rates did not change position in the GCI ranking, and the German did. By way of an example, if we rank OECD countries by their total tax rates, the lowest rates are offered by Luxembourg and Canada while the highest by Italy and France. However, when the GCI is used to build a competitiveness ranking, the most competitive economies are those of Switzerland and the USA and the least competitive ones – Slovakia and Hungary. But also for Australia, Germany, Poland, Spain, Turkey and the USA, it is clear that the increase/decrease in tax rates associated with a simultaneous

³ Total tax rate measures the amount of taxes and mandatory contributions payable by businesses after accounting for allowable deductions and exemptions as a share of commercial profits. Taxes withheld (such as personal income tax) or collected and remitted to tax authorities (such as value added taxes, sales taxes or goods and service taxes) are excluded (*Doing...*, 2016).

decrease/increase in both rankings (GCI and Easy of Doing Business), and for Belgium, Denmark, Finland, Greece, Hungary only in relation to the Easy of Doing Business ranking. This means, that in one third of OECD countries, there is a relative correlation between the level of taxation and the position in the rankings, which determine the attractiveness of the economy (cf. Table 1).

TAB. 1: The level of total taxation, Growth Competitiveness Index ranking and the Ease of Doing Business ranking in the OECD countries

Kraj	Total tax rate (% of profits)				Growth Competitiveness Index ranking				Ease of Doing Business ranking			
	2005	2010	2015	Change 2005– 2015 (in p.p.)	2005	2010	2015	Change in rank 2005– 2015	2005	2010	2015	Change in rank 2005– 2015
Australia	37,0	47,9	47,6	10,6	18	16	21	-3	6	10	13	-7
Austria	50,8	55,5	51,7	0,9	15	18	23	-8	32	32	21	11
Belgium	44,6	57,0	58,4	13,8	20	19	19	1	18	25	43	-25
Canada	32,5	29,2	21,1	-11,4	13	10	13	0	4	7	14	-10
Chile	46,7	25,0	28,9	-17,8	27	30	35	-8	25	43	48	-23
Czechia	40,1	48,8	50,4	10,3	29	36	31	-2	41	63	36	5
Denmark	63,4	29,2	24,5	-38,9	3	9	12	-9	8	6	3	5
Estonia	39,5	49,6	49,4	9,9	26	33	30	-4	16	17	16	0
Finland	52,1	44,6	37,9	-14,2	2	7	8	-6	13	13	10	3
France	42,8	65,8	62,7	19,9	12	15	22	-10	44	26	27	17
Germany	50,3	48,2	48,8	-1,5	6	5	4	2	19	22	15	4
Greece	47,9	47,2	49,6	1,7	47	83	81	-34	80	109	60	20
Hungary	56,8	53,3	48,4	-8,4	35	52	63	-28	52	46	42	10
Iceland	52,2	26,8	29,6	-22,6	16	31	29	-13	12	15	19	-7
Ireland	45,3	26,5	25,9	-19,4	21	29	24	-3	11	9	17	-6
Israel	57,5	31,7	30,6	-26,9	23	24	27	-4	29	29	53	-24
Italy	59,8	68,6	64,8	5	38	48	43	-5	70	80	45	25
Japan	34,6	48,6	51,3	16,7	10	6	6	4	10	18	34	-24
Korea	29,6	29,8	33,2	3,6	19	22	26	-7	27	16	4	23
Luxembourg	n.a.	21,1	20,1	-	24	20	20	4	n.a.	45	61	-
Mexico	31,3	50,5	51,7	20,4	59	66	57	2	73	35	38	35
Netherlands	53,3	40,5	41,0	-12,3	11	8	5	6	24	30	28	-4
N. Zealand	44,2	34,3	34,3	-9,9	22	23	16	6	1	3	2	-1
Norway	60,1	41,6	39,5	-20,6	17	14	11	6	5	8	9	-4
Poland	55,6	42,3	40,3	-15,3	43	39	41	2	54	70	25	29
Portugal	45,4	43,3	41,0	-4,4	31	46	38	-7	42	31	23	19
Slovakia	39,5	48,7	51,2	11,7	36	60	67	-31	37	41	29	8
Slovenia	47,3	35,4	31,0	-16,3	30	45	59	-29	63	42	30	33
Spain	48,4	56,5	50,0	1,6	28	42	33	-5	30	49	33	-3
Sweden	52,6	54,6	49,1	-3,5	7	2	9	-2	14	14	8	6
Switzerland	22,0	30,1	28,8	6,8	4	1	1	3	17	27	26	-9
Turkey	51,1	44,5	40,9	-10,2	71	61	51	20	93	65	55	38
UK	52,9	37,3	32,0	-20,9	9	12	10	-1	9	4	6	3
USA	21,5	46,8	43,9	22,4	1	4	3	-2	3	5	7	-4
Average	45,7	42,9	41,4	-4,3	–	–	–	–	–	–	–	–

Source: own calculations based on: OECD Data (<https://data.oecd.org>); (*Doing...*, 2006, 2011, 2016); (*The Global...*, 2005, 2010, 2015).

Economic activity, as a gainful activity, aims to make a profit and any tax burden means the reduction of the current or future capital resources of a taxpayer. In terms of income tax, the imposition of taxes directly reduces the scale of consumer spending or spending on economic activity. Therefore, the natural behaviour of a taxpayer is to avoid such taxation consequences to minimize its negative impact. Taxpayer's actions can be reduced, i.a. to the legal optimization of the level of taxation through the use of flexible tax structure or tax migration to countries with lower tax burden, as well as the use of transfer pricing.

The transfer pricing are all actions that boil down to the manipulation of prices in transactions made between related entities. Transfer prices are the prices of goods, services, intangibles and fees applied between related companies are different from the prices negotiated on the free market and included in terms and conditions compared by unrelated partners (Sojak & Baćkowski, 2003). Thus, the concept of transfer prices means cases where, following the links between economic activities, these entities arrange their relationships in a way that differs from the conditions that would be agreed by unrelated entities in similar cases. Tax consequence of such relations is the underreporting of income and keeping these revenues off the balance sheet of a given entity, since the income generated by one entity is proven as the income of another entity often having its registered office in the so-called tax haven, i.e., in a country or territory which – generally speaking – allows for avoiding taxation of the income. The most popular way is to undercut export prices when the goods are sent to a foreign company belonging to the same group. Margins for affiliates tend to be significantly lowered. It happens that sales prices to related entities are below the actual cost, while in the case of others – on the same foreign markets – the margins are tens and even hundreds of times higher. It is natural that each foreign investor undertaking a business activity wants to gain as much as possible. Therefore, it is often better for him to show the profit not in Poland, where his/her company or subsidiary has its manufacturing facility, but where it has its registered office – the parent company. Tax authorities confirm that the phenomenon of transfer pricing occurs on an increasing scale and takes more and more complex forms. It has an unfavourable effect not only on the state budget which collects lower tax revenue, but also on minority shareholders, since their shares are less profitable. It goes without saying that any corporation which has branches in many countries and pays different taxes in each of them is tempted to show the profit where the tax burden is the lowest. In turn, price manipulations and cost-shifting between related national entities usually concern small amounts – from a few to ten per cent of what takes place in case of international companies. Related polish companies do not usually bear licensing or management costs. They are trying to “help” related companies in other ways, e.g. by selling parts of fixed assets at depressed prices and giving them interest-free loans. Equally often, transfer prices are manipulated by companies with different legal forms and taxation principles. According to the research by Ernst&Young, 66% of companies identified “risk management” as their highest

priority for transfer pricing in this latest survey, a 32% increase over surveys conducted in 2007 and 2010. One can see a sharp increase in tax controversy around the world in general, and regarding transfer pricing in particular (Ernst&Young, 2013).

Conclusion

Entrepreneur-friendly changes in corporate tax law and favourable political climate are conducive to the creation of transnational form of economic activity. The primary purpose of these transnational economic organisms – just like in the case of most forms of economic activity – is to achieve maximum benefits possible by making full use of the opportunities offered by the globalization. It is important to make maximization of benefits of enterprises accompanied by an increase in the standard of living of citizens of a given country. Without a doubt, the elimination of both legal and bureaucratic barriers and the creation of favourable fiscal environment is a sine qua non condition for the development of a desired activity of the companies and thus for the economic growth and limiting socially adverse phenomena, including unemployment. In the era of globalization of economic processes, the competition between the companies is based primarily on the quality of manufactured goods, provided services and the price thereof. The role of public authorities in this area comes down to creating the conditions for reducing costs of running business activity and enhancing the economic efficiency thereof on the one hand, and, on the other hand, encouraging the entrepreneurs to incur investments in the technological development and job creation. The decisions taken by the state in the area of tax policy cannot be overestimated, because taxes do not only play a fiscal, but also a social (they eliminate excessive differences in the population's income structure) and economic role (they stimulate the behaviour of business entities and households).

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CHANGES IN AGRICULTURAL LAND PRICES AFTER A PERIOD OF TRANSITIONAL PROTECTION IN POLAND AND THE CZECH REPUBLIC

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JEL classification: Q11, Q15

Abstract:

Both in the Czech Republic as well as in Poland over the period of protection for the purchase of agricultural land by foreigners negotiated in the Accession Treaty. In the Czech Republic since 2011, there were fears that it will have effect on the prices of land. Created a statistical model showed that trade of agricultural land is decreasing slightly, while prices in recent years have increased significantly, especially in Poland. Tendencies in the development of agriculture in both countries are similar, but the agricultural system and agricultural structure significantly different from each other. It is estimated that greater impact on the price of agricultural land than liberalization of its turnover had other market factors.

Introduction

Agricultural land is an important production resource classified by economists to the so-called classic and basic factors of production. In agriculture plays a key role while being both a means of work and the subject of work, space for manufacturing processes, of which takes an active part (Szymańska, 2015). The farmland serves also non-commercial functions, like environmental, social, cultural (Wilkin, 2014). An example of activity that joins in agriculture commercial and non-commercial functions is agrotourism. (Kowalska, Tarnowska, 2014). Agricultural land is the rare resource of strategic importance for any country that cares about the food security of its citizens. With the development of civilization this resource will decrease (Piwowar, Dzikuć 2015), and its price will rise. Although the agricultural land market is not fully competitive the law of supply and demand prevails on it. Protection and rational use of the limited resource of land is in the interest of the whole society and regulated in most developed countries. Carried out for this purpose agricultural policy is used to solve problems that cannot handle the market mechanism (Olszańska 2012). Land prices are influenced by many factors, internal and external like economic, social and political. There was taken into account the political changes relating to the enlargement of the EU and their impact on the price of agricultural land in Poland and the Czech Republic.

Since EU enlargement in 2004, the new member states were created concern about the possible purchase of agricultural land by foreigners from the richer countries of the EU. The new member states protect themselves against this situation by negotiating a few or several years of transitional periods. During this period purchase of agricultural land required permits mainly from the central government of the country. It is estimated that in the European Union the most regulated market of agricultural land have France and Hungary, the most liberal in the EU-15: Ireland, Greece and the United Kingdom, and in the EU-12: Romania and the Czech Republic. The question or to be more specific “fear” of farmland mass-purchase arose in Poland as it did in the Czech Republic in the same situation – few years before the agricultural land market liberalization. The restrictions, regarding the agricultural land purchase by the foreigners, were lifted in the year 2011 in the Czech Republic. The paper’s goal is to determine whether the worries were rational and were proved by the market reality or not. It can give a certain clue for the upcoming end of the restriction in Poland due to similarities of the Czech and Polish land market. The second goal concerns the price of the agricultural land. The part of the worst-case scenario was that the mass-purchase would result sooner or later in significant price rise. In other words the local Czech farmers would be crowded-out by the foreign buyers and moreover by the real-estate market speculators.

1. Agricultural system and agrarian structure in Poland and the Czech Republic

Poland and the Czech Republic belong to the post-socialist countries. The basis of the agricultural system in these countries was the state ownership of agricultural land. In the 90s of the twentieth century, these countries have undergone a transformation system, as a result of which the vast majority of agricultural land passed into private hands. However Poland and the Czech Republic represent a completely different agrarian structure, what is the result of structures created in the socialist times. In the Czech Republic more than 90% of agricultural land is leased, because rents are so low that it does not pay to buy them on the property. In 2010, 13.5% of households in agriculture were legal entities, which had in his possession 70.9% of agricultural land. In Poland, are mostly individual farms (97%) and utilize 89.3% of arable land. They are very fragmented, average area in 2010 was 8.6 hectares, in the Czech Republic – 51.2 hectares. Holding corporations in the Czech Republic had an average of 802 ha, in Poland – 373 ha. Tendencies of agriculture in both countries are similar to those observed in Europe. The number of farms is decreasing and their average size is increasing. Between 2005 and 2013 the number of farms in the Czech Republic decreased from 42,250 to 26,250 (38%), in Poland – from 2,476,470 to 1,429,010 (42%) (Eurostat, 2016).

2. Methods

To achieve intended purposes there were collected statistical data on the prices of agricultural land in Poland and the Czech Republic. It is worth noting that collected

comparable and reliable data was not easy mainly because of many sources of data (especially in the Czech Republic), the different currencies of these countries and different exchange rates of these currencies to the EUR. It is difficult to disagree with the opinion that on the European level, there is a lack of comparable data on prices of agricultural land and real estate in general (EEA, 2010). Shortage or lack of continuity of statistical data on the land market also stresses Rowiński (2014). Authors decided to use prices in private trade from official statistic offices and considered the problem of inflation.

For the purpose of testing ranked data Bargagliotti (2009) used Mann–Whitney test (also known as Wilcoxon–Mann–Whitney test) since this method is widely used in social sciences e.g. for comparing price development under different conditions (Aryal & Gabrielli, 2013). Mann–Whitney test is a nonparametric test of the null hypothesis that it is equally likely that a randomly selected value from one sample will be less than or greater than a randomly selected value from a second sample. The both samples have to be independent of each other and the values have to be ordinal. The hypothesis tests if variable X from sample A with n_1 observations and the variable Y from the sample B with n_2 observations got the same distribution i.e. the distributions of both populations are equal. All observations got the rank. Let R_A be the sum of the ranks from A sample and R_B the sum of ranks from the B sample. Test value is the lower one from:

$$U_A = n_1 \cdot n_2 + \frac{n_1 \cdot (n_1 + 1)}{2} - R_A \quad (1)$$

$$U_B = n_1 \cdot n_2 + \frac{n_1 \cdot (n_1 + 1)}{2} - R_B \quad (2)$$

$U(\alpha, n_1, n_2)$ is the critical value of Mann–Whitney test for selected α .

If $U > U(\alpha, n_1, n_2)$ then the hypothesis of distribution match cannot be rejected.

If $U < U(\alpha, n_1, n_2)$ then the hypothesis of distribution match can be rejected.

Hypothesis 1: the distribution of land areas trade per year is equal for years before and after the liberalization.

Hypothesis 2: the distribution of average agricultural land price per hectare is equal for years before and after the liberalization.

Linear regression described e.g. by Hebák (2005) or Bowerman and O’Connel (1997) is based on least square method. It solves the problem of finding a linear function that best fits a set of data points. Let us have a set of n pairs of observations $\{y_i, x_i\}$. The linear function represents the relation of value of the dependent variable Y to the values of an independent one X . This function describes in other words the relation between the data

set and the prediction. With one variable and a linear function, the prediction is given by the following equation:

$$\hat{Y} = a + bX \quad (3)$$

This equation involves two parameters which specify the intercept a and the slope b of the linear regression function. The least square method defines the estimate of these parameters as the values for which the sum of the squares between the dataset and the prediction (observed y_i and the predicted \hat{y}_i) is the least one possible. The minimization problem is given by the following equation:

$$\sum_i^n \varepsilon^2 = \sum_i^n (y_i - \hat{y}_i)^2 = \sum_i^n (y_i - a - bx_i)^2 \quad (4)$$

The estimation of the parameters is obtained by derivation of (4) with respect to a and b and setting them to zero.

3. Results

The first hypothesis considered the development of the year trade volumes on the market of agricultural land before the market full liberalization in 2011 and after. The volumes are monitored on the whole agricultural land fund (thereinafter as ALF) of the Czech Republic.

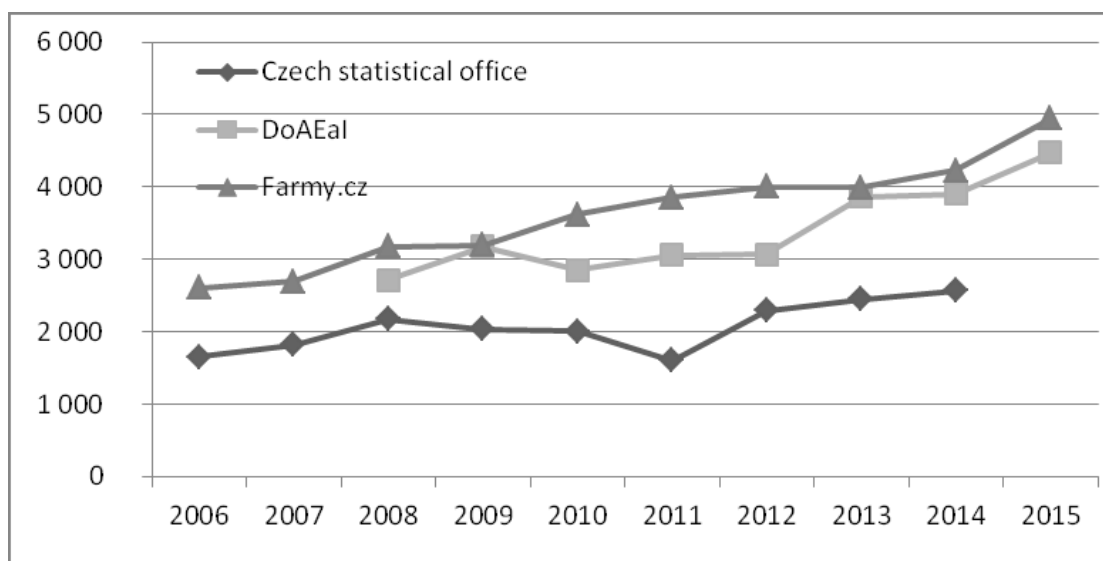
We failed to reject the hypothesis that the distribution of land areas trade per year is equal for years before and after the liberalization. In other words the difference in traded agricultural land volumes before and after the restrictions for buying the land by the foreigners is not statistically significant at the significance level 5%. The result is naturally the same result for $\alpha = 1\%$.

TAB. 1: Development in agricultural land volumes traded per year

Years before	2006	2007	2008	2009	2010
ALF share in %	3,42	3,71	2,94	2,56	2,66
Total traded area in kha	145,3	157,6	124,8	108,5	112,6
Year after	2011	2012	2013	2014	2015
ALF share in %	2,72	2,5	2,11	2,3	2,34
Total traded area in kha	115,4	104,9	84,8	97	98,3

Source: own elaboration based on (MoA, 2015; 2012; 2009)

The volumes of trade land actually dropped a bit after the liberalization regarding the ALF and nominally the decrease is clear even more.

FIG. 1: Average inflation adjusted agricultural land price per hectare development in Czech Republic in EUR

Source: own calculation based on (MoA, 2015; 2009; 2012), (Farmy.cz, 2016)

The second hypothesis considered the development of agricultural land the prices per hectare. Multiple sources are available in the Czech Republic:

- Czech Statistical Office: provides price is based on real-estate transfer tax return analysed for the whole tax payer population per year.
- Department of Agricultural Economics and Information (thereinafter as DoAEaI): provides market prices estimations based on the certified property appraisers for the purpose real estate property lien.
- Farmy.cz: monitors market prices that meet the criteria that both sides are well-informed (exclude all transfers that seem as undersell) and participate voluntarily in trade (exclude distraint) such as the auctions.

The prices from all sources were inflation adjusted with 2006 as a base year and converted by the average year exchange rate EUR/CZK (EUR is the base currency).

The Farmy.cz price series was tested since it is the longest one and most consistent one with the lowest fluctuations because no significant effect (such as tax-rate change, sharp speculative demand increase etc.) was not present in surveyed years. We failed to reject the hypothesis that distribution for average agricultural land price per hectare is equal for years before and after the liberalization. In other words the difference in trend before and after the 2001 is not statistically significant at the significance level 5% and at the level 1% as well.

The linear regression functions are calculated for the post-liberalization period only:

- Czech Statistical Office: $y = 304,17x + 1470$

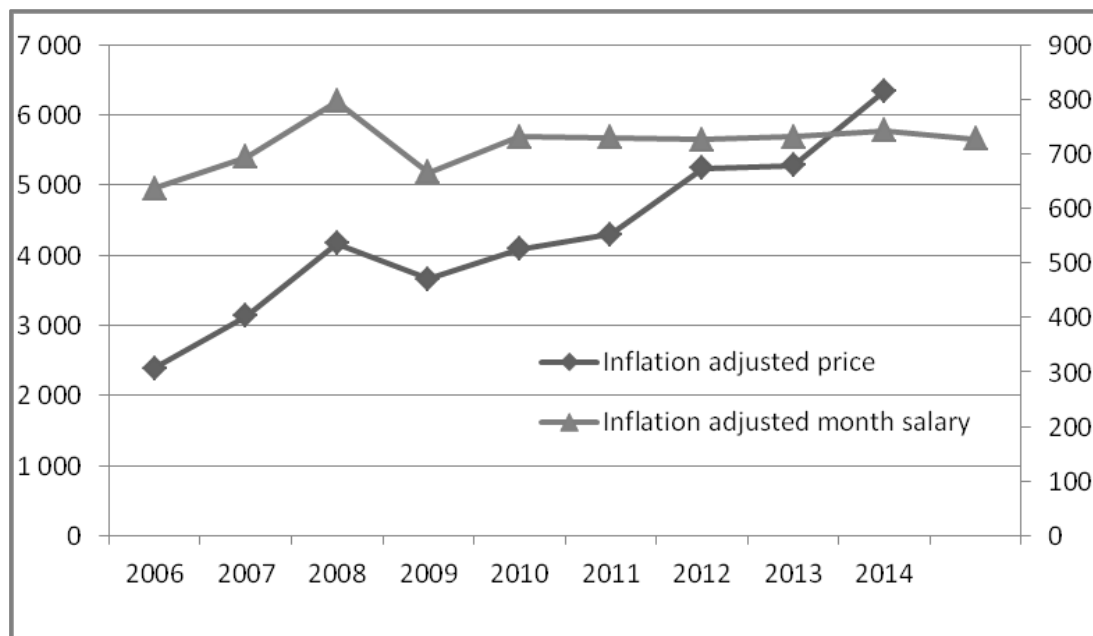
b) DoAEaI: $y = 367,07x + 2572,3$

c) Farmy.cz: $y = 241,15x + 3481,3$

The trend comparison for most consistent set of prices with the lowest fluctuations (Farmy.cz) shows almost no change in slope. However if the calculation is performed in local currency the price increase is more significant and the slope difference as well (the increase of the slope is 2,1 times for Farmy.cz prices).

The chart in Fig. 2 shows average agricultural land price development in Poland. The price development considers the same time period as we study for the Czech Republic. The inflation adjusted price and month salary have base set at 2006 and are converted by the average year exchange rate EUR/PLN (EUR is the base currency).

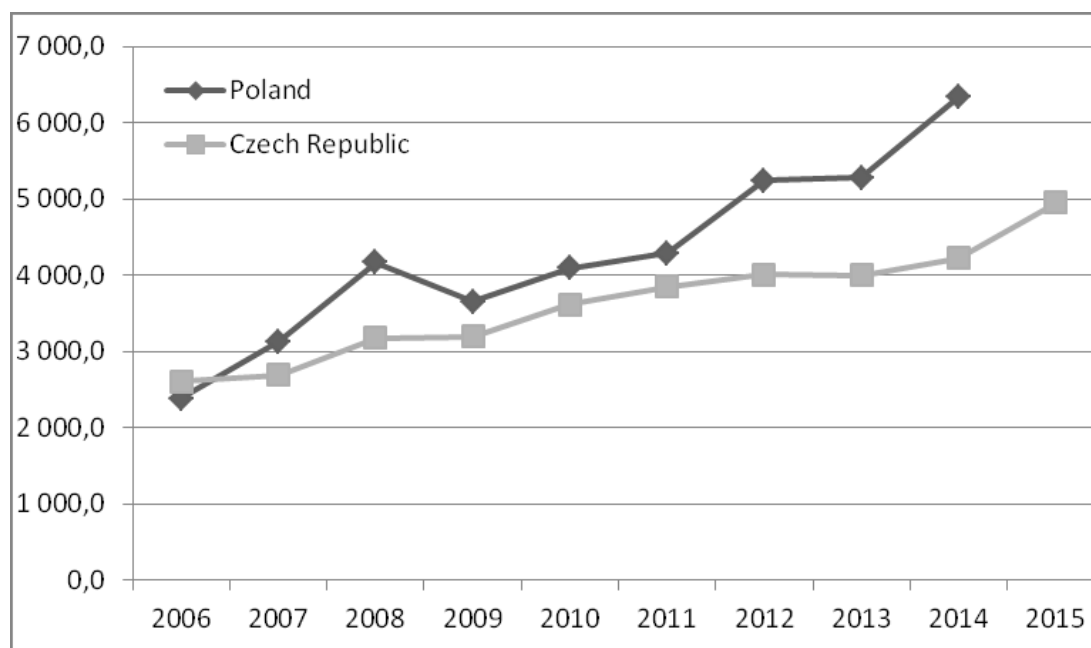
FIG. 2: Average agricultural land price per hectare and inflation adjusted month salary development in Poland in EUR



Source: own calculation based on (IERiGŻ-PIB, ANR & MriRW, 2005, 2010, 2015)

The price rise continues and moreover it is significantly steeper than the change in the average salary which stagnates. It has to be mentioned that the slope difference seems less significant due to a different y axis. The linear regression curve for average agricultural land price per hectare is $y = 417,46x + 2199,1$ for the whole observed period.

Combined results show that countries underwent the price rise which is by the slope much steeper in Poland than in the Czech Republic (represented by Farmy.cz data).

FIG. 3: Average inflation adjusted agricultural land price per hectare in Poland and Czech Republic in EUR

Source: own calculation based on (IERiGŻ-PIB, ANR & MriRW, 2005, 21010, 2015), (MoA, 2009; 2012; 2015), (Farmy.cz, 2016)

If we would apply the trend change before and after the liberalization in the Czech Republic then the slope would change only very little by 4 % to $434x$. However this would have to be justified by assumptions or evidence that both markets are comparable.

4. Discussion

Expected mass-purchase did not happen and it was not proved by the hypothesis as well in the Czech Republic. We failed to reject the hypothesis that the volume trade with and without the restrictions has the same distribution. However the volumes of traded agricultural land stagnate or manifest slow decrease, the prices are rising continuously. Nevertheless the testing showed no statistical significance regarding the development before the year 2011 and after. However it is worth mentioning that we were not comparing the rate of price change in the last 2 years to the previous period of more or less stable (and lower) increase. In other words the results of hypothesis were focused on the factor of liberalization in 2011 and not on the other or mainly later events. Secondly we have to keep in mind that hypothesis testing for small samples accepts much wider range of values without the rejection.

The chairman of the Agricultural Association of the Czech Republic Pýcha comments this development in the Czech Republic as: *“I worry that reason is going out the*

window and that there are the beginnings of an inflated bubble”. (E15, 2016) The price rise will continue because the demand from the non-agricultural investors is strong. This creates the situation when the purchase is not motivated by future profit from farming but because of expectations surrounding further price growth.

Starting from 2013, it is estimated that the CAP reform will have effect on land use. The changes in subsidy policy, the introduction of the Single Payment Scheme (SPS) will have significant impact on the distribution of income and, accordingly, on the structural reform of agriculture only if the movement of subsidy entitlements and land markets are free. The SPS will have the strongest impact on those areas where the land prices and land rents are the lowest, the land ownership is clearly separated from land use and the efficiency of production can be increased. (Swinen et al., 2008).

Conclusion

Expected post-liberalization mass-purchase was not proved in the Czech Republic. Moreover we found that the volume of traded agricultural land very slowly decreases although the decrease is not statistically significant – we failed to reject the first hypothesis.

However the agricultural land prices manifest significant rise in recent years even without the mass-purchase scenario in the Czech Republic. No grounds to reject the hypothesis that the distribution of prices before the liberalization and after is equal. The slopes of the price per hectare regression function are almost equal as well (only the price time series showing unexplained y/y fluctuations shows the difference). However the increase in the last two years was much higher than other macro-identities (GDP growth, average salary) with year-to-year change 12% and 16% in the Czech Republic in CZK (in EUR the increase is lower).

In Poland the price increase shows even greater slope regarding the period 2006-2014. The result is even more interesting in face of stagnating average salary if converted to EUR. The steeper trend in Poland manifest in comparison to the Czech Republic. If we would use the change of price trend before and after the liberalization in the Czech Republic, then the trend in Poland would have been increased by 4%. However due to strong assumption and the outcome of the second hypothesis we cannot recommend it as solid prediction and we claim only that the liberalization should not significantly increase the prices and that other factors that are already present on the market are stronger.

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THE INCOME SITUATION OF FARMS IN THE EUROPEAN UNION COUNTRIES

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Keywords:

income of farms – EU-15 – Central and Eastern Europe – FADN

JEL classification: Q140

Abstract:

The main goal of the article is to determine the income situation of farms in the EU countries. The FADN database was used as a source of data. The study was conducted on the EU-15 as well as Central and Eastern European countries and spanned the period of 2004-2013. The following elements were analysed: net value added, family farm income and work productivity measured with the former two categories per one full-time employee. The share of operating activity subsidies in the net added value was also calculated. The study showed that subsidies had key influence on the income situation of farms in the EU, especially in new member-states.

Introduction

Income, which is one of basic economic categories used for assessment of farms' activity, expresses the most important purpose of this activity (Nowak & Domańska, 2014, p. 65 after Zegar, 2008, p. 36). Appropriately high income enables effective use of factors of production, increases competitiveness of farms and influences their further development (Ryś-Jurek, 2009, p. 178). The income situation of farms depends both on internal factors and the environment. The main endogenic determinants are changes in the structure and volume of production, the production potential and rationality of its use and farmers' entrepreneurship. Agricultural policy is increasingly often listed as the most significant external factor (Runowski, 2014, p. 196). For agricultural producers in the European Union (EU) direct payments are a fundamental exogenic condition of the amount of income (Baer-Nawrocka, 2015, p. 184). Due to the fact that some Central and Eastern European countries have been functioning in the EU structures for many years, it is interesting to compare the income situation of farms in these countries with the situation of farms in the other EU member-states.

1. Methods

The aim of the article was to determine the income situation of farms in the EU countries between 2004 and 2013. Data provided by the Farm Accountancy Data Network (FADN) were used in order to achieve the research goal. The research encompassed the EU countries except Malta and Cyprus (due to the marginal significance of agriculture). The countries under study were divided into two groups: old and new EU member-states, i.e. the EU-15 and Central and Eastern European countries. The time span of the research was limited by the availability of data. The Central and Eastern European countries did not participate in the FADN system before 2004. The latest data available refer to 2013. However, this time horizon is justified by the fact that in 2004 there was the greatest enlargement in the EU history and in 2013 another financial perspective finished. The research subject was farms in the aforementioned groups of countries. Net value added and family farm income were analysed. These variables were also calculated per one full-time farm employee. Basic measures of position and dispersion were calculated for these traits, i.e. the median and coefficient of variation (based on the median and quartile deviation), according to the formulas published by Wysocki & Lira (2005, pp. 45, 51). Apart from that, the share of subsidies in net value added was calculated. All the analyses were made for the two aforementioned groups of countries.

2. Results

As results from Table 1, in 2013 in half of the EU-15 countries the net value added amounted to at least 52,600 euros and it exceeded the value noted in 2004 by more than 60%. The difference between the years under analysis was not so big as far as the family farm income is concerned, as its median increased only by 8% and amounted to 25,400 euros in 2013. It may have been caused by a relatively greater increase in the cost of external factors of production and/or lesser amount of investment subsidies. As far as the Central and Eastern European countries are concerned (Table 2), during the period under study the median of the net value added increased by nearly 20%, whereas the median of the family farm income increased by more than 45%. It may have been caused by a considerable increase in the amount of farm investment subsidies in this group of countries.

In 2013 in more than a half of farms in the Central and Eastern European countries the net value added amounted to 17,000 euros or less. It stood in big disproportion to the EU-15, as it amounted to about 32% of the corresponding value in these countries. What is more, this disproportion increased because in 2004 the median of the net value added in farms in the Central and Eastern European countries amounted to 43% of the corresponding value in farms in the EU-15. Thus, we can conclude that there was a relatively greater increase in the productivity of farms in the old EU member-states than in the new ones. However, farms in the new EU member-states seem to have been

relatively efficient in acquiring investment subsidies, because the distance in the family farm income between these countries and the EU-15 decreased. In 2004 the median of the income in the Central and Eastern European countries amounted only to 29% of the corresponding value in farms in the EU-15, whereas in 2013 it increased by nearly 10%. We can conclude that there was a relatively greater use of investment subsidies by farms in the new EU member-states.

TAB. 1: The income situation of farms in the EU-15 between 2004 and 2013

Year	Net value added				Family farm income			
	per farm		per AWU		per farm		per FWU	
	a	b	a	b	a	b	a	b
2004	32.01	57.43	21.77	26.20	23.39	32.25	19.04	20.80
2005	31.63	61.13	22.19	27.81	20.90	33.94	19.14	18.01
2006	29.98	68.48	21.25	30.43	24.37	33.05	22.24	20.75
2007	50.10	47.72	33.78	24.35	28.60	38.36	24.04	21.98
2008	51.98	34.88	29.25	24.58	26.16	25.81	21.74	14.25
2009	29.41	65.68	22.84	23.96	20.23	22.14	15.68	21.25
2010	43.49	58.88	27.80	29.39	23.32	49.55	22.07	27.71
2011	49.07	51.77	34.64	23.32	30.04	36.73	23.28	24.09
2012	53.57	56.94	35.27	25.05	27.83	50.93	23.44	34.10
2013	52.62	53.93	30.72	29.72	25.40	56.89	21.93	37.42

a – median (thousand euros), b – positional coefficient of variation (%)

Source: the author's compilation based on http://ec.europa.eu/agriculture/rca/database/database_en.cfm

However, the comparison of income results calculated only per farm does not give a full view of the income situation of the entities under investigation. The results depend not only on the production efficiency and intensity or other factors, but naturally they are also affected by the farm size. Therefore, it is equally important to calculate the income generated by farm per full-time employee as it enables conclusion about work productivity. Therefore, the net value added per AWU (Annual Work Unit) and the family farm income per FWU (Family Work Unit) were also analysed.

When analysing Table 1 it is necessary to note that farms in the old EU member-states were characterised by an increase in work productivity both in terms of total work productivity and own work productivity. During the period under study there was a relatively greater increase in the net value added per AWU. In 2013 its median amounted to about 30,700 euros. At the same time in more than a half of entities in the EU-15 the income per full-time employee did not exceed 22,000 euros. It seems interesting to compare total work productivity in the two groups of countries under study. The difference between the groups decreased, so we can conclude that there was

a relatively greater increase in this ratio in the Central and Eastern European countries than in the EU-15. During the period under investigation the net value added per AWU nearly doubled in the new EU member-states and in 2013 it amounted to more than 8,000 euros (Table 2). This situation may have been caused not only by better income but above all, by reduced labour resources in these entities. In view of the common opinion about overemployment in agriculture in the Central and Eastern European countries, we can say there was some improvement in this respect.

TAB. 2: The income situation of farms in the Central and Eastern European countries between 2004 and 2013

Year	Net value added				Family farm income			
	per farm		per AWU		per farm		per FWU	
	a	b	a	b	a	b	a	b
2004	13.97	98.18	4.24	44.02	6.76	33.49	5.69	31.86
2005	14.72	98.86	5.07	43.29	6.52	44.53	5.80	29.67
2006	15.33	28.85	5.72	42.53	7.72	36.96	5.72	27.67
2007	18.57	62.35	8.04	46.07	11.50	37.13	9.15	41.95
2008	17.17	54.66	7.89	36.55	10.17	53.63	7.70	50.49
2009	11.99	48.26	5.42	37.64	7.06	36.78	4.73	58.52
2010	15.55	50.99	7.08	48.04	10.23	36.90	6.79	57.08
2011	16.23	66.67	8.13	52.44	14.01	41.26	9.44	68.29
2012	19.07	60.44	9.94	48.66	11.85	50.00	9.73	57.26
2013	16.73	62.51	8.18	45.07	9.84	48.18	6.24	56.72

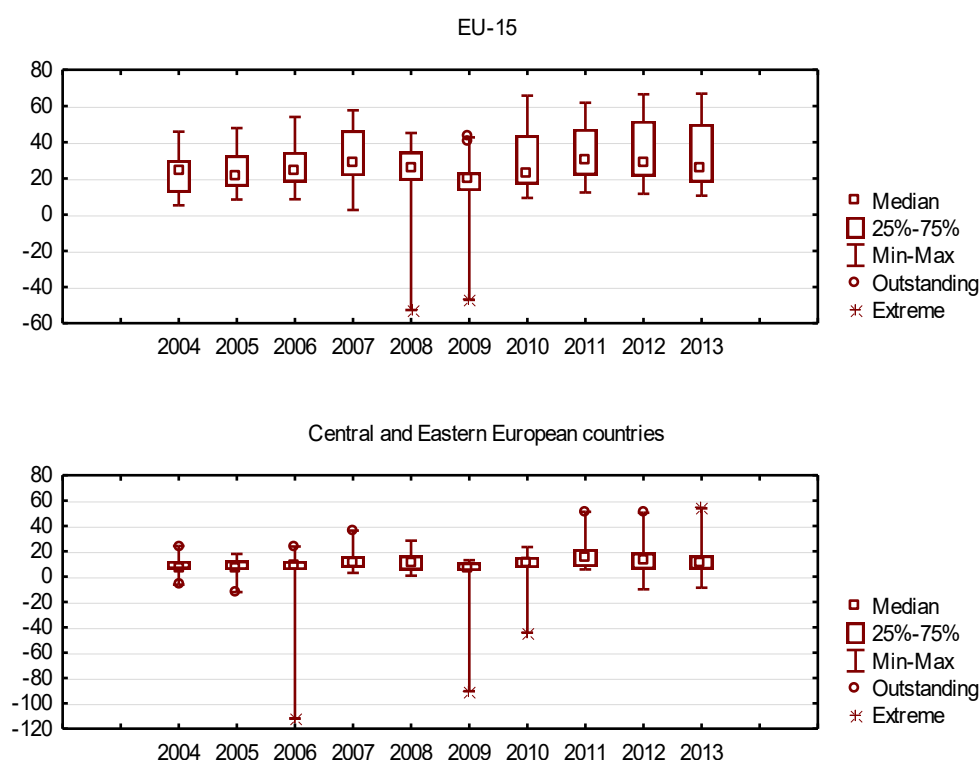
a – median (thousand euros), b – positional coefficient of variation (%)

Source: the author's compilation based on http://ec.europa.eu/agriculture/rica/database/database_en.cfm

It is necessary to stress the fact that the aforementioned tendencies occurred in farms in the groups of countries analysed as a whole. However, there are considerable divergences between individual countries in these groups. The analysis of the values of the coefficient of variation in Tables 1 and 2 and the range of the family farm income in Figure 1 reveals that there was usually much greater dispersion in the results of entities in the Central and Eastern European countries than in the EU-15. There were more outstanding or even extreme cases. This situation can be explained by the length of membership of these countries in the EU structures. It seems natural that there was lesser diversification in the results among the countries with longer history of functioning within the Common Agricultural Policy (CAP). However, it is noteworthy that there might be slow processes of reduced dispersion of some results among the Central and Eastern European countries as there was a noticeable decrease in the value of the coefficient of variation of the net value added. It may have been caused by a gradual decrease in the distance between the Central and Eastern European countries

in the efficiency of production as well as by the influence of operating activity subsidies. However, as far as the family farm income is concerned, we could observe the opposite phenomenon, i.e. increased dispersion. We can conclude that there are considerable differences between the new EU member-states in the amount of investment subsidies.

FIG. 1: The family farm income in the EU-15 and in the Central and Eastern European countries between 2004 and 2013



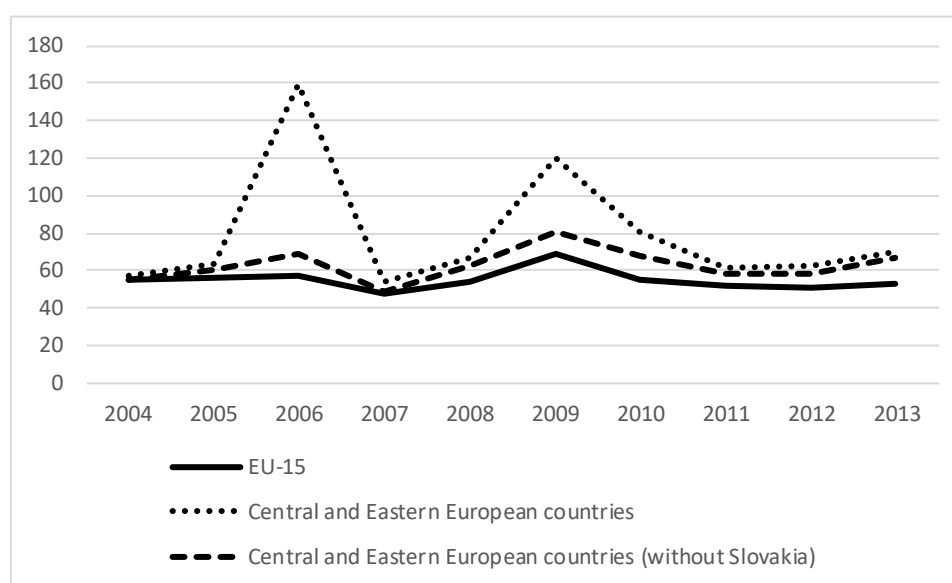
Source: the author's compilation based on http://ec.europa.eu/agriculture/rica/database/database_en.cfm

The article concentrates on general tendencies in the income situation of farms in the old and new EU member-states between 2004 and 2013. It does not describe detailed changes in the income in individual years. However, we cannot fail to mention the fact that in both groups of countries there were much worse results in 2009 and 2010. It was most likely the effect of the economic crisis.

Apart from many other factors, operating activity subsidies very significantly affect the income situation of farms in the EU. As results from Fig. 2, during the period under study in the EU-15 the share of operating activity subsidies in the net value added ranged from 48% to 69%. The average for farms in the new EU member-states was considerably distorted by the results of Slovak entities. Therefore, the average was also calculated without them. Regardless of the calculation method, subsidies had much

greater influence on the income results of farms in the Central and Eastern European countries than in the EU-15. Due to the negative values of the family farm income in some countries the share of subsidies in this category was not presented. However, the analyses conducted in this study show that in many cases subsidies were decisive to positive results, because their values were greater than the income generated by farms.

FIG. 2: The share of operating activity subsidies in the net value added in the Central and Eastern European countries and in the EU-15 between 2004 and 2013 (%)



Source: the author's compilation based on http://ec.europa.eu/agriculture/rca/database/database_en.cfm

Conclusion

As results from the study, other factors have key influence on the income situation of farms in the old and new EU member-states. As far as farms in the EU-15 are concerned, production efficiency is more significant due to the high concentration of investments resulting from the fact that these countries have longer history of functioning in the EU structures and using CAP instruments. On the other hand, as far as farms in the Central and Eastern European countries are concerned, the possibility to acquire investment subsidies and to use them rationally seems to be more important. In both groups of countries operating activity subsidies are an important factor influencing the income of farms. In view of these facts, it seems legitimate to conclude that CAP instruments have fundamental significance and are a major exogenic determinant of the income situation of agricultural producers in the EU.

Acknowledgement:

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THE PROBLEM OF INDEBTEDNESS OF POLISH COMMUNES

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Keywords:

ratio analysis – communes – financial condition – local finance – indebtedness

JEL classification: H72, H74, H12

Abstract:

The main goal of the article is to assess the issue of indebtedness of communes in Poland. The period of 2007-2014 was analysed. The research was based on the database of budget reports of local government units prepared by the Ministry of Finance (information on the debt in the public finance sector and the database of debt ratios) and on the information provided by the report of the Central Statistical Office 'The Management of Finance in Local Government Units in 2014'. The research involved selected methods of descriptive statistics and ratio analysis concerning measures related with the issue under study.

Introduction and literature overview

According to the Polish Constitution, the commune is a basic unit of territorial government (Article 164). It is responsible for catering to most residents' needs in the commune area (Article 7 of the Commune Government Act). In order to achieve this goal commune authorities use not only their own funds and funds transferred from the state budget in the form of subsidies and grants but also repayable financial instruments, mostly credits and bonds (Article 3 of the Local Government Revenue Act and Article 5 of the Public Finance Act of 2009). It is desirable for communes to have a budget surplus but if this situation persists for a long time, it might indicate that local authorities do not manage finances competently. On the other hand, in the long run budget deficits lead to debt. This phenomenon may be caused by systemic, political, socioeconomic or fortuitous circumstances (Motek, 2006).

For many years authors of reference publications have argued about the legitimacy of using repayable funds to finance investments and about their level of safety (e.g. Owsiak, 1993; Poniatowicz, 2005; Jajko, 2008; Poniatowicz, 2010; Stępień, 2011). On the one hand, there are negative premises, such as the cost of acquiring these funds, which might lead to a debt trap. In order to prevent this situation debt limits for local government units have been established (Articles 169 and 170 of the Public Finance Act of 2005; Article 243 of the Public Finance Act of 2009). On the other hand, the effects

of investments deserve attention. They stimulate the development of communes through the multiplier effect. As can be seen, the indebtedness of communes involves both opportunities and threats.

1. Methods and aims

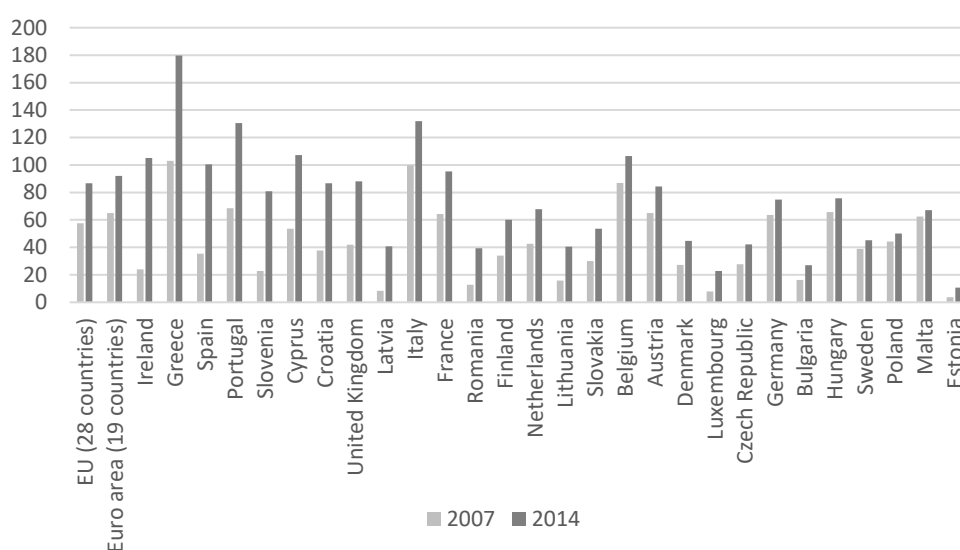
The main goal of the article is to assess the issue of indebtedness of communes in Poland. At the beginning the significance of indebtedness of communes is compared with the state public debt. Then, the article discusses changes in the income and expenses of communes (including capital expenditure, which has influence on debt increase) as well as the amount and structure of income, expenditure and liabilities according to debt titles. The last stage of the research involved assessment of the financial condition of communes in terms of indebtedness by means of ratios is recommended by the Ministry of Finance. The study focused not only on statutory ratios concerning indebtedness but also on those enabling analysis of the influence of EU project implementation on the scale of indebtedness. The period of 2007-2014 was analysed. The research was based on the database of budget reports of local government units prepared by the Ministry of Finance (information on the debt in the public finance sector and the database of debt ratios) and on the information provided by the report of the Central Statistical Office 'The Management of Finance in Local Government Units in 2014'. The research involved selected methods of descriptive statistics and ratio analysis concerning measures related with the issue under study.

2. Results and discussion

The financial and economic crisis resulted in serious challenges being posed to many European governments. The main concerns were linked to the ability of national administrations to be able to service their debt repayments, take the necessary action to ensure that their public spending was brought under control, while at the same time trying to promote economic growth (http://ec.europa.eu/eurostat/statistics-explained/index.php/Government_finance_statistics). The disciplines of the Stability and Growth Pact (SGP) are intended to keep economic developments in the EU. According to SGP, the debt-to-GDP ratio should not be more than (or should be falling towards) 60%. In comparison with 2007 in 2014 the debt in European Union countries increased. In the EU-28 the government debt-to-GDP ratio decreased from 57.5% at the end of 2007 to 86.7% at the end of 2014, and in the EA-19 from 65.0% to 92.0% (see Figure 1). A total of 19 EU Member States reported a debt ratio above 60% of GDP in 2007 when in 2014 this problem was noticed in 14 countries. At the end of 2007, the highest debt-to-GDP ratios were registered by Greece (103.1%), Italy (99.8%), and Belgium (87.0%), while the lowest ratios of government debt-to-GDP were recorded in Estonia (3.7%), Luxembourg (7.8%) and Latvia (8.4%). At the end of 2014, the highest debt-to-GDP ratios were registered by Greece (179.7%), Italy (131.9%), Portugal (130.6%), while the lowest ratios of government debt-to-GDP were recorded in Estonia

(10.7%), Luxembourg (22.7%) and Bulgaria (27.0%). In 2014, government debt-to-GDP ratios increased for every EU Member States when compared with 2007. The lowest increases of debt-to-GDP ratios from 2007 to 2014 were observed in Sweden (6.2 percentage points), Poland (6.0 percentage points) and Malta (4.6 percentage points) and the highest were observed in Spain (64.9 percentage points), Greece (76.6 percentage points) and Ireland (81.3 percentage points). Summing up in the examined time in the EU countries debt systematically increased which resulted in a decrease in the diversity of the analyzed phenomenon (in 2007 coefficient of variation was 59%, in 2014 was 48%).

FIG. 1: General government gross debt as % of GDP in EU in years 2007 and 2014



Source: own work on the basis of <http://ec.europa.eu/eurostat>

In comparison with 2007 in 2014 the state public debt in Poland increased by more than 58%, from 119.7 billion EUR to 190.1 billion EUR. This situation was mostly caused by the increase between 2008 and 2010 (about 12% a year). Of the three sectors included in the state public debt, the debt generated by the government is the most important. During the period under study it ranged from 93.1% in 2007 to 88.5% in 2014. Its decreasing share in the debt structure was caused by the higher growth rate of the debt in the local government sector. In 2007 the share of the sector in the state public debt amounted to 4.6% (5.5 billion EUR), whereas in 2014 it amounted to 8.4% (16 billion EUR). When we compare the dynamics of growth in these sectors, we can see that the debt of local governments increased more, i.e. nearly twice. During that period the debt of the government increased by half, whereas the debt of social insurances decreased by 96% as a result of transfer of appropriations from the Open Pension Fund to the Social Insurance Institution.

The debt of the local governments was strongly influenced by the debt generated by communes. Between 2007 and 2014 it increased by 3.7 billion EUR (more than 1.6 times). The debt of communes had the greatest share in the debt of the local government sector. It fluctuated from 40.6% in 2007 to 36.9% in 2014. However, this decrease was accompanied by an increase in the overall debt structure from 1.9% to 3.1% (Table 1).

TAB. 1: The structure of public debt by sector in years 2007-2014

Sector	Years							
	2007	2008	2009	2010	2011	2012	2013	2014
	Bln EUR							
Government	111.4	126.3	138.9	154.3	166.8	171.7	181.2	168.2
Local government	5.5	6.3	8.8	11.9	14.3	15.0	15.2	16.0
of which communes	2.2	2.4	3.3	4.9	5.8	5.8	5.7	5.9
Social security	0.6	0.6	1.6	0.4	0.5	0.5	0.1	0.0
Total	119.7	135.6	152.5	171.5	187.5	193.1	202.3	190.1
	%							
Government	93.1	93.1	91.1	89.9	89.0	88.9	89.6	88.5
Local government	4.6	4.6	5.7	6.9	7.6	7.8	7.5	8.4
of which communes								
as % local government	40.6	38.5	37.2	41.0	40.4	38.8	37.7	36.9
as % total	1.9	1.8	2.1	2.8	3.1	3.0	2.8	3.1
Social security	0.5	0.5	1.0	0.3	0.3	0.3	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: own work on the basis of Ministerstwo Finansów (2016). Zadłużenie sektora finansów publicznych I kw. 2016. Warszawa. Retrieved from <http://www.mf.gov.pl> and GUS (2015). Gospodarka finansowa jednostek samorządu terytorialnego. Warszawa. Retrieved from <http://www.gus.gov.pl>.

According to Article 212 of the Public Finance Act of 2009, it is necessary to indicate the source from which the debt of the commune can be covered. It could be a surplus from the previous year, but communes usually use repayable funds. Between 2007 and 2014 the total income increased by 48%, whereas total expenditures increased by 52%. It was caused by intensification of investments. The increasing investment needs were financed both from communes' own sources and from external sources. Although the former sources increased by 57%, the debt increased by 165%. From 2007 to 2008 and from 2012 to 2013 there was a larger number of communes with a surplus in the budget. However, from 2009 to 2011 and in 2014 the situation was opposite. In 2010 there was deficit in as much as 90% of the communes. Deficits were covered from the income, which reached the highest amounts between 2009 and 2011, ranging from 2.7 billion zlotys to 3.6 billion zlotys. It is necessary to emphasise the fact that credits and loans were the most important sources of income during the period under study. There was a noticeable increase in the value of securities issued, although it still remained at a low level. In consequence, credits and loans were the most important repayable source in the structure of total liabilities and their share ranged from 86% in 2007 to 99% in 2014. In general there was a low share (about 1%) of payables, which indicated untimely payment. Although the share of payables was minimal, the occurrence of the problem of indebtedness in communes was proved by the number of communes exceeding the

statutory debt ratio. While in the early years of the period under study there were about a dozen or so communes in debt, in 2011 there were as many as 125. In the following years the number was much lower and ranged from 77 in 2013 to 88 in 2014 (Table 2).

TAB. 2: The result of total budgets, financial part and liability of all communes in the years 2007-2014 (mln EUR)

Specification	Years							
	2007	2008	2009	2010	2011	2012	2013	2014
Income	12 700.3	13 884.4	14 455.7	16 110.8	16 895.1	17 469.2	17 833.7	18 837.5
of which: Own revenue	5 912.1	6 838.8	6 688.9	7 188.5	7 684.4	8 137.3	8 588.0	9 293.1
Expenditure	12 493.3	14 012.5	15 596.6	17 766.2	17 754.2	17 487.9	17 699.8	18 953.6
Of which: Investments	2 308.8	2 796.8	3 515.1	4 387.0	3 993.1	3 087.5	2 865.2	3 373.9
Budget results	207.0	-128.1	-1 140.8	-1 655.4	-859.2	-18.7	133.9	-116.1
Number of communes with surpluses	1 529	1 316	608	261	720	1 340	1 436	1 163
Number of communes with deficits	884	1 097	1 805	2 153	1 694	1 074	977	1 250
Revenue	1 499.1	1 934.6	2 687.3	3 570.8	3 111.7	2 287.6	2 359.0	2 151.3
Outgoing	768.5	805.3	731.0	1 096.7	1 420.7	1 401.9	1 536.5	976.5
Liability by types of debt	2 218.8	2 410.9	3 255.3	4 885.9	5 790.5	5 830.2	5 742.0	5 890.0
securities	287.8	259.8	348.0	115.6	57.0	50.2	42.7	39.1
credits and loans	1 903.6	2 125.6	2 879.3	4 737.0	5 695.4	5 746.2	5 662.5	5 816.0
deposits in banks	0.0	-	-	-	-	-	-	-
exigible commitments	27.3	25.5	28.1	33.2	38.1	33.8	36.8	34.9
of which: budgetary units' for supply of goods and services	19.5	17.2	21.5	25.4	28.2	22.9	20.9	19.7
Number of communes which Share of total liabilities in total income > 60%	5	3	14	68	125	82	77	88

Source: own work on the basis of GUS (2015). Gospodarka finansowa jednostek samorządu terytorialnego. Warszawa. Retrieved from <http://www.gus.gov.pl>.

The problem of indebtedness of Polish communes was investigated by means of ratio analysis and measures recommended by the Ministry of Finance. Taking all ratios under analysis into consideration, they achieved the highest values in 2011 and 2012. In 2011 the median of the statutory liabilities ratio was as high as 53.2%. This value reached a warning level, because according to Article 170 of the Public Finance Act of 2005 the limit of total liabilities in total income could not exceed 60% (the threshold was applicable until the end of 2013). If the growth rate of liabilities is higher than the growth rate of income, there may be increasing problems of excessive debt. Between 2013 and 2014 the value of the ratio under analysis slightly exceeded half of the statutory limit and in general it was relatively low. However, the increasing number of communes exceeding the threshold of 60% indicated occurrence of the problem in question.

As far as the next ratio under analysis is concerned, the value of debt does not include the part of liabilities related with the implementation of EU projects. Due to this fact,

the comparison of this ratio with the one discussed above enables assessment of the influence of projects implemented and co-financed by the EU on the scale of beneficiaries' indebtedness. Apart from 2013 both ratios had different values. In 2011 when the overall debt was the highest, the share of liabilities, including liabilities related with EU projects, in total income was higher by as much as 12.8%. It resulted from the implementation of many capital-intensive projects within the EU financial perspective 2007-2013. In the other years under study the implementation of projects financed by the EU also significantly influenced the debt of communes. However, the influence was much lesser. Unfortunately, the Ministry of Finance did not provide the values of some ratios in 2014. Therefore, it is impossible to check the differences in the final period of the EU perspective 2007-2013.

TAB. 3: The median of debt ratios of all communes in the years 2007-2014 (%)

Ratio	Years							
	2007	2008	2009	2010	2011	2012	2013	2014
Share of total liabilities in total income	20.8	21.4	17.5	28.2	53.2	43.0	35.9	34.0
Share of liabilities without liabilities related with EU projects in total income	15.5	13.7	16.2	23.4	40.4	39.4	35.9	-
Share of debt service expenditures in total income	9.3	9.0	3.9	4.7	12.6	13.7	7.3	3.7
Share of debt service expenditures without capital instalments on EU projects in total income	2.2	7.1	3.7	4.2	10.3	6.1	7.0	-
Share of debt service expenditures in own income	20.5	17.1	10.6	13.0	27.3	27.4	16.1	6.2
Share of current expenditures and debt service costs in current income	101.4	97.6	94.4	99.3	115.2	110.8	99.1	-

Source: own work on the basis of Ministerstwo Finansów (2015). Wskaźniki do oceny sytuacji finansowej jednostki samorządu terytorialnego w latach 2012-2014. Warszawa. Retrieved from <http://www.mf.gov.pl>.

The increasing value of a liability translates into increasing costs of its service. According to Article 169 of the Public Finance Act, the ratio between total income and expenditures on debt service should not exceed 15%. In 2011 and 2012 the ratio was closest to the statutory limit and its median value reached 13-14%. This means that as much as half of the communes may have had a debt service problem at the time. In 2013 and 2014 the ratio decreased to 3.7%. This means that it was possible to increase liabilities and service them in the following years. By comparing this ratio with another one, which does not include capital instalments related with EU projects, it is possible to assess how the implementation of projects co-financed by the EU increases debt service costs. During the whole period under study there were differences in the values of both ratios. The biggest differences were observed in 2007 and 2012. In 2007 the debt resulting from the implementation of EU projects caused its service costs to increase by as much as 4 times, i.e. by 7.1%. In 2012 this value increased more than 2 times, i.e. by 7.6%. Such big differences were observed at the end of consecutive EU financial perspectives, i.e. at the most intensive period of acquiring EU funds.

According to the ratio between own income and expenditures on debt service, the greater the ratio value is, the higher the risk of insolvency of a local government unit is (Wskaźniki do oceny...2015). Similarly to the other ratios, the least favourable results were observed in 2011 and 2012. The value of 27% indicated that nearly one third of funds acquired as own income was spent on debt service (Table 3).

As far as the last measure is concerned, i.e. the share of current expenditures and debt service costs in current income, its value usually amounted to 100%. If it was greater, it indicated that the amount of current income was insufficient to cover current expenditures increased by the amount of debt service costs. This situation occurred in 2007, 2011 and 2012. In the other years during the period under analysis the amount of current income was sufficient to cover both current expenditures and debt service costs. It indicated a favourable situation.

Conclusion

To sum up, we can say that the debt generated by local governments, including communes, is increasing. One of major reasons for that is the implementation of EU projects. This fact is proved by the ratios of total debt and its service, which were calculated allowing for the debt generated by the implementation of EU projects and without them. There were particularly big differences between the ratios when they reached the highest values, i.e. during the last period of implementation of EU projects within consecutive EU perspectives. This situation occurred despite the increase in total income, including own income, which was insufficient to cover investment needs. In consequence, liabilities were increasingly used. As far as repayable funds are concerned, due to the easier procedure of their acquisition and lower service costs local governments mostly used credits and loans rather than bonds. Intensified use of repayable funds caused some communes to fall into a debt trap. Therefore, before making an investment decision and acquiring repayable funds it is particularly important to analyse the actual financial condition and potential in order to settle liabilities smoothly.

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THE INCOME OF RURAL HOUSEHOLDS IN POLAND BETWEEN 2004 AND 2015

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Keywords:

financial income situation – real income – household – rural area – subjective evaluation of material situation

JEL classification: D10, D14, D12

Abstract:

The article contains the analysis of the income situation of households in rural areas compared to urban households in Poland in 2004-2015. The basis of information were aggregated data from studies conducted by the Central Statistical Office and published in publications: Living conditions of the population in 2004-2005 and Household budget survey in 2006 ..., 2015.

Based on the survey, it was found that in terms of European integration, the income situation of households living in rural areas has improved significantly. As a result, income disparities between rural households and urban households have decreased. It should be emphasized that in the years 2004-2015 the growth rate of farmers' household income was significantly higher, compared to the entirety of households in rural and urban areas.

Introduction

Diversity of urban and rural households justifies different ways to raise revenues and other means of distribution. In the household budgets, these differences result from a clear merging of production and consumption character of rural households (Gutkowska, Piekut 2014, p.160-161). A special group of households living in rural areas are the farmers' households which due to a number of risk factors of income are characterized by a lower level of economic security. Particularly important here are distinctive and different attributes affecting agricultural production and its profitability, including lack of systematic influence of conducted agricultural activity, seasonality of agricultural production and sensitivity to atmospheric agents (Wołoszyn 2013, p. 315, Wołoszyn, Wysocki 2014, p. 536). Farmers' households because of their affection to the land (the primary source of their existence and place of residence) are characterized by the low job mobility. It's harder for them to obtain alternative sources of income necessary to improve their financial situation.

Polish accession to the European Union was an important incentive to reduce inequalities in socio-economic development, including the improvement of the income situation of households in urban and rural relations. It was caused by the funds coming from the implementation of various EU programs, including Common Agricultural Policy and the Cohesion Policy. Undoubtedly, they influenced the improvement of the financial situation of households, particularly those living in rural areas and narrowed the gap between them and urban households. There is still a problem of low income of many households in rural areas, which creates a barrier to implement the concept of sustainable development. The aim of the article was to assess the level of dynamics and structure of the income of households living in rural areas, compared to urban households in Poland in 2004-2015.

1. Materials and research methods

The basis of information were aggregated data from studies conducted by the Central Statistical Office (CSO) and published in publications: *Living conditions of the population in 2004-2005* and *Household budget survey in 2006 ...*, 2015.

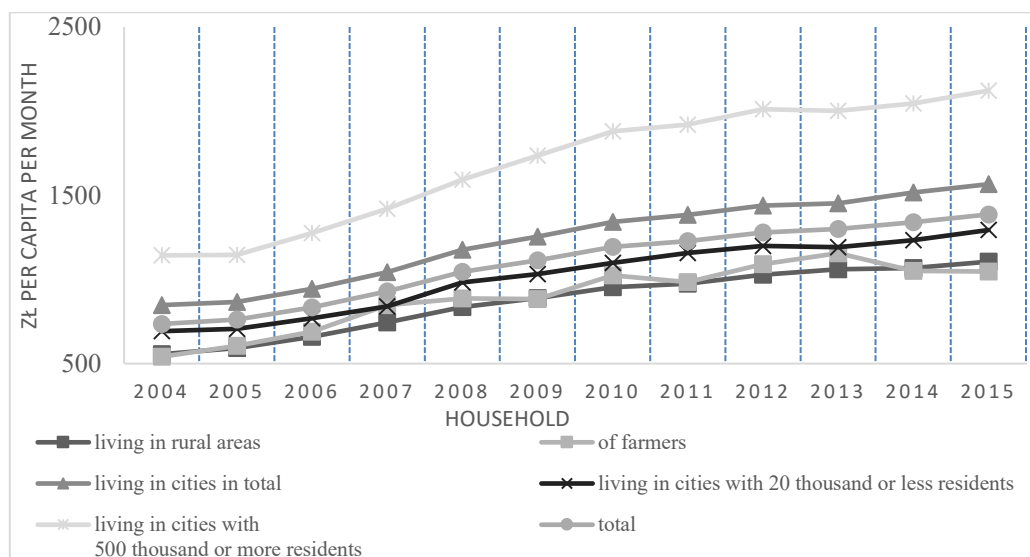
The survey of household budgets is conducted using a method based on a representative sample, which makes it possible to generalize the results on all private households in Poland. These studies are the main source of information about financial situation and living conditions of Polish households. The study used methods of descriptive statistics - measurement dynamics: individual single-base indexes and average periodic rate of change based on all terms. The method of calculating the average periodic rate can be found in the article: Wysocki, Lira 2005, p. 137.

2. Results of research

Due to the important role of income, as a mean to meet the needs and the stimulus of economic activity, it constitutes a fundamental issue of interest to society. Income situation is best characterized by the category of disposable income, presented in the study of household budgets by the Central Statistical Office. The income situation of households varies widely depending on where they live. Throughout the analyzed period, both nominal and real disposable income per person in the rural household was lower than the income per capita in urban household. Rural households in 2004 reached 75.6% of the average nominal income of all households, while in 2015 more than 82% (Fig. 1, Fig. 2, Tab. 1). Revenues increased with higher class of locality, because most of the best-paid jobs are located in the largest cities. These differences resulted not only from the income, generated by these households, but they were also associated with a greater number of members of households living in the village than a city, which largely influenced the level of income per capita. In 2015, the average household in Poland earned a real income amounting to 1,095.87 zł per capita per month. It was by 360.47 zł per capita per month more than in 2004. In 2015, compared to 2004, in Polish

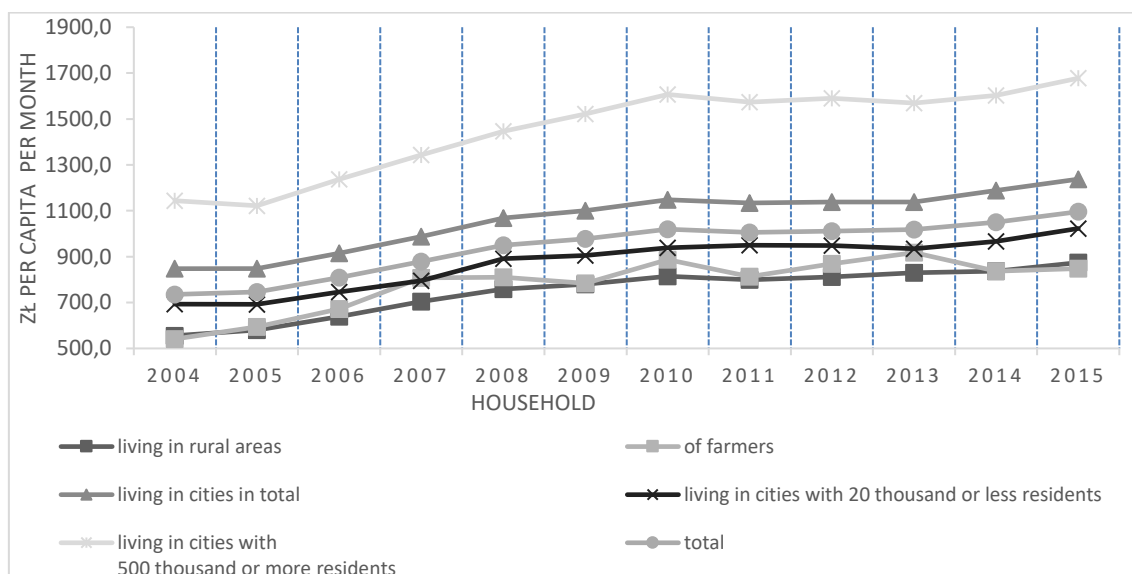
households the average income in nominal terms has increased by 88.49%, while the real growth was 46.93%. In the period 2005-2015, nominal income in all analyzed groups of households, classified by size of place of residence, increased compared to the previous year. The exception was households of farmers, who observed a 4% decline in disposable income in 2011 compared to 2010. In the case of real income also an upward trend was noted in all analyzed groups of households with the exception of 2011, when real income compared to 2010 fell in all analyzed groups of households and in 2014, when the real incomes of farmers and residents of the smallest cities have fallen in relation to 2013. In 2011, the highest decline in real incomes was observed in the group of farmers - by 8.4%. Such a high decline in disposable income, both in nominal and real terms in the group of farmers households, can be assumed that it was caused by approximately 40% decrease in payments related to the use of the farm, with real growth in income from agricultural production by only 1.7%, while the real increase in expenditure on this production was 7.9% (Household budgets in 2011, p. 39). The decline in real income of farmers households in 2014, compared to 2013, was due to the decrease of the income from a private farms in agriculture by 14.4%, which contributed more than 10% real decline in revenues from agricultural production and the real decrease in subsidies associated with the use of a farm of 18.8%. On the other hand, it recorded a real decrease in current spending on agricultural production by 8.6% (Household budgets in 2014, p. 44).

FIG. 1: Average monthly nominal available income per capita in households by class of locality between 2005- 2015



a) farmers' households were defined as a household living mainly from work on private farms in agriculture.

Source: Own calculations based on data from CSO of Poland - Living conditions of the Polish population in 2004-2005 (2005-2007), Household budgets in 2004 ... 2015 years (2005 ... 2016).

FIG. 2: Average monthly real available income per capita in households by class of locality between 2005- 2015 (at constant prices of 2004)

Source: Own calculations based on the CSO data - Living conditions of the Polish population in 2004-2005 [2007], Household budgets in 2004 ... 2015 years [2007 ... 2016], prices in the national economy of the years 2005, ... 2015 [2006 ... 2016].

TAB. 1: Indicator of average monthly available income per capita in households compared to the average for Poland by class of locality in 2004 and 2015

Year	Households by class of locality				
	rural		urban		
	total	of farmers	total	town by size in thousand	
				less than 20	500 and more
In nominal terms					
2004	75.56	73.57	115.26	94.19	155.47
2015	82.49	78.16	116.81	96.51	158.32
change 2015/2004 (in percentage points)	6.93	4.60	1.56	2.32	2.86
In real terms					
2004	75.56	73.57	115.26	94.19	155.47
2015	79.77	77.43	112.96	93.32	153.10
change 2015/2004 (in percentage points)	4.20	3.86	-2.30	-0.87	-2.37

Source: Own calculations based on the CSO data - Living conditions of the Polish population in 2004-2005 (2005-2006), Household budgets in 2004 ... 2015 years (2005 ... 2016).

In the years 2004-2015 the highest average annual growth of disposable income was recorded on farms in rural areas, particularly on farms, living from the work in the private farm, which amounted to a nominal 7.93% and 5.67% real.

In 2015, compared to 2004, significant changes occurred in the structure of sources of household incomes acquisition. Among rural households a decrease in the share of revenues coming from social security benefits and social services has been recorded (in particular the pension benefits of 6.6 pts. per cent) on which consisted of, among others, changes in the granting of pensions (Chmielewska 2013, p. 199). However, there was high (over 13.5 pts. per cent) increase in the share of income from employment. The agriculture is not able to provide a decent income for all residents of the village, especially the owners of small farms. In the future demand for labor in this sector will be subject to further reduction. In rural areas, we are now facing a surplus in labor force in agriculture and the lack of jobs for landless population. In recent years, due to increasing or changing qualifications, change jobs, emigration to other regions of the country or abroad, seasonal odd jobs, the process of increasing employment of rural residents outside their farm is noticeable (Kozera et al. 2014, p. 95). In 2015, compared to 2004, in the income structure of rural households, there was also a relatively high increase in the share of income from self-employment, of 1.7 points per cent, while the average for all households was of 0.7 points per cent. (Tab. 2). In the analyzed years we have seen the development of entrepreneurship and the expansion of private initiative in rural areas. This is manifested in high increase in the number of businesses operating in rural areas. Increasingly, entrepreneurs locate their businesses in rural areas, largely due to significantly lower land prices than in the cities. This results in concentration of different activities, and most of all the services in the suburban municipalities. The causes of the development of entrepreneurship in rural areas can be traced also in the phenomenon of suburbanization (Hałasiewicz 2011, p. 6, Kozera et al. 2014, p. 96).

Major changes in the structure of sources of raising revenues also occurred in rural households, subsisting mainly on work in the private farm. Among these households we observed a relatively high increase in the proportion of income derived from employment (13.8 pts. per cent) and a decrease in the share of income from the main source of their livelihood, ie. work in the private farm (7.7 pts. per cent) (Tab. 2). However, many of farmers' households are still not able to provide an adequate level of income for the farmer and his family, which would meet sufficiently the function of consuming, production and motivation. Therefore, in order to improve personal finances, members of farmers' households, especially operating on small farms, increasingly take paid employment.

TAB. 2: Structure of income sources of households by place of residence in Poland in 2004 and 2015 (%)

Years / Specification		Households by class of locality					Total
		rural		urban			
		total	farmers	total	town by size in thousand		
					less than 20	500 and more	
income from hired work	2004	36.8	0.1	49.1	46.1	53.5	45.5
	2015	50.3	13.9	56.6	55.0	60.1	54.7
change 2015/2004 (in percentage points)		13,5	13.8	7.5	8.9	6.6	9.2
income from self-employment	2004	5.7	1.8	9	8.7	10.3	8
	2014	7.4	1.4	9.2	7.9	12.0	8.7
change 2015/2004 (in percentage points)		1.7	-0.4	0.2	-0.8	1.7	0.7
income from private farm in agriculture	2004	13.1	72.8	0.4	1.2	0.1	4.1
	2015	9.5	65.0	0.3	0.8	0.2	3.2
change 2015/2004 (in percentage points)		-3.6	-7.8	-0.1	-0.4	0.1	-0.9
income from social security benefits, of which:	2004	39.1	21.8	34	37.5	27	35.4
	2015	25.4	14.2	25.5	27.9	19.1	25.5
change 2015/2004 (in percentage points)		-13.7	-7.6	-8.5	-9.6	-7.9	-9.9
domestic retirement pensions	2004	19.8	9.8	20	20	17.8	19.9
	2015	19.0	9.8	20.8	22.5	16.2	20.2
change 2015/2004 (in percentage points)		-0.8	0.0	0.8	2.5	-1.6	0.3
domestic disability pensions and survivors pensions	2004	12	7.3	8	9.7	5.3	9.5
	2015	5.4	3.2	4.1	4.9	2.2	4.5
change 2015/2004 (in percentage points)		-6,6	-4.1	-3.9	-4.8	-3.1	-5.0
other income	2004	5.1	3.4	7.1	6.2	8.3	6.6
	2015	7.1	5.1	7.4	7.8	7.4	7.3
change 2015/2004 (in percentage points)		2.0	1.7	0.3	1.6	-0.9	0.7

Source: Own calculations based on the CSO data - Living conditions of the Polish population in 2004-2005 (2005-2006), Household budgets in 2004 ... 2015 years (2005 ... 2016).

The material situation of households can be understood as the financial situation, which takes into account asset wealth. The financial situation of households affected by addition of wealth, income and expenses as durable goods, ownership and condition of the property, and other material resources. Large importance pays also the degree of satisfaction of households and satisfaction with the goods held by them. In a study of household budgets since 2009 have been published opinions, given by households on their financial situation, also known as subjective assessment of material situation. Subjective assessment of the financial situation of households varies according to the location of the farm. Households living in cities found their financial situation better than households from rural areas. Households residing in cities with a population of 500,000 inhabitants assessed their financial situation as the best - approximately 38% of households considered their financial situation as rather good or very good while the rather bad or bad recognized 13.6% of households. As the worst evaluated their financial situation residents of the rural areas, where 2.9% considered their financial situation as rather good or very good and for bad or rather bad recognized 16.5% (Tab. 3).

In 2015 their financial position as best found households living in the largest cities (over 500 thousand of inhabitants) - almost 12% of them assessed their financial situation as very good. On the other hand the smallest share of households assessing their situation related to finance as very good characterized farmers households populating rural areas - only less than 3% (Tab. 3).

TAB. 3: Subjective evaluation of the financial situation of households by place of residence in 2015 (%)

Specification	Households by class of locality					Total
	rural areas		urban			
	total	farmers	total	town by size in thousand		
				less than 20	500 and more	
very good	5.0	5.4	11.7	8.0	16.6	10.0
rather good	16.4	16.9	19.5	18.5	21.5	18.5
neither good nor bad	59.9	66.8	53.5	57.8	48.3	55.8
rather bad	13.8	8.6	10.9	11.5	9.5	11.3
bad	4.9	2.3	4.5	4.2	4.1	4.4

Source: Own calculations based on the CSO data - Household budgets in 2015 years (2016).

Conclusion

Based on the survey, it was found that in terms of European integration, the income situation of households living in rural areas has improved significantly. As a result, income disparities between rural households and to urban households have decreased. It should be emphasized that in the years 2004-2015, the growth rate of farmers' households' income was significantly higher compared to the total number of households in rural and urban areas.

In the analyzed period, the structure of the disposable income of households has changed. In the case of rural households in 2015, compared with 2004, there was a decline in the share of agricultural income in total income. At the same time the role of non-agricultural sources of income, mainly from employment and reduced social benefits and social services, has increased. This was probably due to the increasing employment of rural people outside their own farm. Modernization of rural areas affected its inhabitants' way of living. As a result, there has been a decline in the importance of agriculture in the rural economy Poland.

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ONLINE MARKETING TRENDS FOR 2017

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Keywords:

digital – marketing – online advertisement – optimization – web

JEL classification: M 31, M 37

Abstract:

It is essential to detect the overall strategy of using SEO techniques and marketing methods of presentation. The analysis begins with the theoretical and actual analysis continues with a proposal for the use of all methods that were used in creating your own e-shop. The right mix of technological features and the settings marketing strategy you can get ahead of the competition. The methods used will show meaningful further orientation, which would be included on site for ideal effectiveness for all users. Colour copy, banner ads, and analysing the most common site of clicks - create a shop that customers would not only sell, but also reported on the news on a healthy diet could be a good alternative to business.

Introduction

This work will be about the trends in online marketing in the year 2017. We will talk about Optimization the web sites for mobile phones, the video advertisement and his stronger position in the market, content marketing and about content buyers. The personalized insertion is like the key to higher conversion and about increasing in spending online. Too many peoples own cell phones. And especial smart phones, and that's the reason why should firms invest every year more money to increasing chance to accost a potential buyers. Advertisement must be personalized with software applications and other IT possibilities. (Smolkova, 2013)

1. Optimizing websites for mobile phones

More consumers show that online stores, news portals, and corporate identities will have a hard time staying afloat in the future if they don't start catering to mobile visitors. Since April 2015, website operators who neglect their mobile visitors have been more likely to see sizeable **losses in ranking** regarding mobile web searches. This is due to a **change in the Google search algorithm**, which is often referred to as "Mobilegeddon". By taking mobile-friendliness into account, Google is officially recognizing the massive increase in mobile internet usage. The focus here is on **user-friendliness** (Smolkova, 2013, p.26-29). Mobile devices have smaller displays

compared to PCs and laptops and are operated by touch or swipe gestures. What's more, the bandwidth of the mobile internet connection is generally very limited. Websites that aren't scalable, use hover elements to show important information, or contain data-intensive graphics won't display properly or be easy to use on mobile devices. As a consequence, Google removes these from the web search or flags them as inappropriate, potentially resulting in massive **traffic and sales losses**.

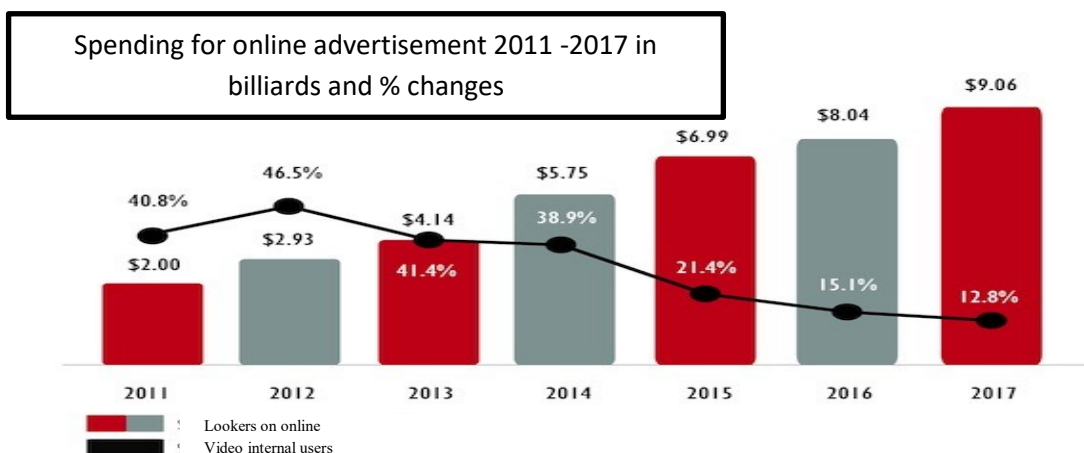
2. Optimizing websites for mobile phones are becoming a necessity

Share web pages are displayed on mobile devices is increasing, also increasing the number of users who are searching for products or services via their smartphones or tablets. This is evidenced by available statistics - one in six YouTube video is played in Slovakia for mobile and one in four search term in Slovakia is mobile. Website optimization for mobile devices are no longer an option but a necessity. Companies that realize this will have an undoubted advantage in the future. It most likely be that firms which can do over the phone to optimize the purchasing process will lead to a much greater extent (Team of authors, 2014)

2.1. Video advertising gives a stronger market

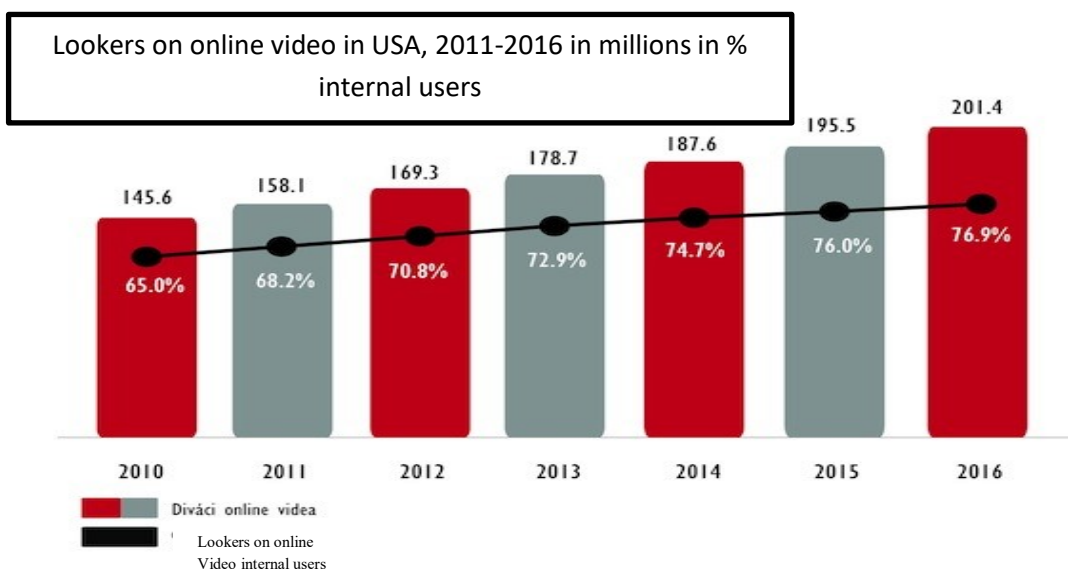
Slovak companies are more likely ignored video advertising into thinking that purchasing power population is less computer-savvy. That was indeed true until recently. However, overall informatics knowledge of the population has changed dramatically even with the advent of smartphones and tablets, which are equipped with Internet wireless and therefore more accessible to a wide range of the population. Marketers know the potential of YouTube ads for some time. Great price, huge hit key target groups, precise targeting and perfect measurability - all paying for video advertising on YouTube for example. In the US, increased ad spending in video advertising, according to data published emarketer.com year on year by 38.9%, digital video ad spending was in 2015 at \$ 5.75 billion. While the United States should growth slow in recent years, in our period the increase is yet to come. Although the video Slovak companies access with no unnecessary respect and use it especially strong brandy, really it is seen a gradual move towards their implementation. Being successful is liable to be largely anyone who can produce video content. (Buying, 2015)

TAB. 1: Spending for online advertisement 2011 -2017 in billiards and % changes



Source: Buying (2015)

TAB. 2: Lookers on online video in USA, 2011-2016 in millions in % internal users



Source: Buying (2015)

2.2. Content marketing

Content Marketing - increasingly mentioned formula of the world's marketers and advertisers. Slovak companies also begin to make greater use of such an effortless way to communicate with end customers, its main respectively essential component is that the company will produce valuable content that will have the potential to spread, important essence of the company will place more emphasis on the education of users, create eBooks, determined through blogs and other available channels, that their union understand this very form has a high perspective, as it is a less violent form of contact with the customer in order to take it, as a potential client searches for the following

goods itself, because it is convinced of its necessity. Potential customers will be raised at the appropriate time, if and only if the information to find and close to the execution of the conversion (Slaba & Starchon & Jac, 2014)

3. Personalized advertising will be the key to increased conversions

Remarketing affected the life of users over the past year quite vigorously. Statistics show that targeting users who already have a connection to the website is far more effective ads are also four times higher click through rates and such. Also banner ads can actually increase the number of orders. It is expected that 2015 will be content to users even more personalized, now in Slovakia and now we begin to receive emails tailored to our conduct (Vilcekova, 2015).

Marketers will focus on detailed segmentation of their remarketing audience. Even in our increasingly be remembered word "mikrotargeted" marketing will be increasingly tailored to each user and it will not be overburdened by irrelevant content. Plus as it can be noted that a potential customer will be addressed with a potentially exciting products to which it has direct inclinations, so it already took in distant time. Client does not perceive itself in this case so intense advertising and tends to him at an earlier time frame to give in. (Slaba & Starchon & Jac, 2014)

3.1. Spending on "online" will be continue to grow

This trend is quite clear - online and expenditure for the entry and operation - advertising is still growing nothing in world but also to our "home market". Slovakia was in 2011, advertising spending in line at 18% in 2013 have already reached a level of 23% year-on-growing spending on online marketing about 20%, at risk in this case mainly prints and radio bundle of money from firms intended for such media is getting lower. On the western markets, the figure is even more fundamental, to spend online is comprised by more than 40% of total advertising spending. Slovakia and the Czech Republic is thus huge scope for growth. (Buying, 2015)

Look like projections for online ad spending when we look at it on a global scale eMarketer.com company has drawn up a summary table of valuable data:

Marketing information system is an information system to support the marketing activities of the organization. Based on generally applicable definition, marketing information system "consists of people, equipment and procedures for the collection, classification, analysis and distribution of the required timely and accurate information to marketing decision" (Kotler-Keller, 2007, p. 111).

3.2. Information systems in public administration

Throughout the process of restructuring the public administration, the right use of information technology to overcome barriers to access to citizens and help create new services more targeted and flexible manner than it is now. Information technology can assist in the implementation of the demands of citizens have unlimited and uninterrupted access to information and government services, which is a precondition for ensuring inclusive information society for all. From this perspective have a crucial role in the effective provision of public services and also to improve cooperation between public administrations in different countries of the European Union to take the appropriate authorities (Hospodárske noviny, 2015)

Linux is highly flexible software solution due to its flexibility as well as stability and security. It is significant that became the foundation of the IT infrastructure of many commercial companies and institutions. In recent times various events show that Linux and open source technologies also have their place in government and even in many developed countries. Security of information systems and their level is extremely important indicator and is given directly to the man who created it, use and take care of it. This level is influenced by many factors such as: the overall quality of the information system, errors made in the development of the system and can create conditions for the emergence of other errors, inappropriate and insufficient care information system, sloppiness, irresponsible attitude and superficiality in the system operation, considerable influence external but also the internal temperature, unauthorized use of the system can attack the system, malicious data flows in the system, accepting data from illegitimate sources, preventive conservation, control, and implementation of corrective measures to raise security levels. System security, however, degrades in proportion to the use of the system. The main idea of Linux is that it is a software solution that is completely free, as is its development is an open source system. Cost savings on such a large environment like the government is a remarkable value that could involve substantial way to relieve the state budget. (Hospodárske noviny, 2015)

4. Public administration research

Cumbersome governance structures significantly depletes the funds to finance the salaries of officials of public administration and thus affects the frequency and conditions of ordinary employees. They are unable to effectively Moreover, as funds absorbs some of the unnecessary features of his senior staff. The solution to the problem of communication and more efficient early warning system would be to slim down the ranks of government. Given restructuring process would be highly challenging but would lead to the improvement of public administration in the short term. (Slaba & Starchon & Jac, 2014)

Data acquisition is challenging activity and in terms of crisis prevention. Ordinary employees are not motivated in any way and are often decimated the leadership to announce extraordinary events. Is to consider the issues arising that every ordinary employee would be able to have an event to communicate and therefore to express themselves how to contact the communication department, which the employee or department mined and facts verified by official records, officials as well as any photo documentation that could have been workers the site of the incident. Communications Office should be a separate part of the public administration, who would be answerable to the government, where appropriate ministries. Flesh out the intermediate stages of the dissemination of messages, in which their disclosure could eliminate (e.g. immediate superior, district, county officials or their representatives of different instances). Commissioned officers are more concerned that they could be happy subordinates to point out the errors superiors in deciding on the events and for this reason are interesting current events and does not eliminated the strategic management. This mode of governance stemming from ignorance of important events can officials would be prevented.

4.1. Basis of public administration management solutions

Proposed improvements would be done and work more realistic picture of ordinary policemen, timely registration of potential threats directly "at first hand". The thus collected information should be given in two ways: - Directly - via the Communications Department of the Ministry, the Minister, the Government - Indirect - current reports given superior - which would make reports and feed a higher instance to the ministries or government. The overall scheme of the functioning of the process information centre (departments) that would ensure the timely transmission of information relating to public administration as well as its crisis management. Place top placement in the hierarchy structure should be from a tactical point of view ministries SR, which has formally oversaw the information section, which should be used as an early warning system. Such a source would be a highly sophisticated way of securing strategic information. Guidance should consist in overseeing the adequate use of the potential of this department. Ensuring the correct functioning and effectiveness of the department. Communication should take place "top-down" as well as "bottom-up".

Conclusion

Information Department SR ministries, should be responsible for constant communication as ordinary officials, field workers, as well as with strategic and crisis management. Another task would be to monitor online messages and news programs. The occurrence of the events and the subsequent responses and preparation for possible risk. This would potentially reactions to stimuli reduced to a minimum. Their extraction from external sources, mostly private online media spreading news and news programs

would create capacity for flexible reaction from the public administration and ministries SR.

Information Department would mainly be processed knowledge and possible "reports" and input from ordinary employees, which in their report could point to an interesting event. It is important to note that in this case should be deployed appropriate incentives and log situation. There would be a double effect: - a more active public administration and higher satisfaction assessment ordinary employees. The department should accommodate all positive manifesting public servants. Strong positive would be a professional two-way communication with online media as well as two-way communication with the public and not least with the regular employees.

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SIMULATION OF PROCESS STRATEGY MODEL IN SMALL AND MEDIUM-SIZED ENTREPRENEURSHIP

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JEL classification: M0, M19

Abstract:

A competitive strategy is considered to be a key factor of business success. However, the researches show the importance of strategy is underestimated. These findings could be a reason for a failure and impossibility to be expanded. This paper derives from the previous research activities focused on strategy in small and medium-sized entrepreneurship that found out the creation and implementation of strategy in SME is confused with operational activities and strategic activities are not considered as same important. The main aim of paper is to simulate the proposed process strategy model for SME into the practice that could strengthen the strategic position of SME on the selected agricultural company in the form of case study. The paper is based on primary survey in the form of case study of selected SMEs, whose findings are served as a basis for process strategy model in SME. The benefits of model will be then verified in practice. The results of paper are served as a basis for other research activities.

Introduction

The area of small and medium-sized entrepreneurship (hereinafter SME) is emerging and gaining popularity with its increasing importance in the whole business field and economy (Cravo et al., 2015). The SME is a term which currently raises interest of academic as well as professional public and it happens worldwide and also in the Czech Republic. SMEs employ 80 million citizens of the European Union and make up every other newly created job. Small and medium-sized enterprises represent 99% of European enterprises, which generate about 70% of all jobs and 60% of EU GDP. SMEs represent 99.84% of the total number of enterprises in the Czech Republic (MPO ČR, 2015). SMEs secure 59.39% of employment, participate in the performance and value added of more than 53.11%, creating GDP more than 37% (Srpová, Řehoř et al., 2010; MPO ČR 2015). According to regulation of the European Commission No. 70/2001, small and medium-sized enterprise is considered to be that enterprise

employing fewer than 250 employees and its annual turnover does not exceed EUR 50 million and its assets do not exceed EUR 43 million.

This paper is primarily oriented on the area of small and medium-sized entrepreneurship in agricultural sector. The main reason for focusing on agricultural companies is the fact that not many researches were provided in this area and the financing of these selected companies is specified due to subsidies, donations and other financial interventions, which regulates agricultural market. “The agricultural sector is included among the very sensitive areas of the economy, as it has its specifics that must be respected, such as the seasonal character of production, a high level of dependence on natural conditions, as well as the production structure” (Aulová, Hlavsa, 2013, p. 24). The results of the research (Špička, Boudný, Janotová, 2009) indicate that the current subsidies have an impact on the stability of the farmers’ income and furthermore, the current subsidies reduce the variability of the farmers’ income.

In the Czech Republic, the role of strategic management and strategy is underestimated. Large and multinational corporations use this concept in greater or lesser extent, but the strategic management is an important part of their business activities. For small and medium-sized companies, some weaknesses have been shown in this area (Blažková, 2007). Charvát (2006) states that the current Czech companies often significantly underestimate the importance of the long-term corporate strategy formulation; they are focused on solving the operative problem during the decision-making process because. Nevertheless, the researches (Šebestová, 2005; Barrow, 1996; Vojík, 2006; Strokes, Wilson, 2010; Analoui, Karami, 2003; Carter, Jones-Evans, 2012; Cravo et al, 2015) show the strong and competitive corporate strategy is considered to be a decisive key factor of stability and possible expansion of any enterprise in the market.

According the research (Holátová, Březinová, Kantnerová, 2015), majority of examined Czech SMEs (60%) had formulated strategy. Based on tested data the most frequent followed strategy is quality and stabilization, regardless of employees number category or business activity. The Quality Council of the Czech Republic and the Association of Small and Medium-Sized Enterprises in the CR (ASMP ČR, 2011) introduced a survey (realised in 2011) among 541 Czech SMEs focusing on their opinion on competitiveness, barriers to entrepreneurship and innovation and the use of modern management methods. Almost half of SMEs see the greatest obstacle to business in a strong competition. Other significant barriers are the little state support and legislative restrictions (25%). Only 3% of entrepreneurs see the barrier in the outdated management methods. 98% of respondents considered the strategic business management for its long-term competitiveness as important. On the other hand, 77% of SMEs actively do not know any modern method of management and almost the same percentage of SMEs do not use any modern method of management.

Recognition of the importance of strategy and strategic management in SME is a major contributor to job creation and economic growth (Analoui, Karami, 2003). The majority of SMEs make them an important constituent of local, regional and national economics and as such a potential target for policy intervention. However, SMEs do not perceive strategic management as one of the major prerequisites of own competitiveness. This paper therefore deals with the importance of strategy and strategy management in SME with the help of process strategy model for SME proposal. This model simulates the validity of this model in practice (details see in chapter 2, 3 a 4).

1. Literature overview on strategy in SME

Strategy reflects the implementation of organizational measures and management practices used to achieve objectives and monitoring missions of enterprise (Thompson, Strickland, 1996; Mallya, 2007). Sadler and Craig (2003) describe the strategy as the purpose and mission, strengths and weaknesses of the enterprise, key success factors, sustainable competitive advantage and key decisions. It is a declaration of intent, which defines the means to achieve the objectives and concerns of long-term allocation of significant resources and linking these resources and capabilities with the external environment (Armstrong, Stephens, 2008; Daniell, 2004). Crainer (2000) adds that the definition and formulation of corporate strategy is quite different from its practical implementation. Dedouchová (2001) modifies the modern definition of strategy as the readiness of the company for the future; the strategy establishes the long-term goals of the company development of individual strategic operations and deployment of company resources to meet these business goals while responding to changes in the company environment. Collis and Montgomery (1997) declares the strategy express the concept of the overall concept of organizational behaviour, especially the way the organizational activity and allocation of resources needed to achieve the intended objectives. The strategy formulation approach is based on the results of the situational analysis (Panneerselvam, 2012). According to Sedláčková and Buchta (2006), strategy aims to achieve consistency between internal resources of and external environment of the enterprise to ensure the overall prosperity and success of the company The concept for creating and implementing the successful strategy derived from various theoretical and practical approaches (Yeates, Wakefield, 2004). The strategy of the enterprises maximizes the competitive advantages and minimises the competitive disadvantages of the enterprise (Carter, Jones-Evans, 2012). The strategy integrates main objectives, business politics and implementing steps of the enterprise into one unit (Mintzberg, Lampel, 1999). Karlöf (2006) argues that strategic work is often infested with the lack of continuity. In some cases it may happen that the work becomes stereotyped and completion of numbers will become more important than strategic thinking. Although strategy is commonly associated with large enterprises, strategic decisions have been found to be just significant to the success of SMEs (Stokes, Wilson, 2010). Jakubíková (2008) distinguishes the main forms of strategies according to level of business

management: corporate strategy, business strategy, functional strategy. The success of strategy is dependent of successful strategic management. The strategic management compared to the normal management have special characteristics - it is based on decisions with a substantial degree of risk, as future development is influenced by many factors, changes and impacts are not able to be predicted, in connection with the ongoing globalization processes, the influence relevant neighbourhood on strategic behaviour increases (Veber 2009; Porter 1994). Kazma (2008) states strategic management is the process of formulation and implementation, evaluation and control to realize the correct strategy in the company.

Wheelen and Hunger (1998) declare the SME strategic management is not dramatically differed from the strategic management. Nevertheless, SMEs must have new mission, objectives, strategies and policies out of a comparison of their external opportunities and threats to their potential strengths and weaknesses. Consequently, they proposed a modified version of the strategic management model, which is more closely suited to the new entrepreneurial businesses. The dynamic SME strategic management model consists of four stages (Wheelen, Hunger, 1998; Analoui, Karami, 2003): 1) Awareness: understanding the strategic situation, 2) Strategy formulation: prepare suitable strategies, 3) Strategy implementation: making the determined strategies happen, 4) Strategy control and development: review and learn for future development. Critical factors in SME strategies in the form of model are following (Stokes, Wilson, 2010): 1) Entrepreneurial management behaviours – opportunity identification, resource leveraging, networking, effectual decision-making, creativity and innovation; 2) Knowledge/technical skills – product/service knowledge, market/industry understanding, IP knowledge; 3) Personal attributes – innovative, determined, external focus, team leader; 4) Strategic management competencies – marketing, finance, human relations; 5) Critical internal factors – motivations; 6) Critical external factors – market sector, barriers to entry, adjustments. There are many benefits in adapting strategic management in SME (Analoui, Karami, 2003; Carter, Jones-Evans, 2012): it helps strategists to understand the current situation of the enterprise and have a clear sense of vision and mission; it enables the managers to assess the strengths and weaknesses and focus on what is strategically important; it helps to establish proper goals and prepare the means to achieve them; it allows an enterprise to be more proactive than reactive and to be ready to face any controlled and uncontrolled situations. Some SMEs still avoid using strategic management. The reasons are following (Analoui, Karami, 2003; Carter, Jones-Evans, 2012): lack of knowledge of the strategic management techniques, a lack of time and/or the inability to plan; SME managers may be unaware of the importance of strategic management for their business; the lack of information and knowledge about strategic planning and its advantages will lead to inability to establish a strategic management system within their enterprises; lack of attention paid to the financial indicators such as cash flow; lack of necessary managerial skills; excessive

involvement in daily and routine operations; anxiety about the uncertain future; low number of employees or poor management information system.

2. Materials and methods

This paper and its research derives from the previous research activities focused on strategy and aspects of strategic development in small and medium-sized entrepreneurship (Svatošová, 2016; Svatošová, Svobodová, Šauer, 2016; Svatošová, Svobodová, 2014). The research has identified the main determinants of strategy development in SME, whose main results have been served as a basis for creating a process strategy model in SME (see Picture 1; Svatošová, 2016). These determinants are distinguished into three main categories: general aspects of strategic management (mission and vision, situational analysis, corporate strategy formulation, strategy implementation, strategy control), internal factors of strategic development (corporate culture, quality of management, marketing strategy and management, financial strategy and management, human resources strategy and management, production strategy and production policy, competitive advantage, flexibility, innovation ability, financial condition) and external factors of strategic development (orientation in industry, ability to work with legislation, negotiation with customers, negotiation with suppliers, struggle with competition). These determinants have been identified based on the literature review and brainstorming with selected SMEs. Focusing on these determinants could support more effective application of strategic management in SME and further strategic development of SME.

The other research (Svatošová, Svobodová, Šauer, 2016) aimed to find out, what importance of strategy and strategic management is given among selected research sample of SMEs. In summary, 21 SMEs have been participated in this research (based on selecting criteria: Joint Stock Company, with maximum 250 employees with minimum 10-year history and the scope of activity belongs to the category CZ-NACE: 01210: Growing and cultivation of wine grapes and 11020: Production of wine from wine grapes) and the main seat is in the CR. The research found out the individual functional and corporate strategy is not considered to be as equally important and 57% of SMEs have formulated strategy. The research also confirmed that there is a relationship between the value of ROE, ROA and the importance of strategies for strategic development. The research also found out there was no relationship between the size of the company's assets and the importance of strategic management. It was also confirmed companies with a higher value of assets (over CZK 200 mil.) have formulated corporate strategy rather than companies with lower value of assets (up to CZK 100 mil.). Enterprises with a higher value of assets evaluate various strategies and strategic management as more important than companies with lower value assets.

This paper summarizes the results of the previous mentioned research activities. Therefore, the main aim of this paper is to simulate a practical validity of the process

strategy model on the selected agricultural company in the form of case study. The model verifies a practical application and functionality in the area of SME. The additional aim is to identify the main benefits and shortcomings of the strategic management process in SME with a help of model simulation in practice. This model highlights the main identified determinants for strategic development in SME and also could eliminate the possible shortcomings in the strategic management process for SME. The simulation of this model is realized with the help of case study that describes and analyses the formulation and implementation of strategy together with process of strategic management for the selected agricultural company.

The other research methods are: analysis of internal documents, the selected methods of situational analysis and financial analysis complemented with the methods of personal interviews with owner-managers and modelling the determinants in form of process of strategic development in SME. The case study points out the main strengths and weaknesses of the enterprises in strategic management and other aspects of strategic development. Based on the findings of case study, the determinants of optimal strategic development have been demonstrated in practice. Simultaneously, the main benefits and shortcomings in process of strategic management have been identified. The main purpose of this model simulating is to prevent from the most common shortcomings in strategic development and provide a recipe and recommendations for the long-term business success for the selected company and other SMEs. Finally, the main identified shortcomings in process of strategic management of selected company are eliminated with serious of recommendations.

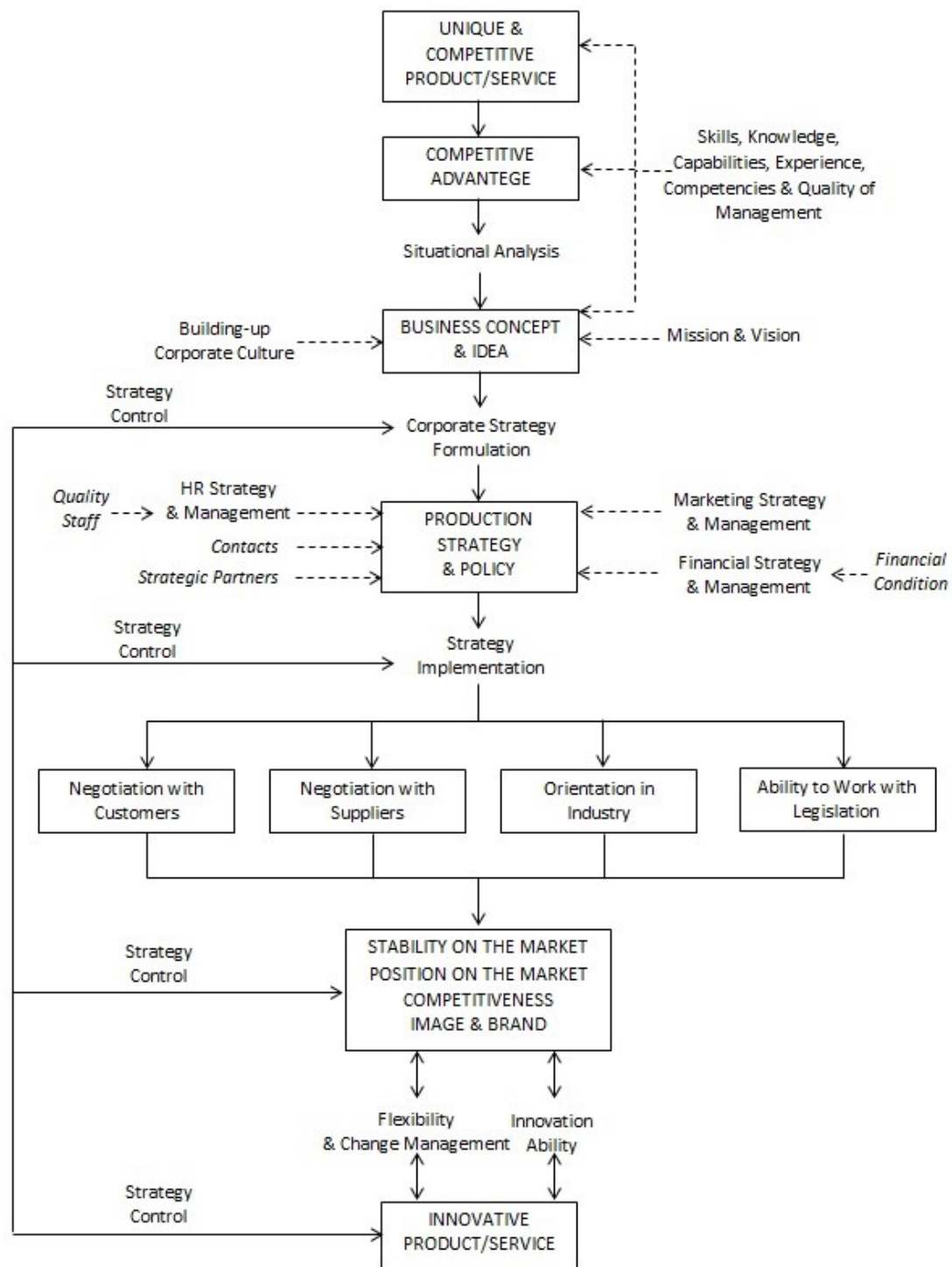
3. Results and Discussion

The research of this paper is divided into two main parts – description of process strategy model in SME as a result of previous research activities (Svatošová, 2016) and the further simulation of this model on the selected agricultural company. This model verifies its practical application and functionality and highlights the main benefits and shortcomings in the process of creating and implementing the strategy of selected enterprises. The process strategy model simulation compares theoretical knowledge about processing of strategy and strategic management in SME, theoretical identification of determinants of strategic development in SME and practical usage and its functionality in business practice (mainly using the experience and opinions of owner-managers of SME).

3.1. Proposal of process strategy model in SME

This model (see figure 1) is based on the results of qualitative research that identifies the most important determinants, highlights the strengths and weaknesses in SMEs and provides an optimal process for using these determinants for the smooth, systematic and long-term strategic development in SME, based on collaboration and discussion with

selected enterprises. The model starts with the most important determinant according the research, i.e. competitive and unique product that creates a competitive advantage such as the opportunity for creating business idea and concept. The success realization of business idea has to be supported by skills, knowledge, talent, capabilities, experience and quality of owner-managers. Although the selected enterprises do not seem the aspect of strategic management as important, the model involves them such as the complementary elements of whole successful process, i.e. the business concept should be derived from situational analysis, building-up a mission and vision that should be used for strategy formulation. The business concept should be used for gradual building-up quality corporate culture. The main core of the model is based on creating production strategy and policy that should be supported by quality and proper HR, marketing and financial strategy and management. The other aspects of strategic development involve good financial condition, strategic contacts and partners, such as the results of discussion with selected SMEs. Afterwards, the business concept together with corporate strategy should be implemented into the practice with a help of quality negotiation with customers, suppliers, perfect orientation in industry and ability to work with legislation. In case of using all determinants in the process, there is a probability to reach the main idea of the business and for strategic development in SME in the form of stability on the market, strong position on the market along with competitiveness and image and brand of the SME. For other strategic development, it is important to be flexible and use all tools of change management and ability to innovate not to lose a competitive advantage and position on the market in the form of innovative product/service and other related aspects. The important final step is to set up measurable indicators for strategy control. The model summarizes the most important determinants and other elements for increasing the probability of long-term success in SME. (Svatošová, 2016)

FIG. 1: Process strategy model in SME

Source: own work based on (Svatošová, 2016)

3.2. *Process strategy model simulation (Case study)*

At present, the Czech market is around 850 wine producers. This industry is made up of more small and medium-sized enterprises. There is a large representation of small winemakers, which distribute its products primarily locally at the production site. The winery market also creates a number of smaller companies and a large number of small winemakers (mainly operating locally). Although large companies determine trends in the wine sector, the smaller manufacturers use close contact with the customer, allowing them to react flexibly to the current market situation. Large wine companies may apply higher market competitive power, which can provide a lower redemption price of inputs and also have a better bargaining position to distribute their products. The small enterprises have an advantage in greater proportion of human labour and raw material and using traditional methods, which many consumers prefer. The smaller enterprises obviously use a smaller share of mechanization, as well as a lower rate of using chemicals, etc., which is a benefit not only for consumers but also for the environment.

For this case study, the agricultural enterprise has been selected. This enterprise is indicated as enterprise A under the promise of its anonymity. The criteria for the selection of this enterprise is the same as in the previous research (Svatošová, Svobodová, Šauer, 2016), i.e. Joint Stock Company, with maximum 250 employees with minimum 10-year history and the scope of activity belongs to the category CZ-NACE: 01210: Growing and cultivation of wine grapes and 11020: Production of wine from wine grapes, the and main seat is in the CR. This enterprise has been participated of this previous research; therefore this case study has its highest explicitness. The case study is supported by studying of internal documents of enterprise A, including all financial statements and complemented with personal interviews of owner-managers. The other motivation for the selection of this enterprise to case study is the willingness of owner-managers to be participated and reveal sensitive information about strategy intention. It also belongs to the group of enterprises (57%) that have formulated strategy and belongs to the group of leader in winery industry.

Enterprise A was established in 1992 with a main seat in South-Moravian Region and nowadays belongs to the most meaningful enterprises in the area of growing and production of wine and wine grapes in the Czech Republic. Enterprise A employees approximately 128 people, the current value of total assets (in 2015) reaches over CZK 606 mil. and annual turnover reaches almost CZK 362 mil. Daily, enterprise A sales around 17 thousands of wine bottles and its segment reaches 3.5% of all wines sold in the Czech Republic. Its main politics is based on reciprocal trust of stakeholders, mainly its loyal customers. It follows all worldwide trends in industry with a respect of local traditions. Business partners often particularly appreciate the stable quality wines and a wide range of products that is constantly innovating gradually. Enterprise A is considered to be as trendsetter to Czech wineries. For example, it was the first enterprise, which started production with controlled fermentation in the 90s; it was the

first that introduced into life the now common and popular delivery service. It impressed with activities combining art and wine, as well as interconnected wine and sport. Enterprise A has co-organized several so-called revolutionary wine exhibitions. Enterprise A was the first one that introduce into life very well organized and increasingly popular Wine wandering etc. It is also known for its sophisticated Vintner's tourism program.

The case study focuses on the analysis and evaluation of strategic management and implementation of corporate strategy in terms of enterprise A with the help of information from personal interview with owner-managers and financial analysis and analysis of internal documents. Enterprise A is the successor of traditional production of wine from wine grapes and its main philosophy is based on trust of its customers. The long-term mission of enterprise A is to produce quality, wholesome products and services, develop the market with new high-end products based on customer requirements. The vision of enterprise A is based on efforts to ensure that all of its current and future activities, strategic moves and plans have always had in mind the positive approach to environmental protection and continuous improvement in the environmental profile of enterprise A. On the basis of strategic planning, analysis of the collected data, the purpose of enterprise A is to adjust internal business processes so as to ensure the future development of the enterprise and its application to the EU market. According to personal interview, the main corporate strategy is based on sustainable and progressive approach to the high-quality products and services that satisfy customers' needs and requirements. The corporate strategy is defined in written internal document of enterprise A and its creation and implementation is in responsibility of top management. The main strategic goals of enterprise A are:

- a) in collaboration with their customers to strive for continuous improvement of the quality of products and services;
- b) to take care to continuously improve the functionality of their processes with a focus on the efficient use of resources;
- c) to exemplary care of their customers to maintain and expand their customer base;
- d) to apply an individual approach to customers;
- e) to spread awareness in the use and consumption of wine.

The main priority focus of business process is oriented on customers. Therefore, enterprise A has established special loyalty program oriented in collecting points and other similar benefits. The other activities for customers are for instance organizing the win tourism program, wine wandering or thematic action connected with wine and its history. Distribution and selling their products is realized with the help of their own shop shops around the CR and other selling points. The other option for distribution and sales is also their own e-shop. It could be stated the main strategy and philosophy of enterprise A is oriented on customers – their needs and trust.

Business partners of enterprise A often particularly appreciate the stable quality wines and a wide range of products that are constantly innovating. Therefore wine portfolio of enterprise A satisfies almost all types of customers. Enterprise A is a producer of traditional varietal wines. Besides a diverse range of traditional varietal wines, specialties can be found in their offer - dry and semi-dry late harvest, the wine category selection of grapes and selection of berries, ice wine, straw and sparkling wines - the sect. The wines of enterprise A annually receive numerous prestigious national and international awards. Full portfolio of services includes not only the actual production of wine and its sale, but also caring for the wine route to its destination. Delivering of product is realised both to final consumer and other retailers (chain store) that have very strong negation power in price creation.

The following figure 2 represents the process strategy model (see figure 1) that is modified to the needs and knowledge about enterprise A. The figure 2 also shows a practical simulation of process strategy model in SME. The model has been created based on the previous research and identification the most crucial determinants for strategic development in SME. The previous research had identified the main determinant in process of strategic management starts with unique and competitive product. Based on personal interviews with owners-managers of enterprise A, they agree with the statement the key factor of long-term business success is based on unique product. Enterprise A started with basic range of wine products for reasonable prices. Gradually, they decided to extend the wine product series that could satisfy all groups of customers. Since the beginning of enterprise A the priority of each activity is focused on high-quality of product (with accepting moderate price politics acceptable for most part of customers), services and all other business processes. According to enterprise A, orientation of high quality and building-up customer loyalty is the key factor of long-term business success and strong competitive position on the market.

The weak part of process model in enterprise A is situational analysis. According to owner-managers, they continuously analyse the needs and requirements of their customers, including current trends in producing and selling wine. They do not know the theoretically well-known methods, such as SWOT, PEST, SPACE or Porter's analysis. It can be concluded enterprise A analyses its business surrounding regularly, but the results of this analysis is not written (in business plan or other similar business document etc.). The creation and implementation of corporate strategy is in responsibility of top management (i.e. board and supervisor management consisted of three and three member with participation of line managers). After that, the main business concept and idea is formulated such as stable position on the market and orientation on brand and image through high quality products, services and other business activities and processes. The business concept is supported by mission and vision mentioned in model. The corporate culture supporting the main business idea is

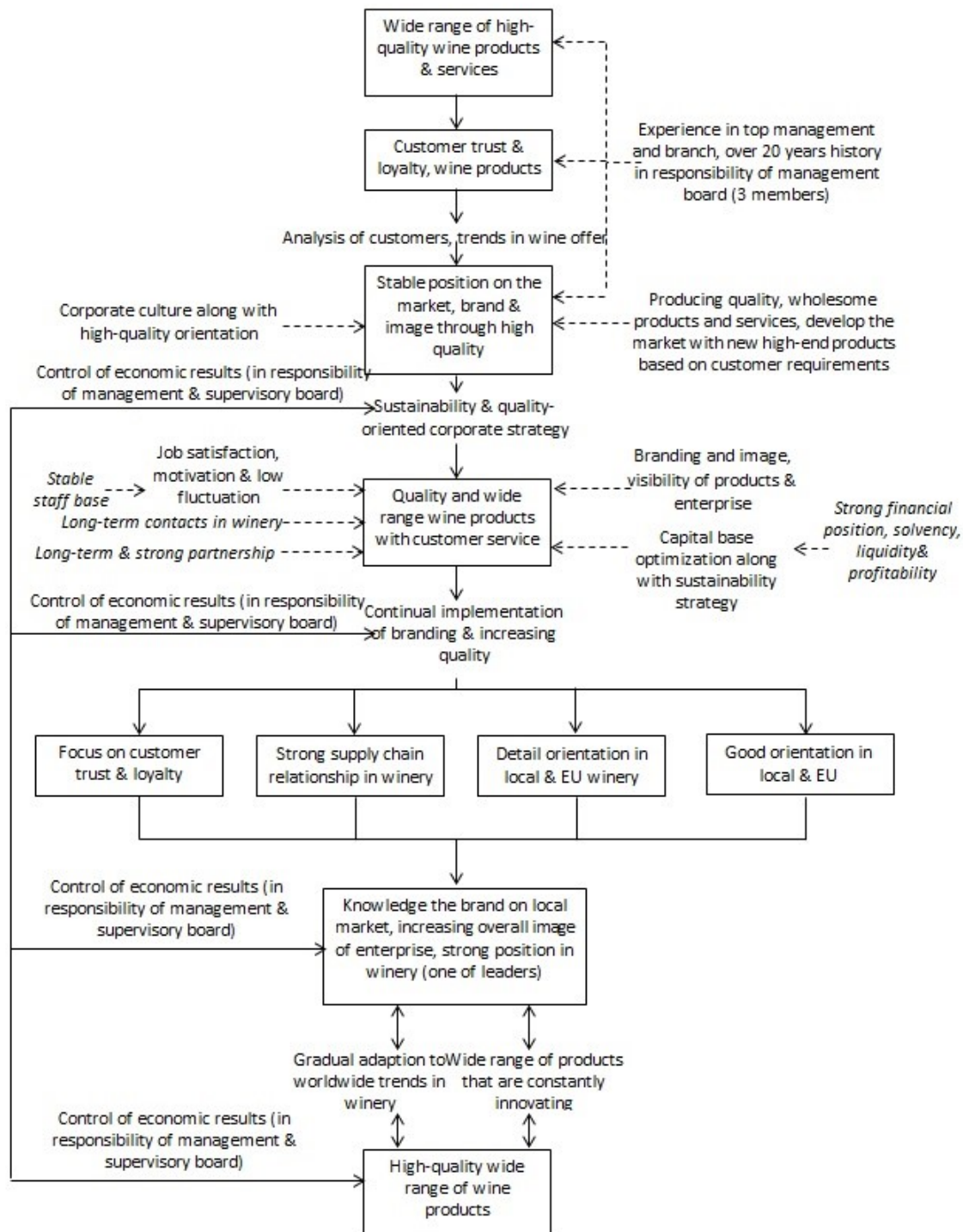
again focused on increasing high quality. Despite this fact, enterprise A does not have any internal document for describing main attributes of its corporate culture.

The main corporate strategy is based on sustainability and high-quality orientation as the model in figure 2 shows. The fulfilling this strategy is supported by marketing strategy oriented on building up a brand and image of enterprise A. Financial strategy is focused on capital base optimization, by effective using their resources along with sustainability strategy. Financial politics and strategy is in responsibility of financial manager and his team. Due to a strong financial position, including increasing profitability, moderate liquidity and solvency, enterprise A could think over future development and expanding. Marketing strategy is implemented along with corporate strategy oriented on increasing image of enterprise A are using more traditional marketing instruments (despite of the fact they use some modern marketing instruments, such as Facebook or e-shop). The other critical problem of enterprise A could be founded in personnel management. Based on personal interviews with owner-managers, no comprehensive motivation and personnel system has been identified. They declared the enterprise A care for its employees with the set financial and non-financial rewards that could be motivating. On the other hand, low fluctuation of staff has been noticed in enterprise A. Owner-managers completely agree with a statement that key contacts and partnership are one of decisive factors for successful business development. Enterprise A has created during its long-term existence very quality base of supply-buyer-partner relationship supporting its future strategic development.

The corporate strategy of enterprise A is gradually implemented into everyday practice oriented on increasing quality of everything they do and increasing overall image. This is supported by systematic building-up the customer member base along with customer loyalty, strong supply chain relationship in winery and other similar branches, detail orientation in local and EU market including subordination of enterprise A to local and EU legislative. The owner-managers accept this concept of process model for strategic management in SME, because all of these aspects mentioned above have supported the main long-term business success and stable position of leader on local and EU market. Systematic, long-term and comprehensive approach to reach main strategic goals is considered to be a decisive factor of long-term business stability. Enterprise A is aware of the fact that could not be in stagnation, therefore they constantly innovate and extend product offer, some of them have created the key market value of the whole enterprise A. It could be stated no formalized change management in enterprise A has been identified, despite of the fact they are aware of importance for adapting to external and internal changes. The output of this model is care for high quality wine product along with customer service and their gradual and constant innovation. All of these processes are controlled by reaching main economic results and customer satisfaction. It could be stated that enterprise A in summary uses a systematic approach to reach main strategic goals; nevertheless some shortcomings have been identified in process of strategic

management (details see in chapter 3.3). This model also proposes some recommendations that could improve the overall process and eliminate the identified shortcomings.

FIG. 2: Process strategy model for enterprise A



Source: own work

3.3. Identification of main shortcomings in process strategy model and proposals for their elimination

The figure 2 has confirmed the process strategy model in SME could be applied in practice. The owner-managers agree with formation of the model including an identification of the most important determinants for strategic development in SME. At the same time, the model has identified the main benefits and shortcomings in the process of strategic management. The main benefits and at the same time main competitive advantage of enterprise A are following:

- a) Priority focus on customers' needs and requirements
- b) Successor of traditional production of wine from wine grapes
- c) Strong corporate strategy creating competitive advantage in the branch
- d) Strong branding, history, image; strong market position

The main shortcomings in the strategic management process of enterprise A are:

- a) Insufficient situational analysis – enterprise A does not realize regular analysis of all external and internal factors that could support or threaten other future strategic plans.
- b) Shortcomings in personnel management and corporate culture – the model identified no priority is given to personnel strategy along with corporate strategy, no comprehensive motivation and personnel system is in enterprise A used.
- c) Shortcomings in long-term development of enterprise A – not all strategic processes are formalized, therefore some confusions are implementing strategic plans could be here observed.
- d) Shortcomings in change management and flexibility including observing modern trends in the branch – it was identified, no formalized and comprehensive insight of change management is realized in enterprise A; after that enterprise A could be not prepared for unexpected as well as expected changes that could in extreme situation threaten the existence of enterprise A.
- e) Shortcoming in marketing strategy and management – enterprise A has its own marketing manager that uses more traditional marketing instruments that modern one; orientation on traditional group of customers prevails.

Recommendations for strategic management process in enterprise A are following:

- a) Increasing staff motivation and creation and innovation ability; focus on corporate culture – it is recommended to create the individual personnel strategy such as a result of new comprehensive motivation and personnel system; after that, enterprise A could realize internal survey about staff satisfaction; the personnel management could support formal and informal attributes of corporate culture (it is also recommended to
- b) Priority focus on analysis and detail observing the branch worldwide – during the identification of strategic process model for enterprise A, the insufficient situational analysis has been determined; here it is recommended to create business document the identify main external and internal factors that could

- positively and negatively influence the business of enterprise A; after that enterprise A could be better prepared for unexpected changes on the market.
- c) Focus on better flexibility and change management – enterprise A has no preparedness for change realization and comprehensive change management; it is recommended to build-up document for change management and to identify a change manager that is responsible for adopting expected and unexpected changes.
 - d) Orientation on long-term development and reinvestment activities – this recommendation relate to part b) a c); with consequential situational analysis and comprehensive change management, enterprise A could be better prepared for investment activities with further progressive expansion.
 - e) Creating and implementing marketing strategy and following modern trends – the functional strategies should meet main corporate strategy oriented on high quality and stabilization of enterprise A on the market; it is recommended to follow modern trends in marketing with using modern online instruments along with focus on the other group of customers and along with building-up the image of enterprise A.

In summary, it is recommended to formalized all strategic processes in enterprise A, create formal documents for strategic development that could support reaching main strategic business goals. The effective usage of these documents, all employees and management enterprise A should participate in creating and implementing these strategic documents in practice. These documents could also support formalized corporate culture for increasing overall image and market value of enterprise A.

Conclusion

The main purpose of this paper was to verify and simulate the theoretically proposed strategy process model in SME into the practice in form of case study (selected agricultural enterprise A). Based on the internal analysis and personal interviews with owner-managers of selected enterprise A, it could be stated the forming this model based on the most important determinants for strategic development in SME could be applied in practice and this model could be used in other strategic decision-makings. Owner-managers agree with the forming of this model and its practical usage. The main benefits of this model are based on highlighting the most important determinants for strategic development in SME, giving the consequences in strategic management process and reciprocal incidences. At the same time, the model could identify the shortcomings in implementing the strategic management that could threaten strategic plans and reaching main strategic goals of the enterprise. Based on the simulation of strategic process model for the enterprise A, the main benefits and shortcomings in the process of strategic management have been identified and subsequently the recommendations for elimination of identified shortcomings have been proposed. These recommendations have been discussed with owner-managers. They decided to deal them with all members of management and supervisory board with building-up long-term strategic plans.

The results of research have identified and confirmed the most important determinants for strategic development in SME, i.e. quality and unique and competitive product under the quality production strategy and policy that creates a strong competitive advantage, ability to be adapted the current needs of the market and customers and creating the quality and long-term base of loyal customers. This model could be served as an inspiration for optimizing the process in business development from theoretical and practical point of view. The results of the case study cannot be generalized for the whole research sample; nevertheless, it could be served as a basis for other research activities in this field. The research has been provided a detailed internal analysis and information about selected SME that could compare its strategic processes with the current theoretical points of view.

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EUROPEAN LEGISLATION AND FAIRER SUPPORT FOR FARMERS

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Keywords:

European legislation – fairness – farming – financial support – recent development

JEL classification: K, Q, F

Abstract:

This paper focuses on the critical assessment of the recently valid, binding and applicable European legislation regulating the fairness of support for the farmers in the European Union. The focus is on six legislative instruments in the European Union, adopted between 1995 and present. It fills the present gap in research regarding agricultural practices, because we focus solely on the legislative, rather than economic or environmental aspects of the issue. The methods employed in our analysis include doctrinal legal analysis and a subsequent socio-legal analysis. We have found out that the recent relevant EU legislation mostly takes on the form of Regulations (of the Council, the Commission and the European Parliament and the Council) which automatically leads to the direct effect and applicability of the adopted secondary instruments in the EU Member States. Such measures adopted by the EU institutions lead to greener farming practices, research and the spread of knowledge, a fairer system support for farmers, and a stronger position for farmers in the food chain

Introduction

The common agricultural policy in the European Union was one of the cornerstones of the European Economic Community. Nowadays, the need for legal regulation and legislative support for farmers' remains, yet, the particular expectations of farmers, consumers and national policy-makers have evolved. According to the European Commission (2014), one of the main aspects of the current agricultural policy of the European Union is the focus on fairness of funding for European farmers (pp. 3-6). Such change originates from a general increase in awareness of agricultural environmental issues among the general public, the increase in demand for greener farming practices, and stronger base for recent farmers' production decision on market demand, as well as public authorities' expectations on the farmers regarding the appropriate ecological and fair trade considerations in the production of farmers (European Union, 2016). State and other public subsidies can serve as the essential means of achieving the desirable practices from the side of the farmers. Nevertheless, such funding practices have to take into consideration the particular regional differences

between various EU areas and the complexity of the issue of fairness of such subsidies in the changing global economy.

1. Methods, literature overview

The methods of this paper combine doctrinal legal analysis with socio-legal methodology. The main sources for doctrinal legal analysis include the relevant European legislation issued between 1995 and present. Subsequently, a socio-legal analysis is carried out to explore the practical aspects of the application of the legislated European policies:

- a) The doctrinal legal analysis takes into account the following documents of the EU legislation:
 - I. Council Regulation (EC) No 1469/95 of 22 June 1995 on measures to be taken with regard to certain beneficiaries of operations financed by the Guarantee Section of the EAGGF [Official Journal L 145, 29.06.1995],
 - II. Council Regulation (EC) No 1290/2005 of 21 June 2005 on the financing of the common agricultural policy,
 - III. Communication from the Commission to the Council of 9 March 2005 on risk and crisis management in agriculture [COM(2005) 74 final - Not published in the Official Journal].
 - IV. Commission Regulation (EC) No 1848/2006 of 14 December 2006 concerning irregularities and the recovery of sums wrongly paid in connection with the financing of the common agricultural policy and the organisation of an information system in this field and repealing Council Regulation (EEC) No 595/91,
 - V. Community guidelines for state aid in the agriculture and forestry sector 2007-13 [Official Journal C 319 of 27.12.2006]
 - VI. Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009.
- b) The socio-legal analysis is focused on the European politics that underpins the adoption of the relevant legislation as well as the subsequent bringing of such policies into practice, as it is reflected in the official statements of the European Union (European Union, 2016) and, in particular, the European Commission (European Commission, 2014).

The current European policies related to the increasing awareness of fair support for farmers have been the subject of interest of many international researchers. Our research project is novel among these studies, because we do not focus on a particular economy, but rather on the doctrinal legal aspects of the overarching European secondary legislation and the socio-legal aspects of the practices following such legislation.

The above-mentioned previous research projects are mostly focused on the local impact of the European legislation and the subsequent practices in particular countries of the

European Union. Huttunen and Peltomaa (2016) investigate into green farming in Finland, while drawing a connection to the historical specificities of the country (pp. 220-223). Smit, Driessen, & Glasbergen (2009) explore the specificities of the issue in the Netherlands (pp. 385-386). Tocco, Davidova, & Bailey (2016) inquire into the situation in Italy (pp. 2-15). Bakucs, Latruffe, Fertő, & Fogarasi (2010) analyse the technical aspects of practising the EU legislature in Hungary (pp. 165-166), and relate these issues to the other EU accession countries of 2004, especially the Czech Republic and Poland (*ibid.*, pp. 172-173).

Some studies connect the European legal regulation of good farming practices to the broader background of economic and agribusiness theories. Some of the regional studies mentioned above also consider the historical rooting of the current economies. This is done in the study of the 2004 EU accession countries and the application of European law and policies is correctly relating the current economic aspects of applying European legislation to the legacy of communism and socialism in the Central European region. Similarly to Bakucs, Latruffe, Fertő, & Fogarasi (2010), Hann (2014) examines the situation in Hungary and draws connections between the current economy and the Marxist-Leninist heritage of the region (Hann, 2014, pp. 635-640). Ioris (2016) links agribusiness economic theories to the economic theories of neo-liberalism (pp. 85-86). Even though this is illustrated by the case-study of Brazil (*ibid.*, p. 88), the main contribution of this research is the connection of agri-business and neo-liberalism.

Some of the previous studies are also centred on particular environmental issues rather than on investigating certain regions or connecting agribusiness to individual economic theories. Such is the research project presented by Kellermann and Salhofer (2014). Their study is solely focused on the protection and preservation of permanent grasslands (p. 6196). Additionally, certain research projects inquire into particular aspects of farming, e.g. reshaping farming, large-scale rewilding or marginal farming (Merckx & Pereira, 2015, pp. 4-9), leadership skills of agribusiness professionals (Smalley, Retallick, Metzger, & Greiman, 2016, pp. 43-47), or the prevention of biodiversity loss in the European Union (Strohbach, Kohler, Dauber, & Klimek, 2015, pp. 558-562).

Our current research builds on these former studies but differs in its sole focus on law and legal aspects of green agribusiness. We investigate into the legal underpinnings of the European Union's support for farmers and draw conclusions in legal theory regarding the efficiency of support farming and the increased concern regarding the fairness of such practices.

2. Results

We have herein sorted our findings into two sections according to the overarching methodology. Firstly, we present our results of doctrinal legal analysis, and secondly, the findings of socio-legal analysis are summarized.

2.1. Results of doctrinal legal analysis

We focus on the European legislation regarding agribusiness adopted between 1995 and present. We have chosen this particular time period because the most recent trends of the development of the regulation of agribusiness are reflected in the pertinent legislation adopted in this era (European Union, 2016).

Among the chosen documents, we selected those that specifically focus on state, government and European subsidies and other material support for agribusiness, and especially those that concern the fairness of such support. These are solely embodied in regulations. Such regulations have been adopted and issued by the Council, the Commission and the European Parliament and the Council. Due to the lack of the legal regulation of the subject matter by directives, the legislated fair funding practices are directly applicable and effective.

The Council Regulation (EC) No 1469/95 of 22 June 1995 on measures to be taken with regard to certain beneficiaries of operations financed by the Guarantee Section of the EAGGF, a Community system is established, the purpose of which is identifying and making known the competent authorities of the Member States and the Commission operators presenting a risk non-reliability (European Union, 2016).

Council Regulation (EC) No 1290/2005 of 21 June 2005 on the financing of the common agricultural policy establishes a single legal framework for financing farming in the European Union. In addition, to new subject-specific funds are established by this Regulation.

The Commission Regulation (EC) No 1848/2006 of 14 December 2006 concerning irregularities and the recovery of sums wrongly paid in connection with the financing of the common agricultural policy and the organisation of an information system in this field and repealing Council Regulation (EEC) No 595/91 is designed to improve the Community's "irregular practices" (European Union, 2016). It requires the Member States to report any irregularities they have detected to the Commission. This is to happen every three months. Moreover, the individual Member States are required to inform the Commission about their domestic legal and legislative procedures in the area of criminal and administrative law.

Finally, the Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and repealing Council Regulation (EC) No 637/2008 and Council Regulation (EC) No 73/2009 lists the rules on direct payments to farmers have changed following the reform of the EU's common agricultural policy (European Union, 2016).

2.1. Results of socio-legal analysis

Our socio-legal analysis has yielded three main results. Firstly, the main aim of the Common Agricultural Policy in the European Union is not only to improve agricultural productivity so that consumers have a “stable supply of affordable food” (European Commission, 2014, p.2), but also to support farmers and provide them with means of living in a fair and environmentally sustainable manner.

Secondly, the market as well as institutional support for farming in the European Union is more climate dependent than other areas of European common policies (European Commission, 2014, p. 6). Therefore, the practices of support by European Union’s as well as national authorities need to be carefully legislatively regulated in order to ensure justice and fairness.

Thirdly, consumers have recently become more aware of the environment (European Commission, 2014, p. 9) as well as more interested in local and regional products and specialities (ibid.). Therefore, the nowadays farmers have two roles in satisfying the consumers’ demand: to economically valorise their domestic and specific products as well as to provide for the production of such products in an environmentally sustainable manner. The current European legislation reflects these trends and aims to provide a safe and fair legal environment for farmers.

3. Discussion

The EU farm policy and Common Agriculture Policy serves many purposes. It has considerably developed between 1995 and present. This helps the farmers to meet and satisfy the changing demands of the consumers as well as to produce agricultural goods in accordance with the public policies. According to the European Union’s official web-page (2016), the most recent trends in the developments of the Common Agricultural Policy include: greener farming practices, research and the spread of knowledge, a fairer system support for farmers, and a stronger position for farmers in the food chain. Due to the importance of the subject matter, the related European legislation mostly takes the forms of Regulations. This enables the legislative instruments of secondary law to take direct effect and applicability in the Member States in question. Future research should further consider the way how the current legislative trends affect the situation of farmers and their farming practices and in the role that European Union’s institutions take in this process.

Conclusion

Our research has taken on previous European projects investigating into the economic and environmental impact of the recent changes in the Common Agricultural Policy. The specificity of our project lies in the close focus on legislation and legislative instruments. We find our research timely and important in the current climate of fast

development of the legal regulation of agriculture in the European Union. While we have taken account previous works concerning particular regions, individual farming practices or specific economic theories, we based our research on a close investigation of law. We have concluded that while Europe's agriculture has been regulated by the EU law since 1962 (European Commission, 2014, p. 5), the subject matter of such regulation as well as its means and purposes have changed radically. The current state of European law directly responds to the needs of farmers and consumers, while simultaneously establishing fair practices thereof. It is now in the responsibility of European and national authorities to bring these legal arrangements into practice.

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USE OF INTERNET AND SOCIAL NETWORKS IN THE CZECH MUNICIPALITY ENVIRONMENT

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Keywords:

Internet – municipality – social network – utilization

JEL classification: H00, O35, R10

Abstract:

The goal of the article is to analyse the use of social web applications and internet by selected municipalities in the Czech Republic in the connection with obtaining information from public authorities. Presented results will be based on research that was conducted in 2016 at the Faculty of Informatics and Management on University of Hradec Králové. The survey included 335 municipalities. For analysis were used contingency tables with clear graphs. The analyses confirmed the expectations of the authors. Social applications are in the sample of respondents used more in the cities than in villages. The same results were found also for updating of contributions. Even though not all the population in the Czech Republic uses the internet and social applications, we can recommend the use of clear and accessible websites and also social web applications.

Introduction

Under the Act No 128/2000 Coll., on Municipalities is in § 35 written that “the independent competence of a municipality includes, in particular, the matters stipulated under sections 84, 85 and 102, with the exception of the issue of municipal ordinances. In the independent competence in its territorial district, and in accordance with the local conditions and local customs, the municipality also attends to the fostering of conditions for the development of social care and to the satisfaction of the needs of its citizens. This includes, in particular, meeting the needs for housing, the protection and development of health care, transport and communications, information, education and training, general cultural development, and the protection of public order.” According to the Act no. 106/1999 Coll., on Free Access to Information, § 2, the municipality has an obligation to provide information relating to their competence. That is the information that under this Act they are required to disclose and others intended for publication, eg. under the law on personal data protection, building act etc.

Publication allows to interested citizens in areas related to events, photos, municipal property, municipal budget, strategic plan development, promotion and funding of public goods, what is happening in the municipality, companies engaged in the community, voluntary associations, and other areas. Publication and understandable information can improve communication and understanding people, what is the municipality and public administration doing. Information and guidance solutions to life situations, links to useful websites, for example Public Administration Portal, the Ministry of Regional Development and the Ministry of the Interior of the Czech Republic are as well as important for the citizens of the municipality as well as important.

1. Methods, literature overview

1.1. Methods and goal

There were used primary and secondary sources in the processing of the article. Primary sources were obtained within the survey, which was conducted by teachers and students on the Faculty of Informatics and Management at the University of Hradec Králové. Investigation was done from 26th of February to 12th of March 2016. Selected students were asked to find social networks and communities established in the event that they are used in the municipality to fill in the details on the presented information. Findings could also contain that the municipalities do not use those technologies. Students were assigned to all regional, statutory or district municipality. In total there were 72 of those municipalities. In addition there were randomly selected cities and villages in each region so that the sample was representative as possible. The cities went from section 3, § 1 of Act 128/2000 Coll. on Municipalities, where it is stated that the municipality, which has at least 3,000 inhabitants is a city. Section 4 § 1 of the Municipalities Act states 25 statutory towns, from which the survey, reflect. There were obtained 335 usable responses from a total of 6258 municipalities in the Czech Republic. Therefore, the results will be referenced to a given sample of respondents.

As for secondary sources, they comprised websites of selected surveys and also official statistics from the Czech Statistical Office and Eurostat, technical literature, information gathered from professional journals, discussions or participation at professional seminars or conferences. Then it was necessary to select, categorize and update available relevant information from the collected published material.

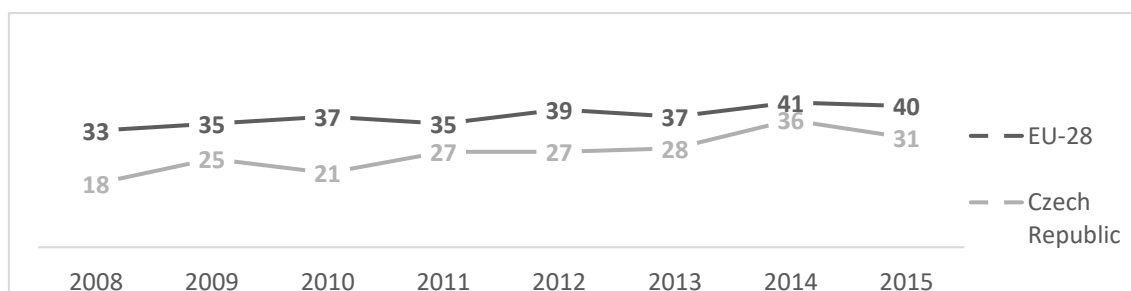
The aim of the paper is to analyse the current situation in the utilization of internet and social networks by municipalities with a focus on the size of the municipality and update information on the social web applications, esp. Facebook.

1.2. Literature review

Social networks offer the opportunity to build their own social group or use formed groups for the municipality. In case that social networks have a sufficient number of users, they should be used for providing information about news in the community, supporting traffic events, development of tourism, reportage of events, the publication of videos, discussion questions, and thus draw feedback on what is happening in the village. Social media are used more and more by people in their personal lives and they also penetrate into the public sphere. Some municipalities are open to this approach and network use. Social networking for the community is not absolutely necessary, but they can be beneficial. Utilization of social networks can reach the target group, provide information and awareness of the community, identify behaviors, needs and interests of citizens, access statistics or evaluation.

Eurostat done the research focused on the interaction of citizens and public authorities. Internet is not used in the Czech Republic is as much as an average of the EU-28 (see. Fig. 1). As far as downloading forms or submitting materials is even worse. In 2015 download the forms 15% and uploaded 10% of citizens in the Czech Republic. The EU-28 was 28% and 26%. (Eurostat, 2016)

FIG. 1: Obtaining information from public authorities of websites



Source: Individuals using the Internet for interaction with public Authorities (2016)

Facebook dominated in the Czech Republic according to the world map of social networks. The number of users of selected social networks in the Czech Republic in the last quarter of 2015 is presented below (jobspin.cz).

- a) Facebook - The number of registered users reached 3,805,480,
- b) Google+ - it is expected to be about 100,000 active users and about 500,000 registrations,
- c) LinkedIn - the number of subscribers is 417,600,
- d) Twitter - in the Czech Republic reached more than 300 000 users.

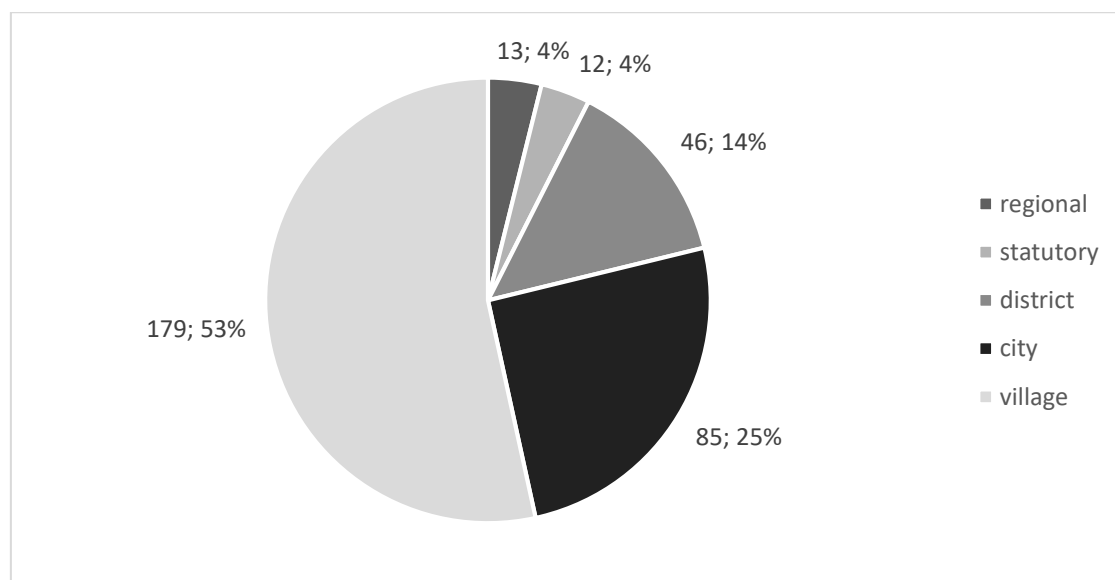
A new trend in online marketing communications as a tool for increasing the attractiveness of municipalities in the Moravian-Silesian region dealt Klepek (2014). The impact of social media in local government of Spanish municipalities devoted

Criado et al. (2015). The issue of social media in smart cities was dealt with in the Mexican municipalities (Sandoval-Almazan, et al., 2015). Social media such as municipalities interactivity with citizens in major US cities was dealt by Mossberger (2013). In Italy, they are also concentrated (Agostino, 2013) on the use of social media to engage citizens in the municipalities.

2. Results

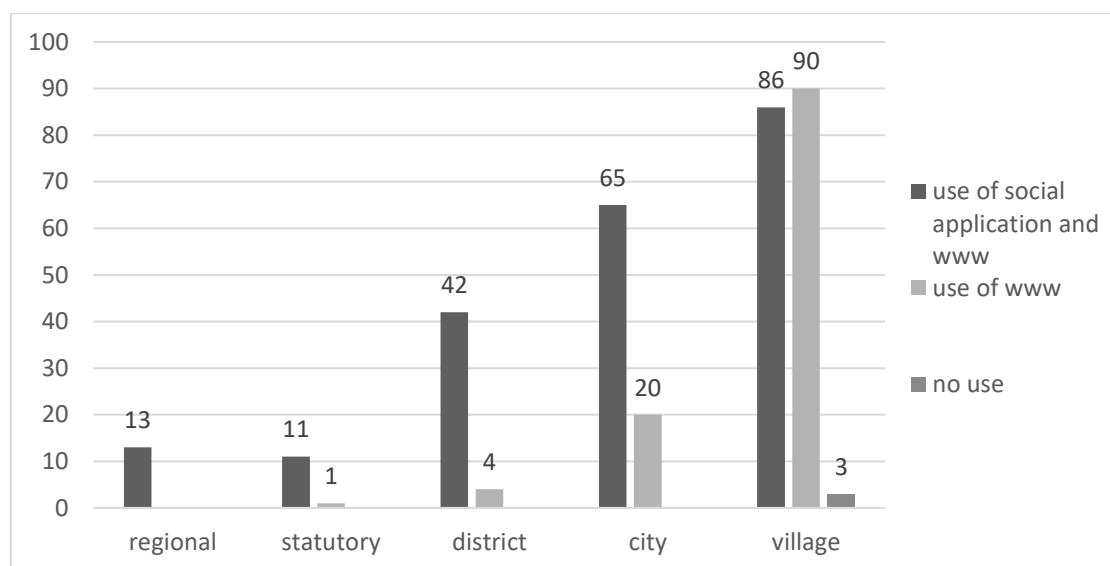
It was obtained a total of 335 usable responses. Distribution of municipalities is shown in Fig. 2. For the classification of the city were used the municipalities over 3,000 population. Regional, statutory and district towns were included all. In our sample we have 156 municipalities, which can be described as a city. By "village" there are listed municipalities with fewer than 3,000 inhabitants. The graph shows that these municipalities is in a given sample of 53%, 179 respondents.

FIG. 2: Distribution of municipalities



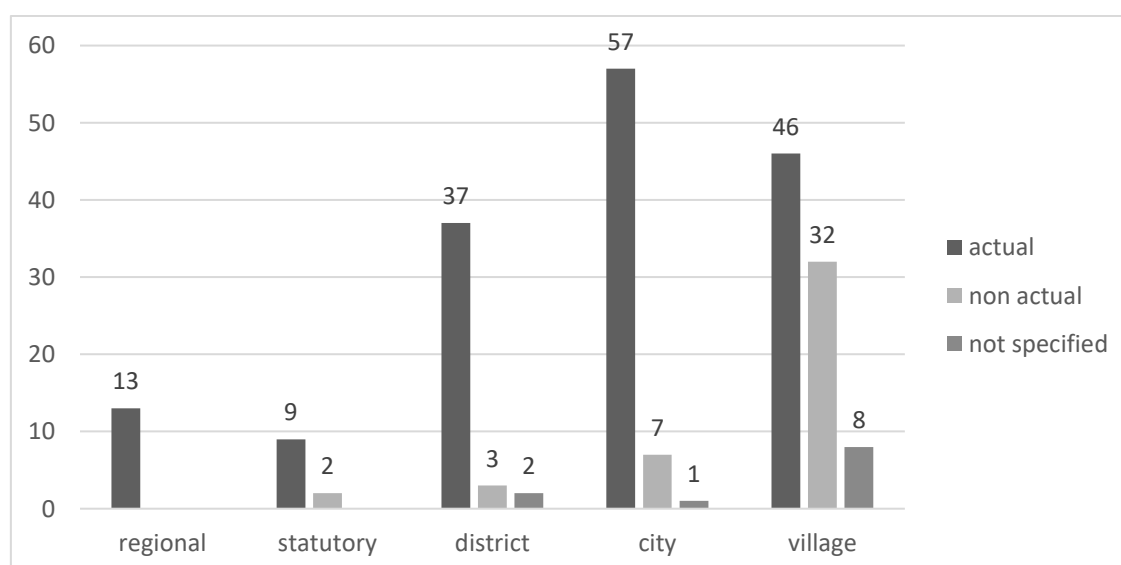
Source: own elaboration

It was founded (Fig. 3) that only three of 335 analysed municipalities have not formed their own website, where they inform citizens about developments in the municipality. It was founded that 217 municipalities use social web applications. Facebook uses 206 municipalities and 11 other uses another social web application (Youtube, Twitter or Instagram). In the sample of respondents applications are used more in the cities than in villages. 84% of cities and 48% of villages use social web applications. Even though not all the population in the Czech Republic uses the Internet and social application, we can recommend the use of clear websites that are outside the three municipalities in the sample used, but also social web applications.

FIG. 3: Municipalities and utilization of social applications and www


Source: own elaboration

We have also focused whether or not are contributions on the Facebook uptodate. It was founded that 162 of analysed municipalities have actual contributions on the Facebook, 44 have no actual contributions and in case of 11 municipalities we have not answer (Fig. 4). It can also be noted from the results that the size of the municipality decreases topicality of featured articles. While in district towns has only 7% of outdated articles, in cities it is already 10% and in villages it is 37%.

FIG. 4: Municipalities, utilization of social applications and actual or no actual contributions


Source: own elaboration

3. Discussion

It can be stated that Facebook has a dominant share between social networks in the Czech Republic and in countries of European Union. The municipalities and official authorities would target on Facebook as the most often used social network. Secondly municipalities can focus on other social networks as is YouTube, Twitter and others. The dominance of the Facebook is the reason why we have focused in our research in the selection of the social networks on the Facebook.

The next research will focus on the utilization of social network by selected municipalities in countries from Visegrad Group.

Conclusion

Phenomenon of social networks is still around us. Individuals using the Internet for interaction with public authorities showed an interesting trend. The Internet use more than 70% of citizens, for communication with the Public Authorities citizens do not use it so much in the Czech Republic. While in 2014, 36% used the Internet for interaction with public authorities, in 2015 it was only 31%. In this monitored indicator, we are well below the EU-28.

Social networks can be used by municipalities for sharing of information about public service announcement, culture, sport and other activities, town halls and council meetings, emergency alerts, crime prevention, construction and problems with transportation and others. There is a big potential in the active utilization of social networks by municipalities to inform individuals about news.

Changes in the global information society affect all areas of communication, of publishing, delivery, display and search. Social networks are now a contact point for citizens, effective marketing tool for promotion, PR, direct marketing, openness town halls and others. Information attracts attention, emotions, stimulate debate and encourage people to share it with the help of texts and graphics.

Into the research that was done in 2016 at Faculty of Informatics and Management from University of Hradec Králové were included 47% of cities and 53% of villages. 217, 65% of them use social networks and internet and 115 of them do not use social networks but use internet for communication with citizens. Only 3 small villages do not use internet and social networks. As far as up to date of the communication on the social networks it is possible to state that 75% of municipalities have up to date information. Like the size of the municipality, the smaller is the unit, the less technology is also used. Even the updated is true the smaller the municipality is, the fewer current posts.

Acknowledgement:

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Act no. 106/1999 Coll. on Free Access to Information

Act no. 128/2000 Coll. Municipalities

LEADER'S MBTI PERSONALITY AND LEADERSHIP EFFECTIVENESS: THE MEDIATING ROLE OF TRANSFORMATIONAL LEADERSHIP

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MBTI –personality – mediation – transformational leadership – leadership effectiveness

JEL classification: M190

Abstract:

Drawing on Jungian psychological types perspective and managerial cognition theory, the present study empirically examines the mediating role of transformational leadership plays in linking leader's MBTI (Myers–Briggs Type Indicator) personality with leadership effectiveness. Using a sample of 236 leaders in China, we found that (1) four dimensions of leader's MBTI personality (extraversion-introversion, sensing-intuition, thinking-feeling, judging-perceiving) related to leadership effectiveness; (2) transformational leadership partially mediated the effect of leader's extraversion-introversion, sensing-intuition and judging-perceiving on leadership effectiveness. Theoretical contributions, practical implications and future directions were discussed.

Introduction

Leaders play an important role in groups and organizations. Therefore, it is not surprising that there has been considerable academic and practitioner interest in the topic of leadership effectiveness in organizational behavior (Derue, Nahrgang, & Wellman, 2011; Yukl, 2001). Empirical research of organizational behavior has found systematic relationships between personality and leadership outcomes (Judge, Bono, Ilies, & Gerhardt, 2002). The results support the important role of leader's personality on leadership outcomes (Ng, Ang & Chan, 2008, Derue et al., 2011).

However, there are several gaps remain in this domain. First, while previous studies mostly have investigated the influence of leaders' Big Five personality traits on leadership outcomes, few studies have attempted to focus on the role of leader's MBTI (Myers–Briggs Type Indicator) personality. There were two typical perspectives about personality research, personality traits which have been extensively tested by the Big Five structure, extraversion, agreeableness, conscientiousness, openness to experience, and emotional stability (Costa & McCrae, 1992) and personality types which have been extensively tested by the MBTI theory, four bipolar psychological dimensions as Extravert–Introvert (EI), Sensing–Intuition (SN), Thinking–Feeling (TF), and Judging–

Perceiving (JP) (Myers, Mccauley, Quenk, & Hammer, 1998). Second, past studies have investigated the influence of leader's personality on leadership outcomes without exploring and explaining mechanisms that underlie such relationships (Gardner & Martinko, 1996; Yukl & Mahsud, 2010). Third, cross-national and cross-cultural research challenges the previous results by suggesting that leader's preferences vary across cultural contexts (Tsui, Nifadkar, & Ou, 2007).

In the current study, there are three main objectives. The first objective is to explore the relationship between the MBTI personality preferences and leadership effectiveness drawing on Jungian psychological types perspective. We select MBTI just because that SN, TF, and JP related closely to leadership actions such as decision and strategy (Gomez, 2013; Bergner, Davda, Culpin, & Rybnicek, 2015). And we believe that research on MBTI may bring important practical as well as theoretical contributions because MBTI have been widely used in management counseling and career assessment (Caplan, 2003; Ginevra, Nota, Heppner, Heppner, & Soresi, 2014). The second objective is to examine the mediating effects of leader behaviors on the relationship between leader's MBTI personality and leadership effectiveness. Derue, Nahrgang and Wellman (2011) highlight the theoretical value of an integrated model of 'leader traits—leader behaviors—leadership effectiveness' framework, and advocate the integration of trait and behavioral theories to understand how traits relate to leader effectiveness. Based on Derue et al. (2011)'s suggestion, we examine how transformational leadership, the most widely accepted leadership paradigm (Lowe & Gardner, 2000), affect leader's MBTI personality -- leadership effectiveness relationship. Finally, the third objective is to investigate and examine the above relationships using Chinese leader samples. Although MBTI theory was developed in western culture, our results would help to extend the cross-national and cross-cultural application of MBTI theory.

In conclusion, by using a sample of 236 leaders in China, we empirically examine: (a) the main effect of leader's MBTI personality on leadership effectiveness; (b) the mediating effect of transformational leadership behavior in linking leader's MBTI personality with leadership effectiveness, to address above gaps.

1. Literature overview, Methods

1.1. Literature overview

Leadership effectiveness (LE) refers to leaders could motive and direct their followers towards common goals (Yukl, 2001). Building on Jungian psychological types and MBTI (Jung, 1971; Myers et al., 1998), people have differences in their behaviour because of the way that they perceive, acquire, and process information, including EI, SN, TF and JP. We propose that EI, SN, TF and JP relate to leadership effectiveness.

EI, which concerns with the orientation of energy. Extroverted leaders (E leaders) focus on the outside world, including the environment, organization, people and tasks, introversion leaders (I leaders) are more focused on inside thinking, experience, and self-awareness (Myers et al., 1998). E leaders are active and good at communicating with others. However, they are aggressive and take actions quickly without concise consideration. Comparing with E leaders, concise consideration of I leaders would be helpful for them successfully finishing leadership activities (Furnham & Crump, 2015). Accordingly, we propose that I leaders are more effective than E leaders.

SN, which characterizes information acquisition and perception. Gallén (2006) showed that information acquisition was important to decision-making, one of leadership activities. Leaders with a preference for sensing (S leaders) are more present- and details-focused, and prefer immediate reality and direct experience; whereas leaders with a preference for intuition (N leaders) are future-focused and prefer inferred meanings and relationships (Myers et al., 1998). Studies have shown that S leaders focus their attention on currently specific facts what is real and tangible whereas N leaders tend to obtain more abstract information from complex backgrounds (Brandt & Laiho, 2013). Gardner and Martinko (1996) suggested S leaders are more effective on structured tasks which require routine and detail-oriented activities. Based on the findings above, we propose that S leaders are more effective than N leaders.

TF, which pertains to information processing. Gallén (2006) showed that information processing was important to decision-making, one of leadership activities. Leaders with a preference for thinking (T leaders) prefer to make decisions on impersonal, objective logic; whereas leaders with a preference for feeling (F leaders) prefer a person-cantered, values-based decision process (Myers et al., 1998). Leadership effectiveness refers to successfully motive and encourage followers well done (Yukl, 2001). It was theorized that successful leaders would be sensitive to follower's feeling and values which fit to characteristics of F leaders (Carr, De La Garza, & Vorster, 2002; Gardner & Martinko, 1996). Accordingly, we propose that F leaders are more effective than T leaders.

JP, which relates to attitudes toward dealing with the outside world and behavioural output. Bergner et al. (2015) argued that JP refers to the way individuals deal with the environment. Leaders with a preference for judging (J leaders) prefer planning and organizing; whereas leaders with a preference for perceiving (P leaders) prefer a more flexible way (Myers et al., 1998). J leaders could produce clear, concise, and unambiguous plans which are helpful to improve success of activities (Bergner et al., 2015; Gardner & Martinko, 1996). Previous studies have showed that J leaders are clearly linked to leadership outcomes (Berr, Church, & Wacławski, 2000). We propose that J leaders are more effective than P leaders. We put forth the following hypothesis:

Hypothesis 1-4. EI (H1) and TF(H3) preferences were positively related to LE; SN (H2) and JP (H4) preferences were negatively related to LE.

Further, we propose that transformational leadership behaviour mediates the relationship between EI, SN, TF, and JP preferences with leadership effectiveness based on managerial cognition theory. Transformational leadership, the most widely accepted leadership paradigm (Lowe & Gardner, 2000), points out transformational leaders motivate their followers by activating followers' higher order needs, fostering a climate of trust, involving followers in the process of decision-making, and inspiring followers to transcend their self-interest for the sake of the team or the organization (Bass & Avolio, 1997). According to managerial cognition literature (Finkelstein, Hambrick, & Cannella, 2009; Weick, 1995), people construe reality through a three-stage filtering process, defining a field of vision, selective perception, and interpretation.

We argue that leader's EI, SN, TF, and JP preferences influence their leadership behavior through this three-stage filtering process for three reasons. First, the individual psychological characteristics influence his/her field vision by determining the extent to which the leader collects information (Finkelstein et al., 2009). Leader's EI and SN preference determines how intensely leaders search for information, how much information they scan, how they learn about external and internal information (Bergner et al., 2015; Gardner & Martinko, 1996). The 'sense making' process formed by these activities influences a leader's focus of attention and field of vision (Weick, 1995), and which serves as one of the most important characteristics of transformational leadership. Second, the study shows that the leader selectively perceives part of information in his field of vision based on bounded rationality perspective (Simon, 1991). Leader's EI SN and JP preference determine his/her choices which further influence leadership behaviors and styles. Third, leader's TF preference determines how to explain perceived information and make different decisions. According to information-processing theory (Lord & Maher, 1991; Wofford, Goodwin, & Whittington, 1998) leadership involves dynamic information-processing, in which cognitive style plays a critical role in leaders' managerial activities (Lord & Emrich, 2000). Wofford and Goodwin (1994) found that there are different cognition-interpretation for transformational leader and transactional leader, and the cognitive interpretation of transformational leader involves expectation for follower's independence and innovation. The differences of cognitive interpretation determine different leadership behaviours (Yukl, G. & Mahsud, 2010).

Research indicates transformational leadership is related to a great number of personality characteristics, such as creativity, flexibility, self-confidence and so on (Bass & Avolio, 1997). Most of these characteristics have been found associated with intuition (N), feeling (F) and perceiving (P). Research on the relationship between these four personality preferences and transformational leadership found that E, N, F and P leaders are more likely to develop a transformational belief system than I, S, T and J leaders (Hautala, 2006). Also, an enormous volume of research has focused on consequences of transformational leadership behaviour and found that transformational

leadership behaviour is predictive of essential leadership outcomes (Braun, Peus, Weisweiler, & Frey, 2013). As such, we propose:

Hypothesis 5-8. Transformational leadership mediates the relationship between EI (H5), SN (H6), TF (H7) and JP (H8) preferences and leadership effectiveness.

1.2. Methods

We collected data from multiple sources from 58 companies in China. MBTI preference was self-rated by 290 focal leaders, 1450 subordinates evaluated leadership behaviour for focal leaders. Leadership effectiveness was assessed by 58 supervisors. Participants were assured their survey results would stay confidential and anonymous. The number of valid responses we received from leaders, subordinates and supervisors were 236, 940 and 45 respectively, yielding a response rate of 81.38%, 64.83%, and 77.59% respectively. The average age of the participants was 38, and average tenure in the company was 9.5 years. 57.63% of the participants were male, and 80% had a college or higher degree. Age, education level and tenure were normally distributed.

All the items used for the study were adopted from existing literature. MBTI personality was measured with 166-item MBTI-F version. MBTI preference scores were first collected, and then transformed to continuous scores for subsequent analysis. A high EI, SN, TF and JP score respectively indicates preference for E, S, T and J whereas low score respectively indicates preference for I, N, F and P. The Cronbach α of SN scale was .73 and the split-half reliability was .74, both exceeding .70. We use 11-item scale developed by Colbert et al. (2008) to measure leadership effectiveness. The Cronbach α for this scale was .946. Transformational leadership was measured with the 20-item MLQ-5X (Bass & Avolio, 1997). As ICC1 was above .20, ICC2 was above .60 and all rwgs were above .80, the agreement of leadership ratings among followers was supported. The Cronbach α for this scale was .949. We controlled leader's gender, age, tenure and education level. We employed path analysis and structural equation modelling (SEM) to analyze the proposed model using SPSS13.0 and LISREL8.80.

2. Results

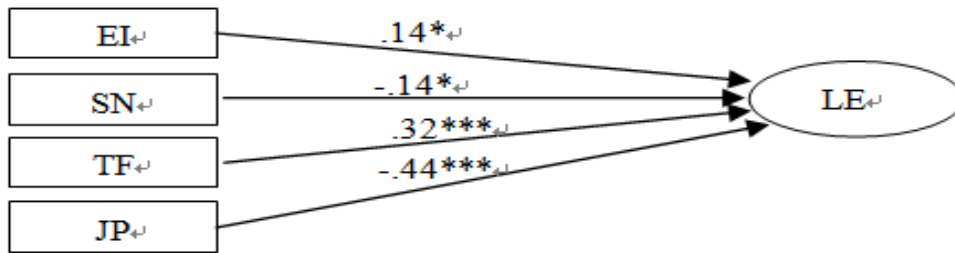
We firstly conducted a confirmatory factor analysis to verify the discriminant validity of the transformational leadership (TFL) and leadership effectiveness (LE). The SN preference was not included in the CFA analyses just because that MBTI has special scoring system. The results of this analysis showed that the two-factor model fitted the data better ($\chi^2/df = 2.05$, RMSEA = .07, GFI = .91, CFI = .98, NNFI = .98) than one-factor model ($\chi^2/df = 6.75$, RMSEA = .16, GFI = .75, CFI = .84, NNFI = .81). Thus, the discriminant validity of measures of two constructs was supported. The means, standard deviations (s.d.), and correlations were summarized in Table 1.

TAB. 1: Descriptive Statistics and Correlations among variables

	Mean [↻]	s.d. [↻]	EI [↻]	SN [↻]	TF [↻]	JP [↻]	TFL [↻]	LE [↻]
EI [↻]	92.82 [↻]	22.92 [↻]	1.000 [↻]	-.244(**) [↻]	-.295(**) [↻]	-.090 [↻]	-.151(*) [↻]	.073 [↻]
SN [↻]	87.92 [↻]	20.87 [↻]		1.000 [↻]	.414(**) [↻]	.557(**) [↻]	.240(**) [↻]	-.125(*) [↻]
TF [↻]	89.14 [↻]	22.64 [↻]			1.000 [↻]	.513(**) [↻]	.097 [↻]	.055 [↻]
JP [↻]	83.75 [↻]	23.14 [↻]				1.000 [↻]	.225(**) [↻]	-.274(**) [↻]
TFL [↻]	3.84 [↻]	.54 [↻]					1.000 [↻]	-.304(**) [↻]
LE [↻]	3.74 [↻]	.72 [↻]						1.000 [↻]

Source: own research; Two-tailed test; *** $p < .001$, ** $p < .01$, * $p < .05$; $n = 236$

We then conducted a mixed-model path analysis to test direct effects of EI, SN, TF and JP on leadership effectiveness for H1, H2, H3 and H4. The results were shown in Figure 1. The model fit indices indicated a good fit ($\chi^2/df = 1.78$, below 2.00; RMSEA = .057, below .08; GFI = .92, AGFI = .90, both above the acceptable level of .90; NFI, NNFI, IFI and CFI, all above .95). The results confirmed the hypothesized relationship between EI ($\beta = .14$, $p < .05$), SN ($\beta = -.14$, $p < .05$), TF ($\beta = .32$, $p < .001$), and JP ($\beta = -.44$, $p < .001$) preference and LE, supporting H1, H2, H3 and H4. That is, leadership effectiveness of leaders with preferences for I, S, F and J was higher than that of leaders with preferences for E, N, T and P.

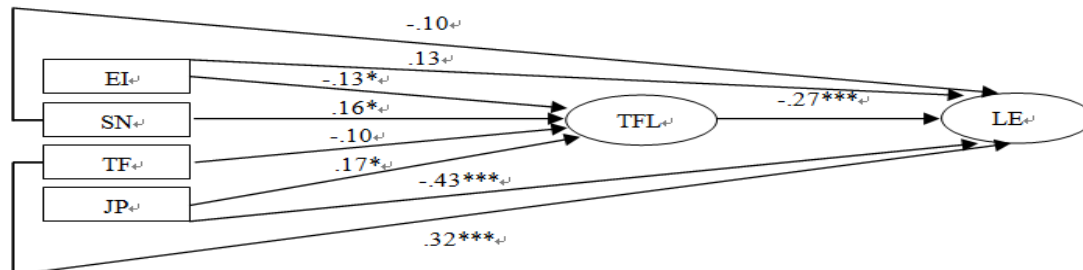
FIG. 1: Direct effect of MBTI on leadership effectiveness

Source: own research; Two-tailed test; *** $p < .001$, ** $p < .01$, * $p < .05$; $n = 236$

We finally test our mediated model for H5, H6, H7 and H8, using the SEM approach suggested by James, Mulaik & Brett (2006). Following James et al. (2006), we first analyzed a full mediation model (paths from EI, SN, TF and JP to transformational leadership and from transformational leadership to leadership effectiveness). The statistical results indicated a good fit of the model ($\chi^2/df = 1.61$; RMSEA = .051; GFI = .91; AGFI = .88; NFI, NNFI, IFI and CFI all above .95). We then compared the results of full mediation model with those of partial mediation model ($\chi^2/df = 1.47$; RMSEA = .045; GFI = .92; AGFI = .89; NFI, NNFI, IFI and CFI all above .95), values of fit indices were both acceptable. The change in chi square ($\Delta\chi^2$) was 25.59, and the corresponding change in the degree of freedom (Δdf) was 4, yielding a significant change in chi square ($p < .001$). The results suggested the partial mediation model fitted the data better. The results were shown in Figure 2. As shown in Figure 2 and Table 2, EI ($\beta = -.13$, $p < .05$), SN ($\beta = .16$, $p < .05$) and JP ($\beta = .17$, $p < .05$) preferences

were significantly and positively related to TFL, and TF ($\beta = -.10$, $p > .05$) preference was not significantly related to TFL. TFL was also significantly related to LE ($\beta = -.27$, $p < .001$), in support of H5, H6 and H8 but not H7.

FIG. 2: Indirect effect of MBTI on LE through TFL (partial mediation model)



Source: own research; Two-tailed test; *** $p < .001$, ** $p < .01$, * $p < .05$; $n = 236$

3. Discussion

The present study revealed two major findings: (1) four dimensions of MBTI personality types relate to leadership effectiveness, among EI, TF positively correlated with leadership effectiveness, and SN, JP were negatively correlated with leadership effectiveness; (2) transformational leadership partially mediated the relationship between EI, SN and JP preference and leadership effectiveness.

This study contributed to the extant literature in a variety of ways. First, our study supported the importance of MBTI personality in a leadership context. Previous leadership researchers overemphasized the effects of Big Five personality traits on leadership effectiveness, our results highlighted the relevance between leader's MBTI personality preferences and leadership effectiveness and demonstrated that I, S, F and J leaders had higher leadership effectiveness than E, N, T and P leaders using Chinese samples. This finding seemed consistent with Berr et al. (2005) demonstration that F leaders are more effective compared to T leaders but not consistent with Furnham and Crump (2015) demonstration that E leaders are more effective compared to I leaders. We try to explain the contradict findings that our samples are most middle-level but not senior leadership. Also culture differences maybe moderate the relationship of MBTI personality and leadership effectiveness. Thus, further inquiry into interactions between MBTI and moderators (e.g. position, culture) would be productive.

Second, our study enriched current research by explaining how MBTI personality preferences influence leadership effectiveness. We specified transformational leadership as a mediator, and findings supported that EI, SN and JP directly and indirectly (via transformational leadership) influenced leadership effectiveness. This finding addressed researchers' concern about the lack of understanding of the mediating process of how leader's personality preferences affected leader effectiveness (Spangler, House,

& Palrecha, 2004). Past research has shown that leadership self-efficacy mediates the relationship between leader's personality and leader effectiveness (Ng, Ang, & Chan, 2008). Our study supplemented the leadership effectiveness literature by identifying a behavioral mediator — transformational leadership, and bridging personality and leader effectiveness. Future research should further explore other mediating effect paths.

These findings also had important practical implications. Our results provided guidance for organizational personnel selection. This idea is consistent with the person-position-environment fit literature. Additionally, the present study indicated transformational leaders were not effective under any circumstances. We therefore suggest that organizations should pay more attention to more leadership behaviours.

Conclusion

In sum, the present study provides interesting answers about the role of MBTI in the leadership context in China. Leader's MBTI influences leader effectiveness by their behaviors, future research still need to consider contextual variables to identify above relationships. Also, future research may want to use longitudinal data or experimental design to examine the causal relationships.

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THE RELATIONSHIP BETWEEN OIL PRICE SHOCKS AND ECONOMIC GROWTH STRUCTURE: EVIDENCE FROM JAPAN

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JEL classification: Q43, C32, E23

Abstract:

Japan is a net oil-importing country, but some empirical studies used different Vector Auto-regressive (VAR) models to find the positive relationship between oil price shocks and Japan's real GDP growth since 1985. We found until now no study explaining Japan's unusual reaction to oil price shocks. This paper uses three kinds of structural bivariate VAR models to interpret this problem. Prior to 1985, Japan economy showed typical responses to oil price shocks, such as decreasing real GDP. In order to explain Japan economy special responses to oil price shocks since 1985, based on the perspective of economic growth structure, we investigated the share of expenditure in Japan's national income for each term and found that reduced private consumption, as well as, higher investment and exports, caused Japan's real GDP to increase.

Introduction

After the first and second global oil crises in the 1970s, empirical studies on the effects of oil price shocks on macroeconomic aggregates have been published. A widely accepted consensus in empirical literature is that oil price shocks (the rapid rise in prices for oil) generally cause inflation and decrease real GDP and real wage for oil-importing countries. Some empirical literature focusing on the Organisation for Economic Cooperation and Development (OECD) or France, Germany, Italy, Japan, United Kingdom, United States, and Canada (G7) indicate that unlike the results found in most industrialized countries, those in the context of the Japan's economy vary across different models. Kilian (2008a) and Cologno & Manera (2008) demonstrate that oil price shocks did not significantly affect Japan's real GDP growth in the 1970s and 1990s. Alternatively, Blanchard & Galí (2007), Jiménez-Rodríguez & Sánchez (2005) use different structural VAR models to confirm the positive relationship between oil price shocks and Japan's GDP growth from 1985 to 2007 and 1972 to 2001. Unfortunately, no study has been conducted explaining Japan's unusual reaction to oil price shocks. Explaining these conflicting results remains a challenge.

Japan is a net oil-importing country, and it has no domestic oil-mining sector. Nevertheless, it has a strong automobile sector. These features of the Japanese economy may show different responses to oil price shocks. Thus, this paper investigates the effects of oil price shocks on the Japanese economy, whether they relate to its economic structure in the period of 1973–2010. In the so-called economic structure, we focus on each term in the expenditure side of Japan's national income (i.e., private consumption, total investment, government expenditure, exports, and imports) and observe their responses to oil price shocks using the structure bivariate VAR model.

1. Methodology

1.1. Oil price in the Japan's case

Most empirical literature utilizes unadjusted nominal West Texas Intermediate (WTI) price (Blanchard & Galí, 2007) or real WTI oil price, which is computed by dividing the nominal price by the US CPI (Jiménez-Rodríguez & Sánchez, 2005), even when the home currency of the country under study is not US dollars. For the Japan's economy, the US CPI is not an important index. Moreover, these oil price indices can provide results but not reflect the real effects of oil price shocks on non-dollar countries. Japan is a net oil-importing country, the influence of exchange rates on oil imports, particularly the yen–US dollar exchange rates that are easily affected by global economic events, must be considered. Therefore, in this study, WTI price is multiplied by the yen–US dollar exchange rate (to obtain the nominal price of the Japanese yen) and is then divided by Japan's CPI (to obtain the real oil price). In fact, exchange rate fluctuations can either magnify or reduce the size of oil price shocks for the Japan's economy, particularly for its oil importation, for example, the 1985 Plaza Accord significantly affected the Japanese yen exchange rate.

1.2. Structural break point

The two serial sequences of Japan's real GDP are 1960Q1–2001Q1 and 1980Q1–2010Q1, which are calculated by 68 System of National Accounting (SNA) and 93SNA, respectively. Since 2010, oil prices mainly showed downward trend, which is not conducive to explain the characteristics of Japan's economic structure, so we do not include this period in our analysis. According to the sequential tests conducted by Banerjee et al. (1992), 1973Q1 and 1985Q4 are structural breaking points in the two serial sequences. As there were no noticeable oil price shocks in international market before 1973, for simplicity, we choose our sample period as from 1973Q1 to 2010Q1. Moreover, 1985Q4 is selected as a structural breaking point in the sample period to arrive at the two sub-periods in the current paper. We also verify the robustness of the findings on the small changes of the break date.

1.3. Unit root tests of variables

Prior to developing the structural VAR model, the unit root tests of these stochastic series are first examined using two methods: Augmented Dickey-Fuller and Phillips-Perron methods. The null hypothesis is that the series has a unit root. If the null hypothesis is rejected, then this series will become stationary. Because of space limitation the results are omitted. The first-order differences of all logarithmic variables are stationary in our test results with these two methods for two sub-periods.

1.4. Structural bivariate VAR model

In empirical literature, the non-linear methods, Dynamic stochastic general equilibrium (DSGE) and VAR models are used to study the effects of oil price shocks on macroeconomic aggregates. In the non-linear method, NOPIs are commonly used in research, such as in Hamilton (2009). However, NOPIs only give the highest oil price level, and they cannot illustrate price fluctuations (e.g., cumulative change) in a given period. In reality, the effects of oil price shocks on economic activities do not only depend on the highest oil price level but also on the cumulative increase in oil prices over a given period see Ferderer (1996). In the DSGE model, the results of the simulation rely on the value of parameter. As we cannot cite the value of the parameter from other paper, writing a separate paper calibrating the parameter is required.

This paper adopts several bivariate VAR (i.e., oil price and one macroeconomic variable in the expenditure side of the national income) models. The theory support of adopting this model to analyze this problem is that, for short sample periods and the small scale of oil price shocks, the effects of oil price shocks are linear, as demonstrated by Kilian & Vigfusson (2011). This model can fully describe the relationship between oil price shocks and the Japan's economy because the five variables in the expenditure side of the national income represent the economic structure of Japan. According to the results of Kilian (2009b), if oil price is ordered first in a bivariate model, that is, it is an exogenous variable, then the responses of macroeconomic aggregates to oil price shocks are assured asymptotically invariant to the inclusion of monetary policy ordered between oil price and macroeconomic aggregates. Moreover, if we adopt the Cholesky decomposition to simulate the structural VAR model, a variable of monetary policy should be placed after real GDP, as the government wants to smoothen the growth of the economy. Hence, the bivariate structural VAR model is useful and is the best methodology to be used. The variables used in the model are oil price, GDP, private consumption, total investment, expenditure of government, export and import, exportation and production of Japanese automobile. Export and import are the real mean in national income.

Structural bivariate VAR models are used in the dynamic equation. The representative processes for the two sub-periods are as follows:

$$A_0 Y_t = B_0 + \sum_{i=1}^p B_i Y_{t-i} + u_t \quad (1)$$

$$M_0 Y_t = N_0 + \sum_{i=1}^q N_i Y_{t-i} + v_t \quad (2)$$

where Y_t is a 2×1 vector of oil and one macroeconomic aggregate of our interest; B_0 and N_0 are a 2×1 vector of intercept terms; A_0 , M_0 , B_i and N_i are 2×1 coefficient matrices; p and q are the optimal length of lags of each model; u_t and v_t are white noise error vectors with zero mean and non-singular variance-covariance matrix Σ_u and Σ_v , respectively.

Based on the variables in vector, the effects of oil price shocks on the Japan's economy are analyzed in four steps. Step 1 analyzes the relationship between oil price shocks and real GDP of Japan. In Step 2, to explain the results in Step 1, five macroeconomic aggregates in the expenditure side of the national income (i.e., private consumption, total investment, government expenditure, exports, and imports) must be enumerated first in detail. In Step 3, the different sectors and industries in the Japanese economy, which are affected by oil price shocks (e.g., automobile exports and production), are considered in more detail. Finally, we explain the total responses of the Japan's economy using the weights of each term in the expenditure side of the national income (Step 4).

2. Results

Fig. 1, 2, and 3 show the results of Steps 1, 2, and 3, respectively. The results show the estimated impulse response functions using one standard deviation of change in oil price. The dotted line in the following figures denotes the 95% confidence interval. The standard errors are calculated using the asymptotic method.

FIG. 1: IRFs of real GDP to oil price shocks

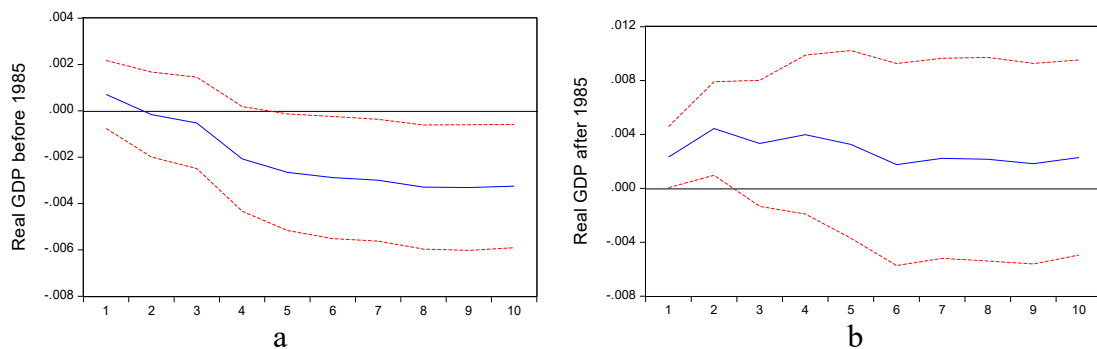


FIG. 2: IRFs of expenditure side of national income to oil price shocks

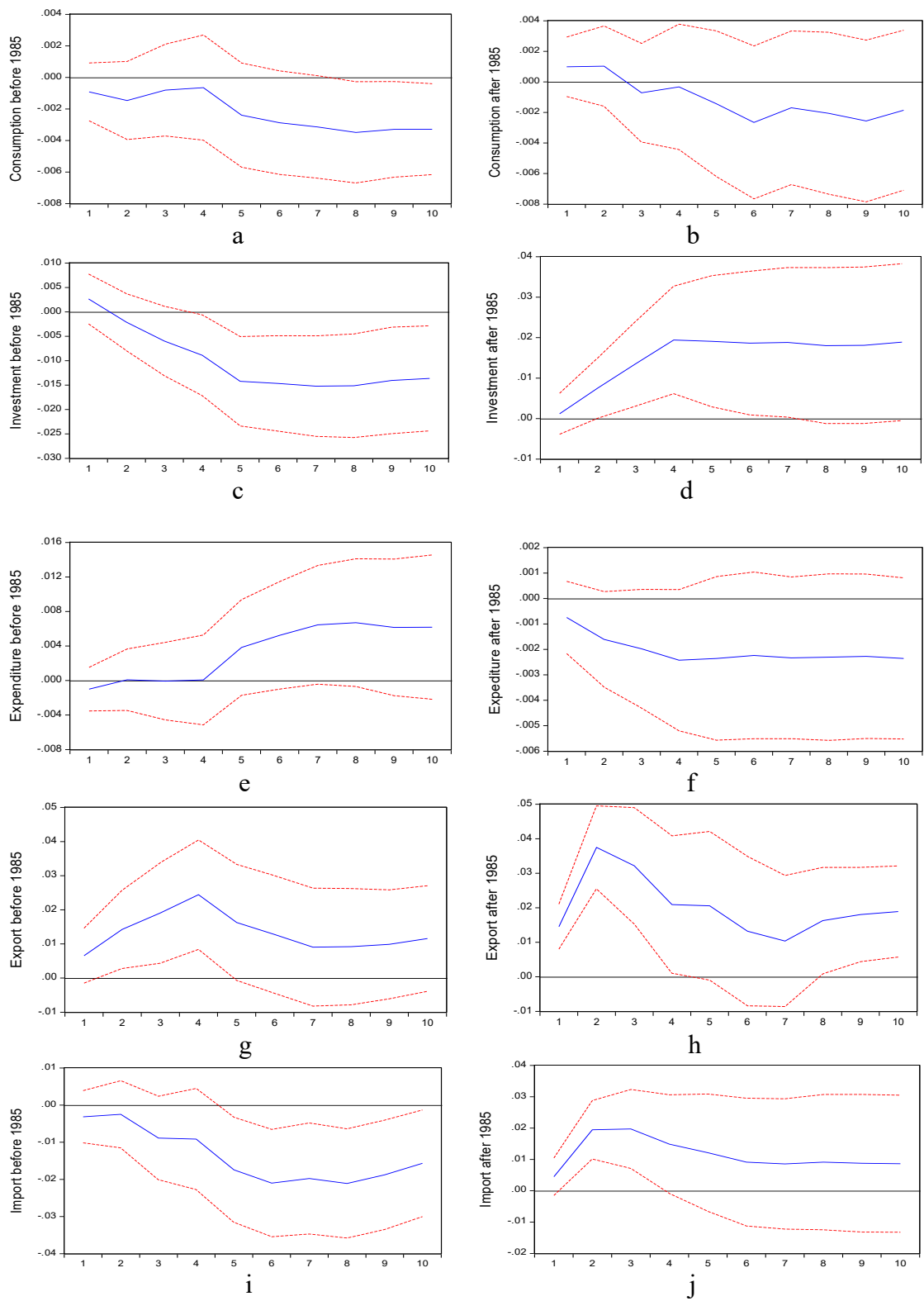
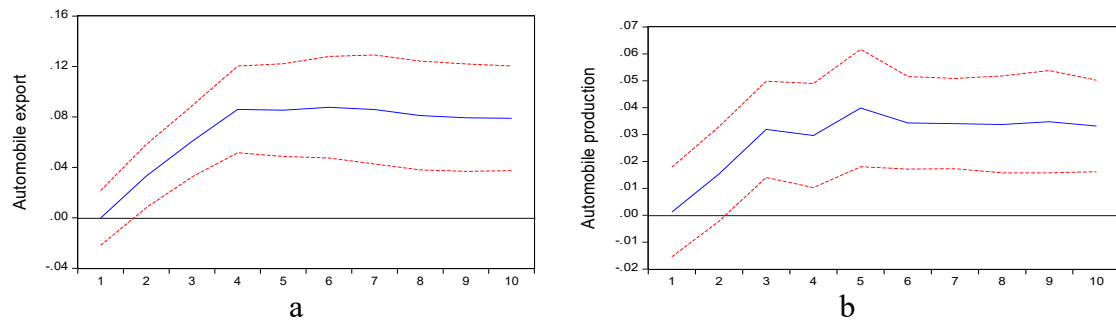


FIG. 3: IRFs of export and production of automobile to oil price shocks

Step 1 shows two facts. First, consistent with typical reactions to oil price shocks, the Japan's real GDP decreased before 1985 in Fig.1(a). The two oil price crises in the 1970s brought significant adverse effects to the Japanese economy. In contrast, Japan's real GDP was almost unaffected over time after 1985 in Fig.1(b). Second, similar to the results of Blanchard & Galí (2007), response scales in the Japanese economy became smaller after 1985. The reason behind the insignificant change in Japan's real GDP relative to oil price shocks is considered in Step 2. Henceforth, each term in the expenditure side of the national income is analyzed to explain the characteristics of the Japan's economy. Fig.2 shows the results on private consumption, total investment, government expenditure, and exports and imports in Step 2. Total investment includes private residential and non-residential investments, private and public inventories, and public investment in Japan's case.

As seen in the Fig. 2 (a), prior to 1985, consumers simultaneously lowered their consumption levels because of anticipated decreases in future income. In the Fig. 2 (c), firm investments only show a small negative effect by oil price shocks. Government expenditure is not affected by oil price shocks in the first four quarters shown in the Fig. 2 (e). Consumer demand decreased and the Japanese yen depreciated during the period. Hence, imports decreased accordingly, as evident in the Fig. 2 (i). These responses can be explained by empirical literature, such as Barsky & Kilian (2004). The unique increase in Japan's export sector relative to oil price shocks can be seen in the Fig. 2 (g). Since the 1970s, Japanese automobiles have entered the international market and have become an important component of Japan's export business. The series of energy and environmental laws passed in the US since 1980 has objectively promoted the importation of Japanese energy-efficient automobiles in the country, as discussed in Hamilton (2009).

However, our real interest is on why Japan's real GDP was not affected after 1985. Private consumption of Japan was not significantly affected by the oil price shocks, as shown in the Fig. 2 (b), because there was no anticipated change in the future income. However, surprisingly, the total investment shows a constant increase in the Fig. 2 (d). This characteristic of Japan's economy is the most important after 1985. Government spending decreased to small levels, as shown in the Fig. 2 (f). Exports after 1985

particularly became larger than those were before 1985, as shown in the Fig. 2 (h). Recently, imports have experienced a slight increase, as shown in the Fig. 2 (j).

Next, we should determine which export sector increases during oil price shocks. Automobile exports have the largest share in Japan's total exports (18.4% in 1988 and 17.1% in 2007 based on trade statistics of Japan); hence, the automobile sector can be considered an important factor in Step 3. Fig.3 shows the trend of Japanese automobile exports and production for full sample periods, both of which exhibit an increase during oil price shocks. This result is in accordance with that of Hamilton (2009). Therefore, when oil prices rise, consumers will take into account the cost of the use of automobiles, and tend to buy brand cars which are more lightweight and have lower fuel consumption. Further, because automobile export is the largest proportion of Japan's export sector, so we confirmed the second level analysis results at the product level, which demonstrates the real reason that Japan's export sector shows a significant positive response to oil price shocks.

Finally, we inspect Japan's economic structure as the Step 4. Tab.1 shows the average weights of the expenditure side of the national income for the two sub-periods in the Japan's economy. The weights of private consumption and total investment decreased, whereas the weights of expenditure of government, export, and import increased in the second sub-period. Moreover, the positive responses of total investment and export offset the negative response of government expenditure, which only created very minimal effects on Japan's real GDP.

TAB. 1: The each term weights in expenditure side of national income

Period ^a	Consumption ^a	Investment ^a	Expenditure ^a	Export ^a	Import ^a
1973-1985 ^a	0.5968 ^a	0.2918 ^a	0.1031 ^a	0.0923 ^a	0.0830 ^a
1986-2010 ^a	0.5632 ^a	0.2591 ^a	0.1613 ^a	0.1041 ^a	0.0877 ^a

Source: Cabinet office, Government of Japan

The reasons behind the weaker responses in Japan's real GDP can be explained using three factors, namely, the positive response of investment after 1985, the increase in Japanese (automobile) exports, and the low government expenditure in the expenditure side of the national income even if it has a negative response. Thus, this paper finds the strong evidence of Japan's economy can withstand the impact of oil price shocks at the meso-structure of the second level and the micro base of the third levels.

3. Discussion

An important finding of this study is the increase in total investment after 1985 in Japan's economy. Although the Granger causality between total investment and export

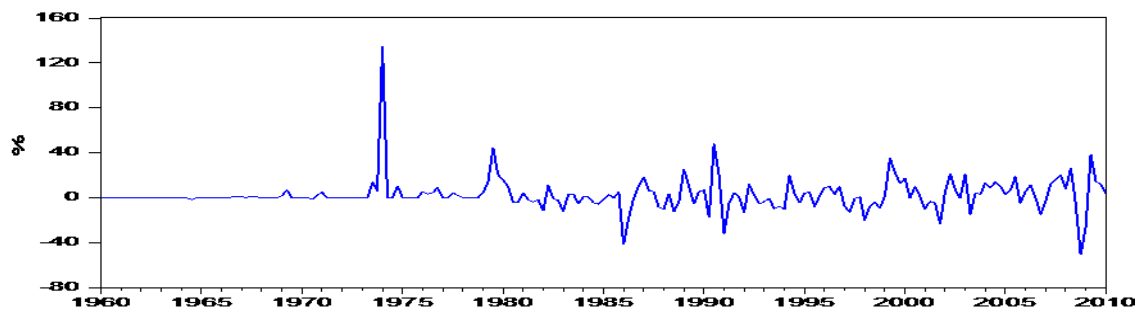
in the Japanese economy exists as shown in Tab.2, we are keen to know the transmission mechanisms of oil price shocks under this special phenomenon.

TAB. 2: Granger causality between total investment and export in Japan

Period ^o	Null Hypothesis ^o	F-statistics ^o	P-value ^o
1986-2010 ^o	export does not Granger cause investment ^o	3.2283 ^o	0.0443 ^o
1986-2010 ^o	investment does not Granger cause export ^o	6.3379 ^o	0.0027 ^o

In the partial equilibrium analysis, Bernanke (1983) shows that the firm will immediately invest to avoid higher cost in the future if the increase in oil prices is permanent. Fig.4 shows the evolution of growth rate of oil price from 1960 to 2010. Before 1985, oil price trends were marked by sudden spikes, only showing a positive growth rate in a short time and then remaining at a constant level. After 1985, the change in oil prices became permanent.

FIG. 4: The growth rate of oil prices



Source: U.S. Energy Information Administration

Conclusion

In our four steps, we confirm the effects of oil price shocks on Japan's real GDP and inspect the responses of each term in the expenditure side of the national income to the Japanese economy. If a positive movement in total investment is observed, the Granger causality between total investment and exports, as well as the frameworks of economic theory can explain this phenomenon. We also find that automobile export, which holds the largest share in the Japan's export sector, increases as oil price increases. Lastly, we find that the government expenditure and imports have low shares in the expenditure side of the national income. We explain why the effects of oil price shocks on Japan's real GDP are not significant after 1985 through the responses of each term.

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KPI-BASED REMUNERATION SYSTEM FOR ACADEMIC MANAGEMENT

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key performance indicators – academic management – remuneration systems

JEL classification: M52, L30, I23

Abstract:

This paper describes the design and implementation of an objectives-based performance management system striving to achieve newly defined objectives in a unit of the Czech Technical University in Prague upon its reorganization. Key performance areas for faculty include teaching-related activities, research and internationalization. There is a direct coupling to the performance-related segment of remuneration.

Introduction

The Masaryk Institute of Advanced Studies (MIAS) is an academic unit of the Czech Technical University in Prague (CTU) established in 1992. It focuses mainly on interdisciplinary and complementary studies, including economics, management, languages, regional development, engineering pedagogy and history. Initially, it did not develop comprehensive research and teaching capacities, outsourcing the production of its study programs as well as the teaching of essential courses to externs from other CTU faculties, the University of Economics and the Academy of Sciences. Its own academic staff provided mainly organizational and study support and taught non-essential courses.

The strategy made some sense and has been principally successful for two decades with currently 1,300 students enrolling annually in accredited undergraduate, graduate and post-graduate programs of MIAS, in part because - as a result of the politically-motivated reorganizations of academic institutions following World War II (Connelly, 2008) - several CTU faculties have maintained their own departments and study programs dedicated to sectoral economics, and such outsourcing avoided dilution of resources. More recently, however, it became clear that this was not a sustainable policy, due in part to censure by the national accreditation authority (Akreditační komise ČR, 2016a), but also its incongruity with the long-term strategy endorsed by CTU. A new management team installed in 2015 was therefore commissioned with the transformation of MIAS into a standard, effective and properly staffed academic entity.

In the context of management change, fundamental reorganization and new strategies it became essential, among other issues, to reconsider the whole system of academic staff management, including remuneration policies. There were three principal reasons for this:

- a) The role of academic staff changed dramatically. Formerly, their workload focused on administration related to the organization of study programs taught by externs, combined with teaching non-essential courses. Research and other creative activities were not required of them, and thus virtually non-existent.
- b) Performance-based remuneration topping up fixed salaries, determined centrally by CTU directive, was based on employment contracts and, first and foremost, depended on the individual's employment history with MIAS. Its coupling with current or recent performance was thus extremely weak and often arbitrary, with huge gaps in the remuneration of faculty with comparable productivity.
- c) MIAS started recruiting new staff in various academic positions, in order to meet its new objectives. This took a very swift course, and by mid-2016 most of the stipulated targets were met. From the personnel composition point of view, however, this resulted in a fragmented environment, comprising multifarious types of staff, both original and new, with sundry experience, creative and teaching potential, as well as motivation and development potential.

Accordingly, this paper introduces an innovative performance-management system based on KPI (Key Performance Indicators), developed and implemented as an essential component of this process since the second half of 2015.

1. Background Research

Early attempts at the assessment of higher education institutions have their origins in the mid-Twenties, when pioneering studies based on reputation assessments by expert panels first appeared in the United States (Cartter, 1966). More comprehensive research has been undertaken by the American Council of Education in the Sixties and Seventies, and by the National Research Council and media outlets in the Eighties (Brooks, 2005; Ostriker and Kuh, 2003). The first attempts were then also made to include quantifiable criteria, however, their contribution to the predicative value of such assessments was contentious (Austin, 1985).

At the same time, academia became involved in the development of corporate management theories and performance assessment systems, such as Management by Objectives (Drucker, 1954), Total Quality Management (Deming, 1986) or Balanced Scorecard (Kaplan and Norton, 1992). These brought about revolutionary changes in the management of companies, and even public administration, but strikingly remained neglected by the academic community as a tool for managing themselves (Birnbbaum, 2000). If any reasons were given to explain such a discrepancy, they included purported complexity, ill-defined stakeholder structure, or vaguely stated missions of academic institutions (Burke and Minassians, 2002).

In other domains, Key Performance Indicators (KPI), defined by Parmenter (2010, p. 4) as “a set of measures focusing on those aspects of organizational performance that are the most critical for the current and future success of the organization“, have become common and essential instruments for managing performance in organizations. They should be measured frequently and tie directly to the success of an organization. Parmenter (2010) describes KPI usage in more detail, but, notably, they should meet the S.M.A.R.T. objectives-setting criteria (Doran, 1981), i.e. being specific, measurable, assignable, realistic and time-related. Development tends to be top-to-bottom, based on the corporate vision, mission, strategy and specific objectives of the budget period, leading to definition of the appropriate Key Performance Areas (KPA) and Key Performance Indicators for all layers of management.

In Czech academia, a quantitative evaluation model for staff has been conceptually designed in 2006 and subsequently tested since 2010 at the Faculty of Science of the Palacký University in Olomouc (Stoklasa et al., 2011). Compared to the presently introduced system it is significantly more complex and stresses application of statistical methods, which, among other factors, contributed to its lengthy implementation (Holeček et al., 2016). A much simpler points-based system is being used by the Tomáš Bat'a University in Zlín (Univerzita Tomáše Bati, 2013). Both cite the objectification of performance assessment as one of their primary objectives, but neither concludes with directly coupling performance and remuneration by means of a transparent algorithm.

2. System Design

Under the circumstances, it was postulated that any system aspiring to induce quick and material change at MIAS must have the following key attributes:

- a) **Universality:** It should take the form of a generally applicable directive for academic staff irrespective of their seniority (which is taken into account in the salary grade determining fixed remuneration) or departmental posting in order to avoid seniority- and departmental-based conflicts and biases.
- b) **Fairness and objectivity:** This satisfies legal requirements and facilitates general acceptance by staff, a number of whom may perceive a prejudice and adverse personal impact by the new system. It also mitigates any undue personal influences on mid-level managers (department heads), as well as potential legal risks that might possibly arise due to cuts in individual remuneration.
- c) **Immediacy combined with a capability to handle the natural variability,** both personal and intertemporal, characteristic for the workload structure of academic staff: To facilitate rapid progress in meeting the stipulated targets and, in many cases, fundamental behavioral change, it was essential to implement the system swiftly and with an appraisal horizon shorter than one year. On the other hand, extreme remuneration fluctuations resulting from natural output variations, such as uneven teaching workloads for particular courses among semesters or editorial deadlines in academic publishing, had to be avoided.

The system has been structured so as to take into account priorities, guided by three determinants. The one was achieving consistence of its Key Result Areas (KRA) with the fundamental theses of the Long-Term Strategy of CTU in its updated edition adopted in October 2015 (České vysoké učení technické, 2016), the others ensured the coupling of its Key Performance Areas, and eventually the calibration of Key Performance Indicators, to extant and anticipated requirements by the National Accreditation Authority on the sustainable structure and qualification characteristics of faculty teaching in its accredited study programs (Akreditační komise ČR, 2016b), as well as to the terms of financial support available from the Ministry of Education, Grant Agencies and other sources.

Summarily, the Key Performance Indicators thus couple to:

- a) accreditation terms of the programs and courses taught at MIAS,
- b) premises of career development for MIAS faculty,
- c) management objectives of MIAS, including its strategic priorities and financial sustainability.

The calibration of performance indicators was derived from qualification and performance objectives benchmarked against generically defined requirements for faculty categories (professors, associate professors, teaching assistants, researchers and instructors) and regardless of current budgetary constraints. This was a viable approach insofar that the key performance areas on the macro level were obvious (acquire research projects, boost publication outputs, achieve internationalization) and, in the short term at least, a dramatic payroll budget excess due to massive and manifold target overruns was inconceivable, while in the longer term any growth would become self-financing. In fact, simulations performed at calibration stage suggested that the system's parameters would initially decrease payroll costs. On the other hand, not meeting some of the change objectives swiftly was considered prohibitive, because it could have led to accreditation restrictions or even forfeiture, thus putting the whole institution to jeopardy.

It was also presumed that activities in the selected Key Performance Areas would cascade and create numerous synergies with positive feedbacks in the system further enhancing its efficiency.

3. Implementation Details

Each individual's assessment takes place semi-annually, by the end of each semester, comprising performance indicators over the last twelve months. This then directly determines their performance-based remuneration for the following six months.

The system uses two basic parametric elements:

- a) A KPI assessment table, determining basic and incremental productivity standards of faculty based on their functional category,
- b) A remuneration ordinance, determining fixed salaries based on pay grade and performance-based remuneration rates.

The assessment of career academic staff (the algorithms for researchers and instructors are somewhat simpler, given less complex set of objectives) respects the natural individual and intertemporal variance of outputs, but principally requires a minimal mandatory component of accredited teaching combined with research.

The criterion for awarding performance-based remuneration thus entails:

- a) completion of two mandatory units of performance, one related to accredited teaching, and the other to defined research outputs, and further
- b) completion of at least three supplemental units of performance related to at least two of the three Key Performance Areas (teaching, research, internationalization).

Not meeting this criterion excludes the person from to any performance-based remuneration entitlement, while any excess increases its base rate in a linear fashion.

To improve functionality, the system includes several specific regulations, including:

- a) Transitional provisions for newly appointed staff, who cannot be realistically expected to assume full initial productivity, and their assessments may thus be temporarily based on extrapolation or appraisal.
- b) Long-term assessments over five-year horizons, allowing faculty achieving universally outstanding performance over this period to claim performance-based remuneration without meeting all the specific criteria.
- c) Reclassification possibility for individuals who are not expected or motivated to meet the performance benchmarks commensurate with their current categorization, if there is an interest to continue their employment in a different role; typically, this may convert a teaching assistant into an instructor.

Conclusion

The missions of higher learning institutions do not consist solely of education and directly related processes, but also science and research, as well as internationalization. This creates a highly demanding set of objectives for academic staff, who must effectively and fluently organize their workloads so as to generate meaningful outputs in all these key performance areas. Maintaining a long-term balance between these activities is critical, and evolves from the needs and priorities of the particular academic unit, as well as from the individual's personal capabilities, potential and preferences.

The establishment of a fair, transparent and efficient assessment system with rapid feedback and immediate results including behavioral changes must involve simulations of various activity patterns, to ensure well-balanced ratings that would not encourage moral hazard involving utilitarian and, from a long-term point of view, undesirable focus. A smart setup, however, encourages valuable synergies between the key performance areas benefiting the whole academic institution. For example, participating in research projects, notably international ones, leads to an increase in creative outputs, as well as to more intense knowledge transfer in education. All of these outputs are also critical for institutional assessments guiding the process of accreditation, and also directly impact an academic institution's funding resources, which makes the system an essential instrument of sustainability, both from the institutional and financial points of view.

The system described herewith has first been used for the assessment of MIAS faculty in September 2016, comprising performance indicators registered from September 2015 through August 2016, with its results determining individual remuneration for the next six months. In terms of the system's principal objectives its initial effects have been encouraging, with tangible restructuring and behavioral impacts. It also appears to become a competitive advantage in attracting new and well-motivated talent.

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IS THE RATE OF GROWTH OF SMES RELATED TO THEIR SIZE?

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growth of rate – size – SMEs – management

JEL classification: L20 – M10

Abstract:

The sector of small and medium business is a very important part of every national economy, providing the functionality of the entire market system. It is an important part of innovation, employment and social integration. The growth of small and medium-sized enterprises, as an indispensable part of regional development means the development of the region. The aim of the managers of these organizations, where the number of employees is less than 250, is to achieve success, development and growth. Organizational growth can be expressed using the growth rate of revenue, which is influenced by a number of external and internal factors. The paper analyses if the amount of the growth rate reflects the size of the enterprise, according to their number of employees. Data were gathered as questionnaires and interviews from 183 enterprises operating in the Czech Republic. The research was made in the period of 2014-15.

Introduction

In 2003, the European Commission adopted new recommendation to all policies, measures and programs for small and medium enterprises (Evropská komise, 2006). SMEs are reported as the engine of the European economy. They drive job creation and economic growth and ensure social stability (Richard, 2008). Small and medium-sized enterprises (SMEs) play a significant part in economic activity through employment, innovation and growth (Floyd & McManus, 2005), acting as a supplier of goods and services to large organization and any lack of product quality could adversely affect the competitive ability of the larger organizations (Deros et al., 2006). Their turnover is of the same size as the turnover of large enterprises that make up the remaining 0.2% (Dolejš & Filipová, 2008).

Small and medium enterprises are better able to respond to market changes and are more adaptable than large enterprises (Wagnerová & Šebestová, 2007). They provide and create jobs, particularly during the economic recession. SMEs seek to utilize individual creative efforts (Hillary, 2000). Asheim (2003) says that the growth in the number and role of small and medium enterprises is associated with structural shifts between

manufacturing and services, which also increases the demand for business services. Defining the concept of small and medium-sized enterprises is based on the following aspects: the size, legal form and business perspective (Šulák & Vacík, 2005). In its recommendations, the European Commission has identified three different categories of enterprises, based on the number of employees and work results: medium-sized enterprises (number of employees ranges from 50 to 250 employees), small enterprises (employ less than 50 people), micro-enterprises (employ less than 10 employees) (Vodáček & Vodáčková, 2004, 2007, Staňková, 2007).

In addition to the definition of small and medium enterprises and the distribution by the number of employees it is also necessary to define the rate of growth. There are many different definitions of business growth and ways of measuring this growth. Business growth is typically defined and measured, using absolute or relative changes in sales, assets, employment, productivity, profits and profit margins (Barringer et al., 2005). High growth tends to be associated with a firm's entrepreneurial behaviour (Brown, et al., 2001). The relationship between the entrepreneurial orientation of the firm and its performance has been thoroughly investigated, from both a conceptual (Lumpkin & Dess, 1996) and an empirical point of view (Wiklund & Shepherd, 2005). As for the dynamism of the environment, the most usual argument is that the influence of EO on performance becomes more intense when the firm acts in a dynamic environment. Lumpkin & Dess (2001) show that in this type of environment, firms that behave more proactively and aggressively will achieve better performance.

In recent years there has been an increased focus on the relationship between firm's strategic orientation and firm performance (Madsen, 2007). Prior studies have generally found a positive relationship between EO and firm performance (Jantunen et al., 2005; Wiklund & Shepherd, 2005). However, there are also studies where such a relationship has not been found. One reason might be that the measure that has been used to assess the firm performance has typically been a combination of both profitability and growth measures (Covin & Slevin, 1989; Wiklund, 1999). However, there are also few studies that have purely explored the specific relationship between EO and the firm growth (Covin et al., 2006). Findings of these studies have confirmed that there really exist a positive relationship between EO and the firm's rate of growth. Schiffer & Weder (2001) show, that small firms consistently report higher growth obstacles than medium-size or large firms. Beck et al. (2005) show that size, age and ownership are the most reliable predictors of firms' financing obstacles. The authors find that older, larger and foreign-owned firms report lower financing obstacles. The relationship is not only statistically but also economically significant.

1. Methods

This paper aims to assess whether the rate of growth of SMEs in the Czech Republic is influenced by their size by number of employees. Data acquisition was carried out

through questionnaires and interviews in 183 companies from the Czech Republic between 2014 and 2015. Managers of these organizations were asked about the size of their growth rate of revenue measured in %. The data were adjusted by contingency tables so that they could be further analysed. The contingency tables provide a picture of the interrelation between two variables. The contingency tables consist of two categorical variables, X and Y. Let X have the values of $x[1], \dots, x[r]$ and Y have the values of $y[1], \dots, y[s]$. We label $\pi[jk] = P(X=x[j] \wedge Y=y[k])$ simultaneous probability of the pair value $(x[j], y[k])$, $\pi_j = P(X=x[j])$ marginal probability of the value $x[j]$, $\pi[k] = P(Y=y[k])$ and marginal probability of the value $y[k]$ (Budíková & Králová 2010).

After that a bivariate random choice of n sample size was found from the distribution that complies with the bivariate random vector (X, Y). We found simultaneous frequencies $n[jk]$ of the two values $(x[j], y[k])$. The frequency is based on the relation where $n[j] = n[j1] + \dots + n[js]$ is the marginal frequency of $x[j]$; $n[k] = n[1k] + \dots + n[rk]$ is the marginal frequency of $y[k]$. Further, the simultaneous probability estimated by the simultaneous proportional frequency of $p[jk] = \frac{n[jk]}{n}$, marginal probability of is $\pi[j]$ and $\pi[k]$ is estimated by marginal frequency of $p[j] = \frac{n_j}{n}$ and $p[k] = \frac{n_k}{n}$ (Friedrich & Majovská, 2010). We are testing the null hypothesis with H_0 : X, Y as stochastic random variables compared to the alternative with H_1 : X, Y as non-random variables. The analysis is based on comparing the frequencies $n[jk]$ with the theoretical frequency of $\frac{n_j \times n_k}{n}$ of $(x[j], y[k])$. They should be similar under the null hypothesis (Freund & Wilson, 2010). The analysed statistics is

shaped as: $K = \sum_{j=1}^r \cdot \sum_{k=1}^s \frac{\left(\frac{n_{jk} - \frac{n_j \times n_k}{n}}{\frac{n_j \times n_k}{n}} \right)^2}{\frac{n_j \times n_k}{n}}$. The test fulfils the condition of approximation

(80% takes the value of ≥ 5 and the remaining 20% are not less than 2); the K statistics asymptotically follows the distribution of $\chi^2((r-1)(s-1))$. The rejection definition range is of $W = < \chi^2[1-\alpha]((r-1)(s-1)), \infty$. The hypothesis of independence between X and Y is rejected at the asymptotical level of α as the K statistics is realized in W rejection zone. The strength of dependence of the categorical variables is defined by the Cramer's

coefficient $V = \sqrt{\frac{K}{n(m-1)}}$, when n is the size and $m = \min\{r, s\}$. The coefficient ranges between 0 and 1. The closer to 1 the tighter is the correlation between X and Y. The closer it is to 0, the looser is the correlation. The values are defined as follows: 0 to 0.1 = negligible dependence; 0.1 to 0.3 = weak dependence, 0.3 to 0.7 = medium dependence; 0.7 to 1 = strong dependence (Budíková, & Králová, 2010, Friedrich & Majovská, 2010). Within the sample data, the dependence between the growth rate and size of an enterprise was analysed in the form of hypotheses about the independence of individual variables at the asymptotical significance level of 0.05.

2. Results and discussion

First, the data was converted into a contingency table, where individual frequencies also expressed the percentage of individual rows and columns. As Table 1 shows, the greatest frequency was reported by enterprises with five employees (83), followed by those with 6-20 employees (51), followed by enterprise with over 21 employees (49). The methodology of classification of SMEs was not fully respected because of the conditions of good approximations in the sample.

TAB. 1: Contingency table – growth of rate and number of employees

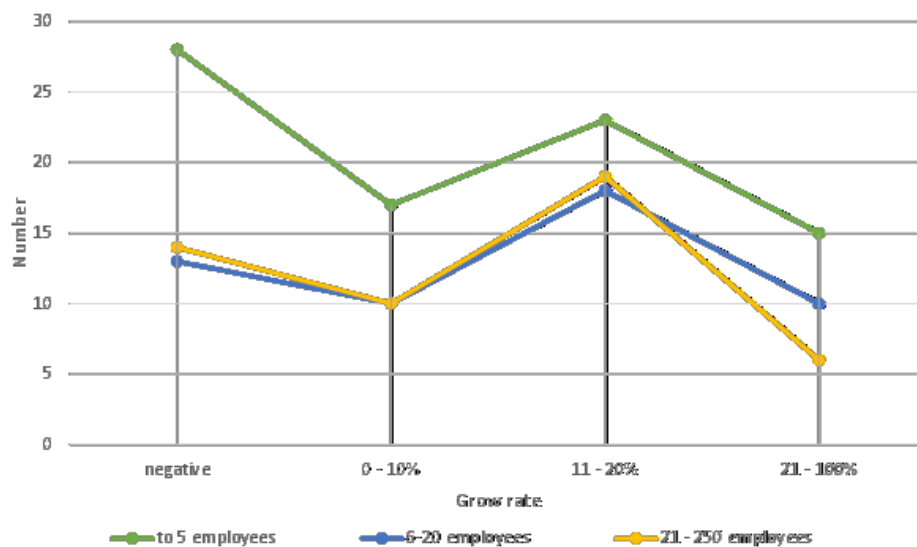
	Number of employees	Negative growth	0-10% growth	11-20% growth	21-100% growth	Total
n	0-5	28	17	23	15	83
Relative frequency		50,91%	45,95%	38,33%	48,39%	
n	6-20	13	10	18	10	51
Relative frequency		23,64%	27,03%	30,00%	32,26%	
n	21-250	14	10	19	6	49
Relative frequency		25,45%	27,03%	31,67%	19,35%	
Number of SMEs - n	Total	55	37	60	31	183

Source: own processing

About 1/3 of the sample achieved 11-20% growth rates (60) followed by a negative growth rate in 55 enterprises (30%). Interestingly, the growth rate of more than 21% was recorded by 31 of the total of 183 in the sample (about 15%). The contingency table also shows that the negative growth rate is most prevalent with 51% for enterprises up to 5 employees and about 25% for enterprises with more employees. Conversely, the growth rate of between 11-20% is most common in almost 32% of companies with over 20 employees and a growth rate of 21-100% occurs in 32% of firms with 6-20 employees. The average growth of rate is the highest in small enterprises (averaging around 17%), in micro and medium enterprises is around 11%. Using the test statistic of X^2 test of independence with one degree of freedom at the significance level of $\alpha = 0.05$; the hypotheses are tested: H_0 = growth rate and size of the company are independent, H_A = non H_0 . At first, the conditions of good approximation are validated - at least $80\% \geq 5$ and the remaining $20\% \geq 2$ on the basis of theoretical frequency. The conditions for a

good approximation were fulfilled, as 100% of the value is ≥ 5 . Therefore, the Pearson Chi-square test can be used: $\chi^2=2,977$, $df= 6$, $p=0,812$. As the p-value is greater than α , we cannot reject the null hypothesis, so we can still say that the rate of growth is not dependent on the size of the enterprise. This conclusion is also confirmed by a test statistic over the degree of dependence by the Cramer's coefficient: $V = \sqrt{\frac{K}{n(m-1)}} = 0,090$. The Cramer's coefficient value indicates that there is only a negligible dependence between the variables, which is confirmed by the Pearson Chi-square test as graphically illustrated in Figure 1. The graph of interactions shows the colour-coded range of abilities to solve problems that are related to creativity on the x axis. Various frequencies are plotted on the y-axis.

FIG. 1: Chart of interactions: the growth rate and enterprise size



Source: own processing

Conclusion

The European Union considers the sector of small and medium enterprises as the backbone of the European economy in terms of innovation, employment and social integration. Currently, the SMEs operate in a turbulent environment that is constantly changing. For the enterprises it means threats but also potential opportunities to gain a comparative advantage in the competition. All businesses should strive to align their activities with the current changes. All sectors of the SMEs are characterized by certain developments and trends, which gradually or even very intermittently causes the industry changes. Life cycle industry is heavily dependent on the development of demand, which is then reflected in the growth rate of the industry (Sedláčková and Buchta, 2006). The macroeconomic environment influences the SMEs by an expected growth rate of the

economy, the state fiscal policy, monetary offering, expected interest rates, inflation, etc. (Synek, et al., 2011).

The authors of the paper focused on SMEs. They analysed a single indicator of their success on the market – the growth rate of revenues in last year. However, they failed to prove statistically that the size of an enterprise measured by number of employees affected the growth rate. SMEs in the Czech Republic most often achieve a positive growth rate of between 11-30% (more than 1/3), however, about 30% of the sample have to deal with a negative rate. A large percentage of these small and medium-sized enterprises may end unsuccessfully due to inexperienced management, lack of financial stability and incompetence. Their failure can be accompanied by significant financial losses. The support for SMEs is of great importance in this context, either at a national level or from the EU. That aims to maintain and strengthen the competitiveness of SMEs and obviously to favour their access to capital in the Czech Republic as in the whole EU. It can take various forms. It might be realized in the form of grants and concessional loans. Core competencies in the support system at the central level are kept by the Ministry of Industry and Trade of the Czech Republic, which is superior to a number of institutions and their common goal is to support the SMEs. Support for this sector helps increase the performance of the economy and employment. The authors did not prove the influence of the size to the growth of rate; they can say that business growth of rate may best be conceived of as a collective term for several rather different empirical phenomena, with different underlying causal mechanisms, requiring separate theoretical explanations (Davidsson and Wiklund, 2000). Established firms must learn to act entrepreneurially is no longer a novelty, and the reasons they could benefit from doing so are generally well known (Ireland, et al., 2003).

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CHINESE URBAN AND RURAL BASIC PUBLIC SERVICE SUPPLY: THE EVOLUTION OF INSTITUTION AND THE JUDGEMENT OF STATUS

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Keywords:

basic public service supply — the evolution of institution — urban bias — equalization

JEL classification: H41, R00, E62

Abstract:

Since the People's Republic of China found, Chinese urban and rural basic public service supply has experienced the evolution process from deflection to equalization. Before the reformation of rural taxation carried out diffusely at the beginning of the 21st century, Chinese government was partial to cities in the basic public service supply. It implemented two different systems of public service supply in the cities and countrysides. Thereby, it widened the gap of the public service level between the cities and countrysides. According to the strategic mission presented in the 21st century, Central People's Government put forward a proposition called "Equalization of urban and rural basic public service supply", and promoted the reformation of rural taxation gradually around the country. Apart from enlarging the public finance support range to the village construction, it was beneficial to improve the level of public service for rural residents. On the basis of clearing up the evolution logic of Chinese urban and rural basic public service supply system, this paper measures and summarizes the evolution status of equalization of urban and rural basic public service supply since the reformation of rural taxation.

Introduction

Urban and rural basic public service supply is a public product provided for urban and rural residents, which to meet their basic needs of survival and development. The supply condition of basic public services is closely related to the residents' vital interests, and it is the basic functions of the government to provide equal basic public services for all the residents. Generally speaking, the basic education, health care and social security are the common demands of basic public services for urban and rural residents. It is of great significance to enhance the level of human capital, urban and rural residents to enjoy the achievement of modernization.

After the founding of China to the early 21st century before carrying out rural tax and fee reform, the basic public service supply in the urban bias exist serious problem .The

level of rural residents to enjoy basic public service is far lower than the urban residents. Since the early 21st century, public financial support for rural public service supply is constantly growing. China's basic public service supply is gradually changing from "urban bias" to equalization. In this background, this paper focuses on the following two questions: What is the logic of the basic public service supply from "urban bias" to "equalization" in China? And what is the trend of China's urban and rural basic public services equalization?

1. The Institutional Evolution of Public Service Supply: from Urban Bias to Equalization

After the founding of the People's Republic of China, under the priority to develop the heavy industry strategy, the government divided the citizens into the agricultural and the non-agricultural by household registration system. On the basis of the household registration system, the differently public service supply system between urban and rural was further derived. More specifically, the government built a "cradle-to-grave" public service supply system for residents through the enterprises and institutions of public ownership, and fiscal funds play a lead role in urban public service supplies. It is relatively complete that urban residents can enjoy better basic public services. Under the people's commune system, the necessary capital and labor of countryside public service supplies mainly come from production teams, but the government finances play a very minor role in the supplies. As a whole, rural public service takes the form of "external financing" and "external supply". Under the urban-biased public service supply system, because the serious shortage in rural public service supply, and there is a large difference in urban-rural basic public services, which caused serious social problems.

Using the development strategy of "Focused on economic construction ", the local governments of all levels promote the local economic growth as the main goal after Reforming and Opening-up. They compress the supply of public service expenditure farthest and deploy the limited public service preferentially for the city. In this way, the local governments use the household registration system as an important tool to restrict the rural migrant workers came into the city and access to urban public services. That is why the reform of the household registration system is progressing slowly. In the early 1980s, the rural household contract responsibility system was implemented, and the township government and village committee became the main body of the rural public service supplying. Continuing the rural public service system of "external financing" and "external supply" system from the people's commune period, external income is the main source of funds of public services supplying in rural areas (Sun&Zhu, 1993; Fan Gang, 1995; Lin Wanlong, 2002). Apart from handing in the agricultural taxation and bearing the task of ordering agricultural products according to the law, rural residents have to bear the village or township planning, compulsory labor and accumulation under this background. What's more, rural residents have increasingly heavy burden because of the various temporary assessment funds and administrative fees. With the

reform of the state-owned enterprise and the adjustment of city public service supply system by the Chinese government after 1990s, city's basic public services supply gradually adopt the market form. However, city residents enjoy a higher public service level all the time, in contrast to the rural residents. Hence, urban and rural basic public service supply still exists serious problems in the city bias.

According to the strategic mission presented in the 21st century, "To build a harmonious society", Central People's Government put forward a proposition called "Equalization of urban and rural basic public service supply", which has promoted the change of urban and rural public service supply system. In the process, in order to solve the heavy burden of peasants and inadequate supply of rural public services, the central government began to implement the rural tax reform at the end of the 20th century. The State Council set up a leading group on Rural Tax Reform in September 1998. In March 2000, the central government decided to carry out pilot reform of rural taxes and fees in Anhui Province, and other provinces selected a few counties (cities) to carry out pilot projects in accordance with the actual situation. This policy officially opened the prelude to the reform of rural taxes and fees. The rural tax and fee reform pilot expanded to 20 provinces in 2002 and further enlarged to all provinces in 2003. The financing mode and supply system of rural public services has been changed greatly because of the reform of rural taxes and fees, and the scope of financial coverage of rural public services has been increasing. After the implementation of this reform, the public services within the scope of the township are mainly solved by the government financial arrangements while the public services within the scope of village level are mainly through the villagers' meeting 'one thing' to raise money. Government finance gives appropriate subsidies to village-level public services. The rural basic education, health care and social security system are also constantly improving because of the public finance support. In this context, China's rural residents enjoy a rising level of public services and the public service supply has been changing from "urban bias" to "equalization".

2. The Judgment of Status about the Equalization of Chinese Urban and Rural Basic Public Service Supply

To grasp Chinese urban and rural basic public service supply accurately, we measure the equalization levels of urban-rural basic public services and observe the change from 2002 to 2014.

2.1. The Construction of Evaluation Index System and the Choice of Appraising Method

We regard basic education, health service and social security as urban-rural basic public service. Then we establish an index system to rate the equalization levels of urban-rural basic public services. This third-level indicators is composed by an objective index,

aspects indexes and basic indexes (see Table 1). We choose the equalization of urban-rural basic public services as the objective index. It includes urban-rural equalization in basic education, health service and social security. Limited by the accessibility of data, we use the difference in pupil ratio of ordinary primary and middle school between urban and rural, the ratio of personal education funds of pupil and middle school student between urban and rural as four indexes of urban-rural equalization in basic education. The urban-rural equalization in basic health service include five basic indexes. These are the ratio of hospital beds and health technical personnel in every one thousand people between urban and rural, the ratio of urban-rural newborn and maternal mortality; the ratio of per capital medical services expenditure between urban and rural residents. The urban-rural equalization in basic social security is composed by the ratio of minimum average standard of living and beds in social service agencies per 1000 people between urban and rural. That's to say, the index system to measure the equalization levels of urban-rural basic public services includes 3 aspects indexes and 11 basic indexes. All basic indexes adopt the ratio between urban data and rural data.

The equal evaluation index system of basic public services in urban and rural areas is related to three level indicators and 11 basic indicators, using the method of multi-index comprehensive evaluation. In order to avoid subjective and rote weight assignment, we use the method of the analytic hierarchy process combined with mean squared deviation method. Specifically, the hierarchical structure from the indicator of dimension to target is more clear. In addition, we can subjectively judge the relative importance of each indicator, so it is suitable to use analytic hierarchy process to index system for weight assignment. The basic indicators are the interpretation of the dimensional indicator. For the relative importance of each indicator cannot be judged by subjective judgment, we use mean squared deviation method for weight assignment of basic indicators to reflect the influence of the dispersion degree of basic indicators on the weight assignment.

2.2. Data Sources, Target Processing and Weight Generation, Results

The original data of the equal evaluation index system of basic public services are from Chinese Statistical Yearbook, Chinese Rural Statistical Yearbook, Education Statistical Yearbook, China Education Statistical Yearbook, Chinese Health Statistics Yearbook (renamed China Health and Family Planning Statistics Yearbook in 2013) and China Statistical Yearbook of civil affairs.

Index system of the basic indicators of properties and dimension is different. So it's unable to directly evaluate the level of urban and rural equal basic public services, and it's need to pretreatment the basic index number. On the one hand, Evaluation index system of urban and rural basic public services equalization levels do not match the various basic indicators attribute, we need to deal with the assimilation of index attribute. Through taking the reverse index to the bottom, we can positively change it.

For Appropriating indicators, we use the formula “ $X_{ij}=1/ (|X_{ij}-1|+1)$ ” to change it positively, So that all the basic indicator of the level of urban and rural basic public services equalization forces convergence.

On the other hand, Evaluation index system of urban and rural basic public services equalization levels in various basic indicators have different dimension and order of magnitude, so dimensionless processing is needed. For this, we used average method of basic indicators dimensionless processing, the calculating formula is:

$$y_{ij} = x_{ij} / \bar{x}_j, \text{ among them } \bar{x}_j = \frac{1}{p} \sum_{i=1}^p x_{ij}.$$

Weight of aspect index is made by AHP(Analytic Hierarchy Process).Among three aspect indexes in the evaluation system of the equality of urban and rural basic public service supply, there are 4 basic indexes in the equality of basic education between cities and countrysides,5 basic indexes in the equality of medical treatment and public health between cities and countryside, and 2 basic indexes in the equality of social security between cities and countryside. The amount of basic indexes have a direct influence on the action strength of aspect indexes. Therefore, the weight ratio of these the aspect indexes is 4:5:2. By applying MATLAB, using normalization method to handle the eigenvector corresponding to the maximum eigenvalue, we get the weight vector of aspect indexes in target indexes : $W=[0.364,0.455,0.182]T$.

The weight coefficients of every basic index in aspect index depend on the relatively discrete degree of the evaluation indexes. The larger the discrete degree is, the larger the weight coefficient. Then, if we multiply the weight of basic index in aspect index by the weight of aspect index in target index, we get the weights of every basic index in target index, and table 1 shows the results.

After multiplying basic index disposed and the weight of target index and aspect index, we can get Chinese urban and rural basic public service level data and aspect index from 2002 to 2014 , the concrete measurement results are as following table 2 and figure 1. we can see the equalization scores about urban and rural basic public service has showed an upward trend during investigation period, which from 0.848 in 2002 up to 1.121 in 2014. We can draw a conclusion that the equalization of urban and rural basic public service has improved steadily.

TAB. 1: the index system to measure the equalization levels of urban-rural basic public services and the evaluation of indexes

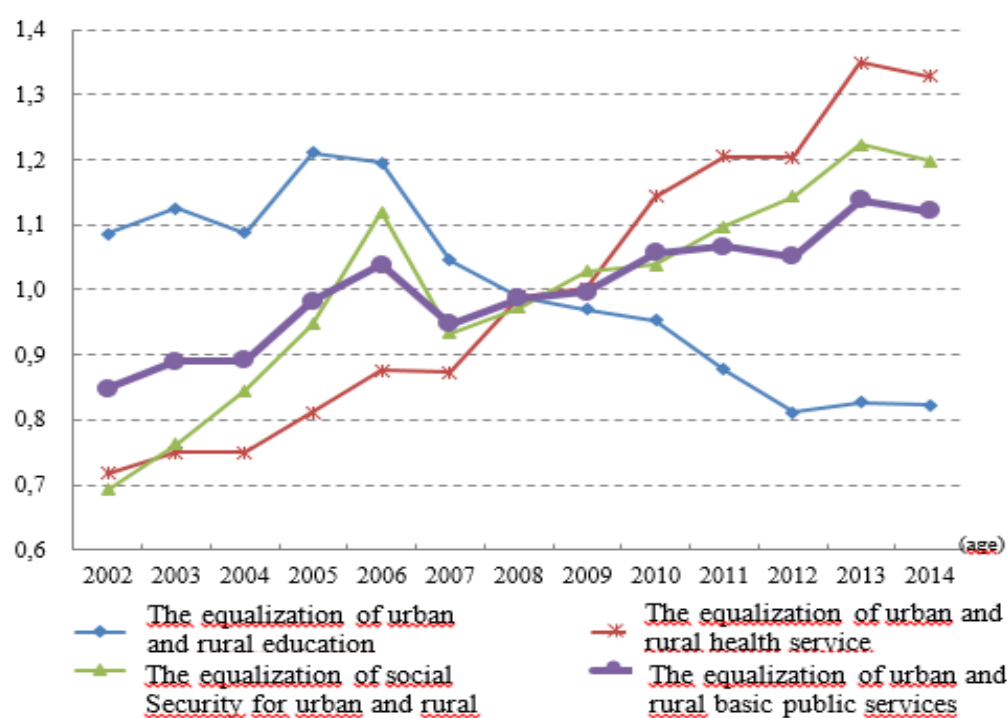
Objective Index	Aspects Index	Basic Index	Evaluation of Aspects Indexes	Evaluation of Objective Indexes
the Equalization of Urban-rural Basic Public Services.	the equalization of urban-rural basic education (0.364)	The difference in pupil ratio of urban-rural ordinary primary school	0.123	0.045
		The difference in pupil ratio of urban-rural ordinary middle school	0.172	0.063
		The ratio of personal education funds of pupil between urban and rural	0.291	0.106
		The ratio of personal education funds of middle school student between urban and rural	0.414	0.151
	the equalization of urban-rural basic health service (0.455)	The ratio of hospital beds between urban and rural(per 1000 people)	0.092	0.042
		The ratio of urban-rural health technical personnel (per 1000 people)	0.071	0.032
		the ratio of per capital medical services expenditure between urban residents and rural residents.	0.369	0.168
		The ratio of urban-rural newborn mortality	0.102	0.047
		The ratio of urban-rural maternal mortality	0.366	0.166
	the equalization of urban-rural basic social security (0.182)	The ratio of urban-rural minimum average standard of living	0.614	0.112
		The ratio of beds in social service agencies between urban and rural(per 1000 people)	0.386	0.070

Source: prepare by author

TAB. 2: The fundamental public service equalization level data about Chinese city and village from 2002 to 2014

year	Aspect Index			the Equalization of Urban-rural Basic Public Services.
	Basic Education Equalization	Health Service Equalization	Social Security Equalization	
2002	1.086	0.718	0.692	0.848
2003	1.125	0.750	0.762	0.890
2004	1.087	0.750	0.845	0.891
2005	1.211	0.811	0.947	0.982
2006	1.196	0.876	1.119	1.038
2007	1.046	0.873	0.934	0.948
2008	0.989	0.990	0.972	0.987
2009	0.970	1.002	1.028	0.996
2010	0.953	1.144	1.039	1.056
2011	0.877	1.205	1.097	1.067
2012	0.812	1.204	1.144	1.051
2013	0.827	1.349	1.224	1.138
2014	0.822	1.328	1.198	1.121

Source: prepare by author

FIG. 1: The score of fundamental public service equalization and all aspects index about city and village from 2002 to 2014

Source: graphing by author

3. Conclusion and discussion

Chinese urban and rural basic public service supply has experienced the evolution process from deflection to equalization. Before the reformation of rural taxation carried out diffusely at the beginning of the 21st century, Chinese government was partial to cities in the basic public service supply. It implemented two different systems of public service supply in the cities and countrysides. Thereby, it widened the gap of the public service level between the cities and countrysides. According to the strategic mission presented in the 21st century, Central People's Government put forward a proposition called "Equalization of urban and rural basic public service supply", and promoted the reformation of rural taxation gradually around the country. Apart from enlarging the public finance support range to the village construction, it was beneficial to improve the level of public service for rural residents.

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PROBLEMS OF THE GERMAN LABOUR MARKET

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Keywords:

german labour market – employment of foreigners – impact of migration – social reform

JEL classification: J61

Abstract:

The submitted scientific article is focused on analysing various actual problems within the German labour market. The object of the research is examined thoroughly highlighting the impact of migration to the German labour market. The German labour market went through reforms called „Agenda 2010“ including the reform of the labour market and the social reform „Hartz IV“. In the context of broader coherency it will be also pointed out the international arrangement of a „Blue card“ that enables people to work in Germany. The fact that there is a relatively low percentage of unemployment in Germany is a positive aspect of the German labour market.

Introduction

In this scientific article we describe the German labour market and its positive and negative sides. The positive side of the German labour market is the fact, that Germany has a comparatively low level of unemployment – 6,4% (2015). We try to analyse the factors influencing the German labour market. Due to the process of globalisation and migration from crisis and war regions Germany records a greater increase of migrants from third countries. Within the German labour market works a considerable amount of persons from member states of the European Union. Germany tries to attract persons with a professional qualification from abroad. We also refer to the move of persons that already got a „Blue card „enabling them to work in Germany. The German labour market had to go through reforms titled „Agenda 2010“ including a reform of the labour market and the social reform „Hartz IV“. These reforms put pressure on the unemployed. As a result of these reforms the production costs decreased and the German economy acquired on competitiveness. Another group of people that operates in the German market consists of students that have finished their studies in Germany and have no interest to return to their home countries but stay and work in Germany.

1. Methods, literature overview (style HED – heading 1 numbered)

Our studies are focused on the situation on the German labour market. In this process we use the method of analysis, e.g. the number of all persons able to work, of unemployed and self-employed in Germany, the share of population with a migration background in relation to the total number of residents in the federal states of Germany. We looked for relationships between the measures of the labour market's reform within the „Agenda 2010“, the social reform „Hartz IV“ and the labour market. Collecting facts we relied on documents – the legislation according to the reforms mentioned above. Doing this we used the methods of induction and deduction. Evaluating the factors that influence the German labour market we referred to statistical methods.

Object of our studies was the German labour market in the conditions of globalization, growth of population with a migration background, a lack of skilled workforce and other factors. The data required are from the Federal Statistical Office, the internet portal „Statista“, the online portal Hartz I-IV (laws) and the Federal Agency for Refugees and Migrants.

2. Results

2.1. Economic growth and the situation on the German labour market

The Federal Republic of Germany (further Germany) has the strongest economy within the European Union. The German economy is based on a high work productivity due to automation and robotization of production processes. Establishing and maintaining a new technology can become a competitive advantage that may be even crucial for the existence of a company (Němeček et al., 2011). Germany has the highest level of robotization after Japan and South Korea. Family enterprises play a very important role in national economy. It is because they belong among micro, small, medium or even large enterprises, they take a share in employment and through that they contribute to lowering unemployment and create new jobs (Strážovská et al., 2015).

In the years 2005 to 2015 the GDP moved from 0,7% to 1,7%, the lowest growth was registered in the year 2009 with -5,6% (Tab. 1).

TAB. 1: Growth of GDP in the Federal Republic of Germany

Growth of GDP in the Federal Republic of Germany in percent compared to the previous year										
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0,7	3,7	3,3	1,1	-5,6	4,1	3,7	0,4	0,3	1,6	1,7

Source: Statistisches Bundesamt, Pressemitteilungen vom 14. Januar 2016 – 014/16

Private consumption was the most important driver for growth in the year 2015. The expenditures of households grew by 1,9%, state expenditures by 2,8%. The increase of

investments in Germany had been 3,8%. The exports of goods and services had increased by 5,4% compared to the previous year (Statistisches Bundesamt, Zahl der Erwerbstätigen, 2016). Germany is a welfare state and holds high social standards, what means a high share of social transfers in relation to the GDP.

Germany has a population of 80 million people, 90% of them have German citizenship, but more than 15 million have a migration background. The most strongly represented nationalities are (December 2015) Germans 91,5%, the Turkish group 2,4% and other nationalities as there are Greeks, Italians, Russians, Serbs and Spaniards. The first residents with a migration background came into the country since the year 1955 on basis of intergovernmental agreements, on invitation by the German government. The reason for their coming was a workforce deficit on the German labour market, in the automotive industry. In January 2016 the share of foreigners in Germany increased by 1.017.000 residents compared to the same month of the previous year according to the results of the Central foreigners register. The number of citizens from the EU in January 2016 increased by 340 000 persons compared by January 2015 (+9%). (Hartz I – IV, 2016) The biggest share of foreigners calculated on the total number of inhabitants in German federal states is listed for Berlin – 14,3%, Hamburg – 13,9%, Bremen – 13,4% , Hessen – 13%, Baden-Wurttemberg – 12,6% and North Rhine Westphalia – 10,5%.

At present the German labour market includes German citizens, citizens of EU member states and of third countries. The number of employable population reached the amount of 44, 9 million persons. The unemployment rate stood at 4,6% (2015), what means a rate below half the average in the EU (9,4%) (Statista, 2016, Ausländeranteil in Deutschland nach Bundesländern. This low level of unemployment was in part influenced by the reform of the social system and the reform of the labour market “Hartz IV” in the frame of Agenda 2010. These reforms exerted pressure on unemployed persons that became cheap manpower for employers and became a group of workers working near the poverty line (the so called precariat) with special employment contracts. With regard to this matter Janouskova too mentions, that high costs on labour lead to substitution by capital, eventually to untraditional forms of working relationships... (Janoušková, 2011). The household expenditures have - due to the lower income - slowed down and just the private consumption should have a bigger share of the economic growth.

2.2. The political measures Hartz I-IV concerning labour market and employment

The political measures under the name „Hartz I-IV“ in the years 2002 till 2006 constitute one of the biggest social reforms. The content of these laws is:

- a) temporal reduction of unemployment benefits for persons older than 52 years; younger persons have to be mobile within their region and having received for

- one year unemployment compensation have to accept even working places without social insurance and paid under the collective arrangement,
- b) unemployment benefits and material need benefits were put together, material needs benefits can be received only by persons able to work,
 - c) support of self-employed work by digressive contributions for a maximum of three years if the yearly income does not exceed 25.000 €,
 - d) establishment of one-person stock companies (Ich-AG), mini jobs – the employed persons do not have to pay any taxes, the employer pays contributions to social and health insurance and a 2% rate of taxes from the remuneration, midi jobs – employees pay a graduated contribution to social insurance, jobs through Job Agencies, 1€ jobs – job opportunities that cover the costs for taxes and social insurance.

As a result of these reforms, there has been an increase in the number of persons threatened by poverty, lower pensions in the future and a shift of transfers of state benefits to the future.

2.3. The EU „Blue card” and students at universities in Germany

The EU “Blue card” serves as a tool to attract skilled workers from third countries, - of whom Germany has a shortage. From January to September 2015 in Germany have been issued 11.171 EU Blue cards to members of third countries. Within the same period of 2014 have been granted 9,056 permits. This means an increase of 23, 4% (Bundesagentur für Flüchtlinge und Migration, 2016). Applicants for the EU Blue card were mainly from India – 20,8%, China – 8,3%, the Russian federation – 8,3%, Ukraine – 5,9 and also from Syria – 4,2%. Compared with all EU member states Germany is in the first place as regards the grant of the EU Blue card. In the year 2014 87, 4% of all EU Blue cards have been issued in Germany. Behind Germany follow France and Luxembourg.

Germany also tries to attract skilled labour force through studies at German universities. The total number of student at universities was 2.755.408 in the winter term 2015/16. Every ninth student came from abroad (Bundesministerium für Bildung und Forschung, 2016). Most foreign students come from Turkey, what means 34 736 persons. The highest proportion of foreign students were in the attractiveness of study in Germany is high. The cooperation between Germany and Slovakia in this area continues to deepen, because the Comenius University Bratislava cooperates with several German universities under the Erasmus program (Milošovičová et al., 2015).

3. Discussion

Currently a strong wave of migration in Germany and Austria raises the question whether a multicultural society could work. Immigrants may significantly contribute to

the attractiveness of locations under the following conditions: a thought-out migration policy, creation of platforms for mutual communication, thorough supervision of compliance with labour and residence rights, pressure on foreigners in their integration through language courses, law and civics (Trousil, 2011). Now the problem of labour migration in Europe that means also in Great Britain as well as in Switzerland, is the discrimination of employees according to the number of years they have contributed to the social systems. In the same way Germany and Austria examine changes in granting certain social benefits depending on a certain number of contributions to the social system. This fact contradicts the free movement of people as one of the freedoms of the EU.

The Hartz I-IV laws forced a lot of unemployed to accept jobs without social insurance, below basic salary and other disadvantages. Manifestations of this reality are an increase of people threatened by poverty, low pensions in the future and a shift of state benefit transfers to the future. Forced freelancers, persons with temporary contracts, and one - person joint stock companies represent a problem of the labour market not only in Germany, but in many EU countries.

To study in Germany is attractive, many students after studying in Germany go back to their native countries or leave to another state. 41% of foreign students in Germany interrupts their studies in Germany and only 44% of all students that successfully graduates remains in Germany. The German government and country have the goal to attract 350.000 students to German universities by 2020. For every second business entity foreign students are important. This is the result of a survey of 230 companies. Germany is known as a transit country for students. But special actions are needed to motivate students to graduate and to stay for work in Germany. One proposal is a financial model to support universities to attract foreign students by Stifterverband and McKinsey. (Wirtschaftswoche, 2016).

Conclusion

Finally we can conclude that the German labour market has a low unemployment rate. To a large extent responsible for this situation are the Hartz I-IV laws that mark one of the biggest social reforms. In January 2015, Germany introduced a nationwide minimum wage of 8, 50 EUR gross and the obligation to pay social security contributions for persons employed in private households. The number of foreigners in Germany is rising, and more of them are from third countries than from the EU. Despite the influx of foreigners, Germany has a problem with a lack of skilled human labour. Another tool for obtaining skilled workers is the EU Blue card. Germany achieved the first place in granting the EU Blue card. This is positive for Germany, but also brings negative phenomena in the countries where people are from and where they have studied. The migration of university graduates to Germany is a problem for Slovakia and all countries in that position.

Germany as the fifth richest country in the world has problems with poverty. 60% of households have a less than average income. According to the Reports on poverty from the welfare organization Wohlfahrtsverband clean-energy project / Social poverty report every eighth German lives below the poverty line. The poverty line defined according to microcensus investigations is fixed with less than 917 Euro for a single, for a mother/father with two children less than 1467 Euro, for a couple with two children 1926 Euro. This is not in line with the objectives of the European employment policy, which aims to improve living conditions through promotion of employment, sustainable growth and greater social cohesion (Bérešová, 2015).

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EMPLOYMENT IN THE SERVICE SECTOR - NATURE OF ITS STRUCTURAL CHANGES

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Keywords:

employment – service sector – knowledge-intensive services

JEL classification: E24, J2

Abstract:

The main goal of the article is identify the specific nature of structural changes taking place within the employment of service sectors across the European Union. Its spatial scope covers the twenty-eight European Union countries. The temporal scope of analysis covers the years 2008-2015. The study made use of service sector data available from the Eurostat database and classified as per NACE Rev. 2. The changes taking place in modern economies depend largely on changes taking place in the service sector. The changing role and function of services are reflected in the economic structure, and especially in the structure of employment. A modern service sector, i.e. the one in which the importance of knowledge-intensive services keeps growing, favours building a knowledge-based economy. The EU countries see a steadily increasing share of employment in the knowledge-intensive services, which at the same time decreases in traditional services.

Introduction

The emergence of the next phase in the development of highly developed economies, defined as knowledge-based ones, enforced a review of the role and importance of services in the development of modern economies. There is a significant increase in the importance of services based on advanced knowledge (referred to as knowledge-intensive services - KIS).

The predominance of service sector, in terms of workforce size, its contribution to the overall value added and the growing importance of knowledge-intensive services are the reasons of increased interest in this study area. The proportion of jobs in individual service sector industries or the proportion of highly qualified workforce easily translates into the structure of any national economy and makes the development of a national economy inclined towards industries that require specialist knowledge.

The main goal of the article is identify the specific nature of structural changes taking place within the employment of service sectors across the European Union. Its spatial

scope covers the twenty-eight European Union countries. The temporal scope of analysis covers the years 2008-2015. The study made use of service sector data available from the Eurostat database and classified as per NACE Rev. 2. The results presentation consists of three parts. The first one describes structural changes within the European Union, the second one identifies structural changes occurring in the internal structure of service sectors in individual EU countries. The final part presents the results of a comparative analysis of the development of knowledge-based services in the context of building a knowledge-based economy.

1. Structural changes within the European Union

The structural changes taking place in modern economies are very complex in nature, which obviously makes any analysis difficult. The transformation is mainly enforced by the functional needs of modern market economy (Karpiński, Paradysz, Ziemiecki, 1999, pp. 22-23). In nearly all market economies we can observe objective processes, independent of geographical or social differences between the countries involved. The universal character of main macrotechnological developments (e.g. information technologies and computerization) and their impact on production and employment means that in the future the same objective structural processes will become visible also in those economies which have only recently become market-oriented. In professional literature, the inter-sectoral shifts in employment are considered a basic criterion for evaluating the level of socio-economic development of any country. However, it must be noted that in the long-term perspective the economic developments are unpredictable and any rules of economy are only approximately true, having a definite probability of realization (Kuciński, 2010, p. 18).

In the professional literature, the concept of structural change has been defined in many ways, but most often identified with long-term and permanent changes in the sectoral structure of economy (Chenery, Robinson, Syrquin, 1986; Syrquin 2007). Today, the determinant of structural change is primarily the emergence of spheres that create innovation capacity and that make use of the modern factors of production, i.e. of knowledge. M.G. Woźniak claims that structural changes are manifestations of modernization, which relate to its quantitative dimension, concerning the characteristics of economic growth, and are indicative of a deeper evolution of regulative mechanisms within the economy, resulting from both the top-down reforms and the spontaneous adjustments (Woźniak, 2012). A manifestation of quantitative changes, usually likened to structural changes, is a change in the weights attributed to the individual components of the economic system, which is inevitably accompanied by appearance of the new and disappearance of the old components of the structure. Studies on quantitative changes of this kind mainly cover those occurring in the employment and production structure within various sectors. This makes it possible to identify the industries and sectors showing tendencies toward a growing or declining share in the total employment or production figures. Quantitative measurement of the structural changes consists in

calculating changes in the quantitative relationships between the components of economic structures that have been identified by means of specific criteria.

Because of its many and variegated dimensions, structural change is difficult to measure. It is also quite difficult to assess in terms of desirable speed, direction and composition because it is quite difficult to evaluate desired or optimal outcomes associated with structural change. The concept of structural change refers to the long-term dynamism of the economy, through which the types and nature of existing production, consumption, trade, or research activities shift to new ones. Most recently, the diffusion of information and communication technologies have changed the way products and services are developed, produced and sold, which in turn necessitates different skills from employees in a knowledge economy and require, in general, longer time spent in education. When it comes to measuring structural change, a distinction should be made between structural change in general, which is rather difficult to measure, and change towards a preferred economic structure (Malerba et al, 2011, p.3).

Structural change means change in the relative size of the sectors, however defined. We may judge size by output (contribution to GDP), or by inputs used, either capital or labour. Usually more attention is paid to labour because of the interest in employment and also because it is more easily measured than capital.

Evaluation of the development level of the service sector in any individual economy is the more difficult for the lack of complete, continuous and comparative streams of statistical data (Ilnicki, 2009, p. 119). The obstacles to the analysis of its dynamic economic aspects are, on the one hand, the changes in the approved system of national classification of business activities, and on the other the publication of incomplete data varying in scope. The development level of services is usually defined on the basis of employment in the services sector. This criterion comprises two indices, those of structure and development intensity. The structure index demonstrates the general character of the business activity involved, while the intensity index reflects the activity's "attractiveness" which results from its sectoral structure (Ilnicki, 2009, p. 121).

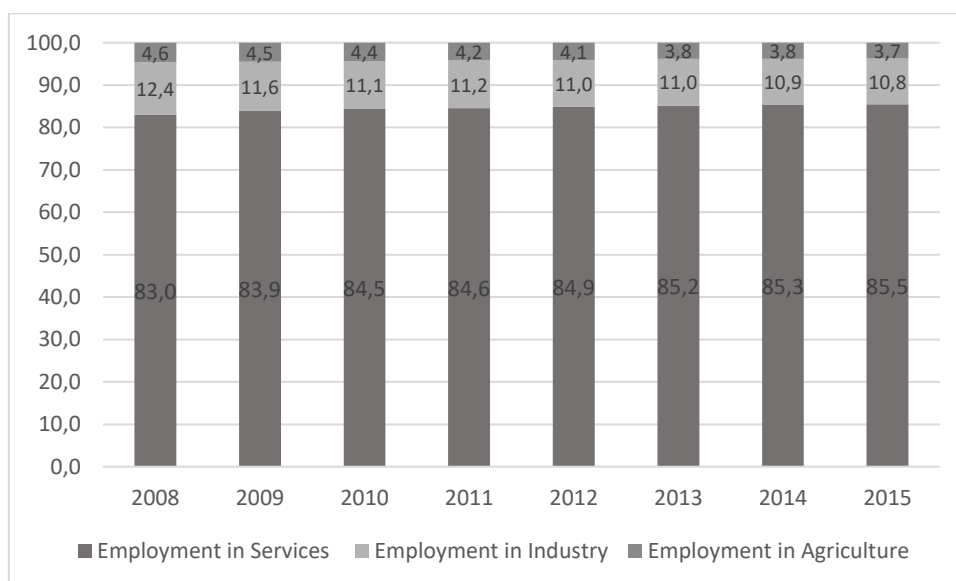
Evaluation of both the services sector as a whole and its internal differentiation requires reliable, complete and comparative statistical data. For many years now the services have been analysed by the national statistical authorities and the analyses are continually modified. Along with the increase in the significance of services for the economic growth there has been an increase in the intensity of scientific research. The quantitative changes were followed by qualitative ones. Instead of researching services as a whole, the research focused on individual types of business activities belonging to various sections of the services sector. This change was aimed at improving the knowledge of the phenomena and processes occurring in the sector. A detailed description of the shift in approaches to the sector analysis can be found in the work of

D. Ilnicki (2009) and in the publications of the GUS (Polish Statistical Office) and the Eurostat.

A sectoral analysis of employment within the European Union (EU-28) during the 2008-2015 period clearly demonstrates that labour moved away from agriculture and manufacturing into services (Fig. 1). During the analysed period the proportion of employment in manufacturing decreased by 1.6 percentage points and in agriculture by 0.9 percentage point while it increased in services by 2.5 percentage points.

The improvement in employment has now extended to most sectors, including those most affected by the crisis such as agriculture, construction and industry. Services withstood the second recession dip better and drove the initial employment recovery, although industry is once again contributing to employment creation. Industry, construction and most service sectors all contributed to employment creation during the year to the second quarter of 2015. However, during the same period, employment continued to decline in agriculture (*Employment... 2015*, p. 22).

FIG. 1: Employment by NACE sectors in the EU-28, 2008-2015 (% total employment)



Source: European Commission. (2015). *Employment and Social Developments in Europe 2015*, December 2015. p. 339.

For the purposes of further analysis, services were subdivided into three groups, namely:

- Group 1 (G – I, L) to include the following sections: G – Wholesale and retail trade, H – Transportation and storage, I – Accommodation and food service activities and L - Real estate activities;

- Group 2 (J, K, M) to include the following sections: J - Information and communication, K - Financial and insurance activities and M - Professional, scientific and technical activities;
- Group 3 (N – P) to include the following sections: N - Administrative and support service activities, O – Public administration and defence; compulsory social security, P – Education, Q – Human health and social work activities, R - Arts, entertainment and recreation, S - Other service activities, T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use and U - Activities of extraterritorial organisations and bodies.

The intensity index analysis shows that the whole period analysed saw a sequence of positive changes in the two service groups and one decrease. For the European Union (EU-28) as a whole, the values of intensity index in Group 1 fell from 107 employees per 1,000 inhabitants in 2008 to 105 in 2015. In Group 2, the rise was from 46 to 48 employees, and in group 3 – from 143 to 150. For Poland and Czech Republic, the values of both the structure and intensity of development lag behind the average European ones which allows the prediction that the employment in services will keep growing.

The presented data illustrate the objective tendency for the growing significance of the services sector as the major creator of new jobs. An important determiner of the shift in employment was the modified share of individual economy sectors in the total labour absorption. Manuel Castells claims that while there is a common tendency in employment structure transformations, there are also some differences in employment patterns that are rooted in history. The differences result first of all from the modus operandi of national institutions, the national culture and politics (Castells, 2010, p. 229). The new technologies, economy and institutional framework interact with one another and together affect the size and structure of employment as well as the dynamics and direction of the labour shift away from agriculture and manufacturing to services.

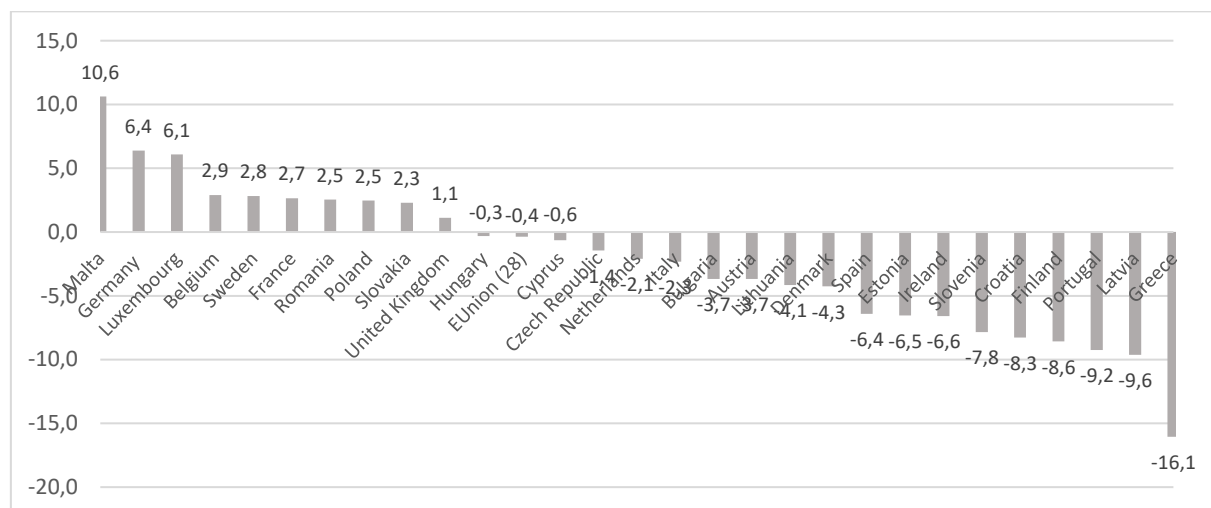
2. Internal structure of employment in services

An analysis of the European labour structure allows identification of those sections of the services sector which absorbed labour most intensely during the 2008-2015 period.

During that period, across the EU-28 the absolute employment figures in sections G-I, L decreased by 0.4% (Fig. 2). The largest employment increase in those sections were seen in Malta (10.6%), Germany (6.4%) and Luxembourg (6.1%). In Greece, Latvia and Portugal the same figures decreased by -16.1%, -9.6% and -9.2% respectively. During the same time the proportional employment in sections G-I, L rose across the EU-28 from 24.4% to 24.7% of the total, i.e. by 0.3 percentage point. Sections G-I, L had the largest share in total employment (exceeding 30%) in Greece (32.3%), Cyprus (31.1%)

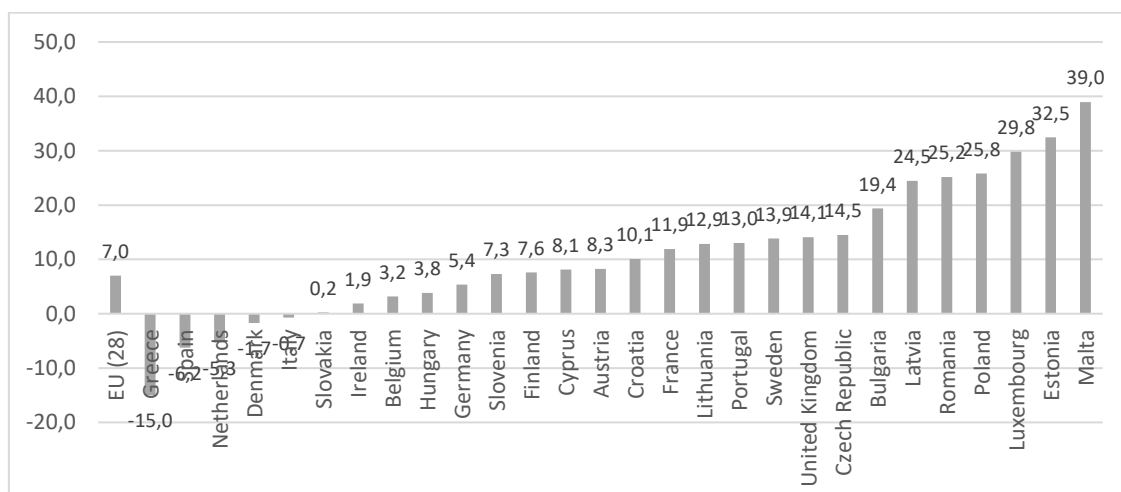
and Spain (30.2%). Conversely, sections G-I, L had the lowest share in the total employment in Luxembourg (16.4%).

FIG. 2: Changes in the employed persons in sections G-I, L (NACE Rev. 2) in the EU-28, 2008-2015 (%)

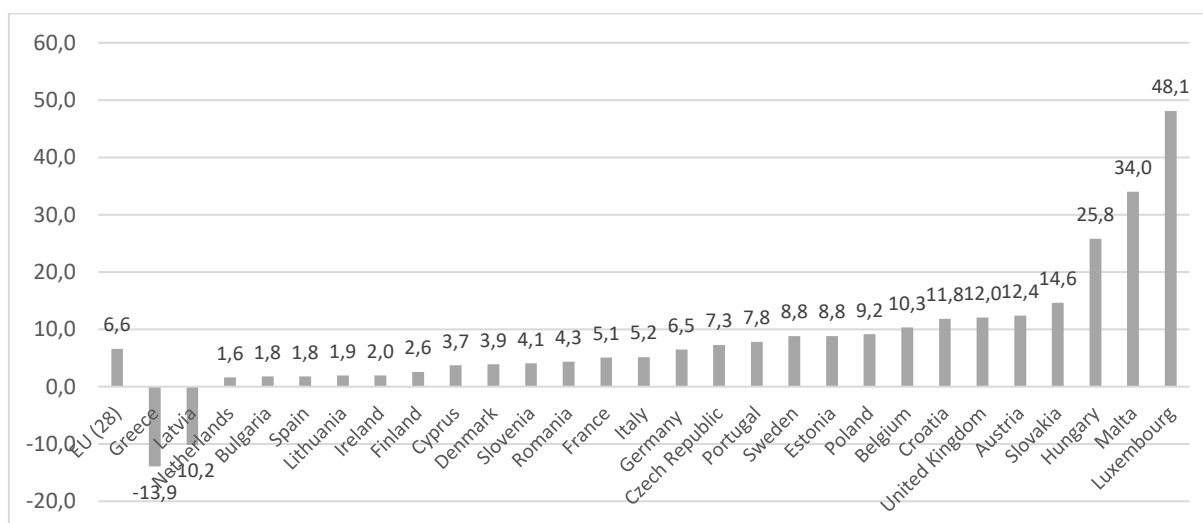


Source: own calculations based on Eurostat

Fig. 3 illustrates the change in employment for sections J, K and M. Across the EU-28, the absolute employment figures in services rose by 7.0% on average and its share in the total grew by 0.9 percentage points (from 10.5% in 2000 to 11.4% in 2015). The largest growth in the absolute employment figures for sections related to Financial and insurance activities, Information and communication and Professional, scientific and technical activities took place in Malta (39.0%) and Estonia (32.5%). The decrease occurred only in five economies ie. Greece (-15.0%), Spain (-6.2%), Netherlands (-5.3%), Denmark (-1.7%) and Italy (-0.7%). In 2015 share in total employment varied from 5.6% in Romania and 7.5% in Slovakia to 21.0% in Luxembourg.

FIG. 3: Changes in the employed persons in sections J, K and M (NACE Rev. 2) in the EU-28, 2008-2015 (%)

Source: own calculations based on Eurostat

FIG. 4: Changes in the employed persons in sections N-P (NACE Rev. 2) in the EU-28, 2008-2015 (%)

Source: own calculations based on Eurostat

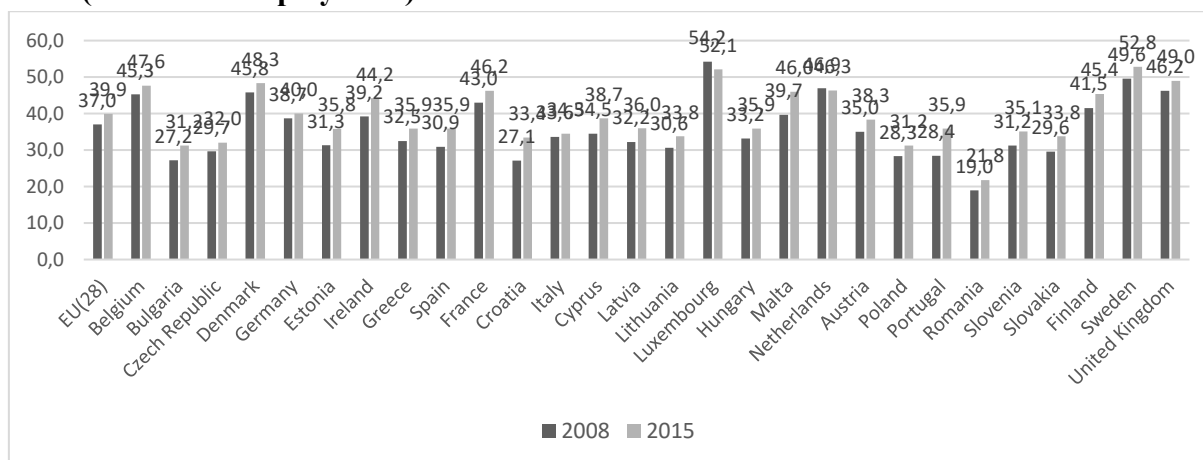
In services belonging to Group 3, i.e. sections N-P, the absolute employment figures rose by 6.6% on average across the EU-28 (Fig. 4). The figures increased for all the EU countries except Greece, which saw a fall by 13.9%, and Latvia (-10.2%). That group of services accounted for 32.8% of the total employment in 2008 and by 2015 the figure reached 35.5%. The N-P sections' share in 2015 total employment varied from 19.7% in Romania and 50.2% in Luxembourg. During the period analysed, the most significant increase in job numbers within the N-P sections was noted in Luxembourg (48.1%), Malta (34.0%) and Hungary (25.8%).

3. Development of knowledge-based services as a necessity in building a knowledge-based economy

The increased role of services in modern economies belongs to a standard sequence of events in their development. The lines of economic development are followed by significant transformations of the prime structure of service sector, which result from changes in the nature of services taking place at subsequent stages of socio-economic development. Initially, the sector is predominated by services that do not require highly skilled labour, and then personal services requiring professional qualifications (repair service) start developing. The next step is the development of services to meet the needs of manufacturing industries (e.g. legal services, accounting or banking). Services intended for a consumer (e.g. tourism and recreation) develop in parallel. The next phase sees the development of complementary services based on new technologies, which require specialized knowledge (e.g. telecommunications and IT) (Nowacka-Bandos, 2009, p. 76).

The use of expert knowledge in services was noted by researchers studying the service sector and was reflected in the emergence of a new category of services based on advanced knowledge (knowledge-intensive services - KIS) [Baláž, 2004]. It is assumed that the knowledge-intensive services include the service types in which at least half of the employees have tertiary education [Miles, 2008, pp. 14-15]. At the current stage of technological advancement, any development of economy without drawing on scientific knowledge seems impossible. While the developing economies get more and more dependent on efficient generation, acquisition, diffusion and application of knowledge, the role of services in this process is undisputable. In the knowledge-based economy, the services labelled as knowledge-intensive (KIS) keep gaining importance. This is manifested e.g. with the growing share of KIS jobs in the total employment [Węgrzyn, 2015, p. 61].

FIG. 5: Employment in Knowledge-intensive service – KIS in the EU-28, 2008-2015 (% of total employment)



Source: own calculations based on Eurostat

Analysis of the employment data of individual EU countries shows that the importance of knowledge-intensive services (KIS) is steadily increasing (FIG. 5). In the years 2008-2015, the share of knowledge-intensive services in the total European employment (EU-28) increased from 37% to 39.9%. The largest increase was seen in Portugal (by 7.5 percentage points), in Croatia and Malta (by 6.3 pp). On the other hand, the share declined in the Netherlands (by 0.6 pp). In 2008, the highest rate of employment in KIS was found in Luxembourg (54.2%) while the lowest in Romania (19.0%). Several years passed, and in 2015 the highest rate of employment in KIS was found in Sweden (52.8%) and Luxembourg (52.1%) while the lowest in Romania (21.8%). The difference between countries with the highest and lowest rates of employment in KIS has been decreasing surely, even if slowly (in 2008, it amounted to 35.2 pp, to reach 31.0 pp in 2015).

Conclusions

The changes taking place in modern economies depend largely on changes taking place in the service sector. Clearly, there is an increase in the importance of services sector, which has a larger and larger share in the economy and without which no economy can develop effectively. At an advanced stage of socio-economic development, knowledge becomes the most important determiner of the structure of goods and services production as well as of the economic growth. The changing role and function of services are reflected in the economic structure, and especially in the structure of employment. A modern service sector, i.e. the one in which the importance of knowledge-intensive services keeps growing, favours building a knowledge-based economy. It is essential to have adequate access to modern services, i.e. financial services, insurance, legal services, accounting and bookkeeping, tax advisory and professional, scientific and technical services. The EU countries see a steadily increasing share of employment in the knowledge-intensive services, which at the same time decreases in traditional services. In Sweden and Luxembourg, the proportion of people employed in knowledge-intensive services exceeds 50% of the total, with the EU average standing at 39.9%. A further increase in employment in the knowledge-intensive services can be expected, particularly in the economies where this type of service is underdeveloped, as these services are necessary for the smooth functioning of modern economies.

Acknowledgments:

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PROBLEMS OF BUILDING EFFECTIVE TAX SYSTEM IN THE COUNTRIES OF CENTRAL EUROPE

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Keywords:

fiscal policies – tax system – public revenue – income tax – indirect taxation

JEL classification: E62, H20, H21, H25.

Abstract:

During the 1995-2014 period, Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia and Slovenia transformed their respective tax systems. This paper describes the direct and indirect taxation transformation paths followed by the countries of Central and Eastern Europe that affected implementation of the fiscal principles and functions of their respective tax systems. Research shows a large number of similarities in their selection of instruments that have significantly changed the way in which the tax systems operate. Thanks to their application of solutions novel to Europe, e.g. the deep cuts in tax rates or the introduction of flat-rate taxes, the ex-Eastern Block members of the EU have set trends for the entire EU and become a model followed by other post-socialist countries.

Introduction

Fiscal policies are significant factors of economic growth. Tax system is one of the basic instruments of fiscal policies. The structure of tax system significantly affects the market actors' decisions regarding consumption, employment or accumulation of capital. Still, the primary function of tax system is the fiscal one. Taxes should be an efficient source of public revenue. Their fiscal function requires the creation of an effective tax system, based on several principles of which the most important are fiscal principles.

The efficiency of any tax system performance of its fiscal function is the system's suitability to the conditions and socio-economic relationships prevalent in any given economy. Frequently, similar economic objectives are attained with different tax system structures, as illustrated by the variety of systems adopted in individual EU countries. This refers primarily to the rate structure of individual taxes. Countries with similar histories of economic development and similar experiences in political history normally have similar concepts of building their tax system structures. This is also the effect of

similar relationships within their economic structures and similar aspirations for economic growth.

During the 1995-2014, the CEE members of the EU transformed their tax systems. When embarking on the transformation they had to reconcile the fiscal function of their tax system with a number of characteristics specific to countries under political transformation. This often made them seek innovative solutions whose success made them model to other developing countries. This paper describes the direct and indirect taxation transformation paths followed by the countries of Central and Eastern Europe that affected implementation of the fiscal principles and functions of their respective tax systems. The analysis covers mainly the changes in rate structure of the taxes in question and their impact on the structure of public revenue in Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia and Slovenia. The changes are presented against the background of the tax solutions adopted across the EU-15. The underlying research consisted of statistical and analytical methods.

1. The socio-economic determiners of tax system change

For public authorities, building a tax system compliant to the taxation principles and effectively performing its fiscal function is a very difficult task, since the main goal of fiscal policies is usually stimulation of economic growth. Wagner's law suggests that the growing share of public expenditure in GDP results from enhanced incomes and living standards of the society who increasingly feel the adverse impact of economic development, including diverging income levels, environmental pollution etc. On the other hand, excessive taxation leads to a number of negative economic processes. A typical effect of high taxation is restriction of economic growth. The empirical studies of 1960-2000, carried out in Western European economies, demonstrated the strength of this negative correlation (Balcerowicz, 2004). Similar results were obtained in an OECD study of 23 developed economies, which covered the 1960-1996 period (Gwartney, 1998). It demonstrated a strong negative correlation between the tax burden and public expenditure levels and the rate of GDP growth. It is estimated that an increase in fiscal burden by 10 percentage points causes a fall in actual GDP by 1 percentage point. Labour market also suffers from a number of negative effects of an excessive tax burden. These typically include an increased cost of labour, an increased bargaining power of workforce that translates into inflation and reduced investment expenditure, an increased profitability of avoiding employment and a weaker motivation for accumulating human capital. The deadweight loss theory, describing the effects of excessive fiscal burden in labour markets, defines the relationship between growing taxation and reduced labour supply. The theory holds that the deadweight loss through taxation is equivalent to the difference between the cost of net production loss and the benefit of leisure time (as estimated by the employee) (Tarchalski, 2009). It can be assumed that the deadweight loss is the size of reimbursement that the government

would have to pay to the taxpayer to maintain his satisfaction at the level prior to the tax introduction. American studies show that due to the deadweight loss, any 1% increase in tax burden in the US would bring a public revenue 40% lower than the one predicted with the use of simple arithmetic (Feldstein, 2006). Other studies assert that the negative difference from projected revenues may be as high as 100% (Auten & Carroll, 1999 and Gruber & Saez, 2000).

The economic literature lists the negative correlation between public spending and investment spending (crowding out) as a major factor in long-term economic downturn. In the presence of a strong crowding-out effect, for the public expenditure on goods bringing external benefits to increase the rate of long-term economic growth, the marginal productivity of such public expenditure would have to exceed the productivity of business expenditure on such goods to an extent allowing to set off both the public sector wastefulness and the developmental impact of distorting the standard logic of private business (Rzońca, 2007).

On constructing their tax systems, the CEE countries have had to account for a number of correlations. Their basic challenge is tuning the public duty burden to allow attainment of their primary objective of maximizing a sustainable economic growth. Studies carried out on a large and varied sample of countries estimate the optimum share of public spending in GDP to be around 20-30% (Tanzi & Schuknecht, 1998). A similar study on the Bulgarian market (covering the 1990-2004 period) led to an estimate of 21.4% – 28% (Mavrov, 2007).

The share of public expenditure in GDP is closely related to public revenue whose fiscal aspect determines the way in which business entities operate and creates conditions for sustainable growth.

When compared to the EU average, the countries included in the analysis generally have a low level of public charges. Only in Hungary and Slovenia that level comes close to the EU average. The lowest level of public revenue, only slightly exceeding the postulated ceiling of 30% of GDP, was in 2014 reached by Bulgaria, Lithuania, Romania and Slovakia. At the same time, it was Bulgaria and Slovakia who conducted the deepest reforms of public finances which resulted in the strongest reduction of fiscal burdens. An additional factor enforcing reduction of the tax burden in the countries analysed has been the tax competition. Huge demand for capital in the economies under transformation makes them use taxation as an instrument supporting capital investments and accumulation. For these new market economies, free flow of capital is a development opportunity and at the same times a restriction in designing their tax systems (Grabowski, 2004).

TAB. 1: Total tax revenue (% of GDP)

	2000	2005	2014		2000	2005	2014
EU (27 countries)	45.3	44.3	44.1	Lithuania	35.7	32.7	33.7
Belgium	49	49.3	48.9	Luxembourg	43.6	41.5	41.6
Bulgaria	40.7	38.3	34.3	Hungary	44.7	42.2	45.2
Czech Republic	38	39.8	39.3	Malta	34.4	41.7	39.5
Denmark	55.8	57.8	55.1	Netherlands	46.1	44.5	46.2
Germany	46.2	43.6	43.6	Austria	50.1	48.2	48.1
Estonia	35.9	35.2	40.9	Poland	38.1	39.4	37.5
Ireland	35.9	35.4	35.6	Portugal	38.3	40.1	41.4
Greece	43	39	39.7	Romania	33.9	32.4	33.4
Spain	38.2	39.7	36.3	Slovenia	42.8	43.8	44.2
France	50.2	50.6	49.5	Slovakia	39.9	35.2	32.4
Italy	45	43.4	46	Finland	55.4	53	52.7
Cyprus	34.7	40.7	41.1	Sweden	58.7	55.8	52.4
Latvia	34.8	35.4	35.7	United Kingdom	40.4	40.7	40.2

Source: Eurostat (2012), available at <http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search>

Another characteristic, common to the countries in question and affecting the fiscal function of their tax systems, is the high level of shadow economy, frequently rooted in their historic experiences. During the 1990s, the rapid expansion of private sector was related to the utilization of tax system for minimizing tax burdens. Businesses often used the weak points of tax authorities to place all or a part of their production in the grey zone of economy. This refers in particular to service companies. At the same time, tax avoidance became socially acceptable in a number of economies under political transformation. This was due to a low level of tax morality as well as to the negative side effects of transformations, blamed upon the government (Grabowski, 1995).

TAB. 2: DYMIMIC evaluation of the size of shadow economy (mean % of GDP)

	Shadow economy as % of GDP	
	1990-1992 mean score	2000-2014 mean score
Bulgaria	27.1	36.4
Czech Republic	13.1	18.4
Estonia	34.3	39.1
Lithuania	26.0	29.4
Latvia	25.7	39.6
Poland	22.3	27.4
Romania	27.3	33.4
Slovakia	15.1	26.7
Slovenia	22.9	29.2
Hungary	22.3	24.4

Source: Grabowski & Tomalak (2004)

2. Basic steps in constructing a fiscally efficient tax system

The CEE countries transformed their respective tax systems in full recognition of the situation described above, with the predominant fiscal function still in place. During 1995-2014, all these countries except Slovenia saw an increase in the indirect taxes' share in total tax revenue. This process was most advanced in Bulgaria and Romania. The 2014 mean value for EU-27 was exceeded by all countries in the region except the Czech Republic.

While meeting the basic principles of taxation efficiency, elasticity and stability, for the countries in question the indirect taxes (especially VAT) have become a major source of revenue, much more important than in the EU-15 countries. The indirect taxation share was growing while the tax rates remained relatively stable. As for VAT, during that period there were a couple of VAT rate cuts which, however, had no impact on the sum total of tax revenue as they were introduced alongside liquidations or increases of the preferential rates. The efficiency of indirect taxation was well utilized in the 2008-2010 period of economic crisis when most of the 'new EU' countries were able to slightly

raise their VAT rates to reach in 2014 the levels varying from 20% (Bulgaria, Czech Republic, Estonia, Slovenia, Slovakia) to 27% (Hungary).

The increase in indirect taxation share of the total tax revenues was accompanied by a fall in the direct taxation share. This trend was best visible in Romania, Lithuania, Bulgaria and Estonia. At the same time, Slovenia and Hungary increased the share of direct taxation in public revenue

TAB. 3: Changes in the rate of income tax from legal persons in the years 1995-2013)

Belgium	-6,2	Luxembourg	-12,1
Bulgaria	-30	Hungary	1
Czech Republic	-22	Malta	0
Denmark	-9	Netherlands	-10
Germany	-27	Austria	-9
Estonia	-5	Poland	-21
Ireland	-27,5	Portugal	-8,1
Greece	-10	Romania	-22
Spain	-5	Slovenia	-5
France	-0,6	Slovakia	-21
Italy	-20,8	Finland	-0,5
Cyprus	-15	Sweden	-1,7
Latvia	-10	United Kingdom	-9,0
Lithuania	-6,2		

Source: Eurostat (2012), available at <http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search>

The changes in fiscal efficiency of direct taxation are mostly due to reductions in tax rates. As far as taxation of personal income was concerned, during the 1995-2014 period some of the countries have adopted low, flat rates of income tax, while others kept reducing the rates applicable to the highest tax brackets. Again, Bulgaria was the

leader in tax rate reductions. Relatively large cuts in the tax rates due on highest personal incomes were also introduced in the Czech Republic, Romania, Hungary and Slovakia. Latvia was the only country not to introduce any rate changes during this period. However, this was because they were already far ahead through the earlier introduction of low, flat PIT rates.

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Conclusions

During the 1995-2014 period, Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia and Slovenia transformed their respective tax systems. The main drivers of the transformation were fiscal factors. In pursuit of efficient sources of revenues for their national budgets, these economies had to tune their tax system structures to the specifics of post-socialist economies under transformation. The major factors that had to be taken into account included the size of shadow economy and the tax competition between individual countries. Another stimulus for change was the EU accession.

Another outcome of the tax system transformations in the CEE countries was the diminishing share of direct taxation in total public revenue. This was mainly due to reduction in the rates of income tax charged from both individuals and corporations. The Central and Eastern European countries have led the way as far as switching from progressive to flat rates of tax is concerned. The absolute leader was Estonia who adopted flat-rate taxation of income as early as 1994. They were followed by Latvia, Lithuania, Slovakia and Romania, and then in 2008 by Bulgaria and the Czech Republic. It should be emphasized here that the concept of low, flat-rate taxation was considered the best solution and consequently adopted by most countries of the former Eastern Bloc (Tarchalski, 2009). Those who did not follow suit, namely Poland, Hungary and Slovenia, still reduced the top rates of personal income tax and additionally introduced preferential treatment of sole proprietors.

The negative aspect of tax systems that still persists in the CEE countries is the fiscal burden on labour, inclusive of social security system contributions. The new CEE members of the European Union do not differ much in this respect from the old EU-15.

The situation persists despite the deep cuts in PIT rates. This suggests an inconsistency of public finance reforms and may lead to non-attainment of the objectives of tax system transformations.

However, the CEE countries took radical steps as far as the corporate tax burden was concerned. The unquestionable leader in tax rate reduction is Bulgaria and the Bulgarian corporations enjoy the smallest fiscal burden in the EU. Businesses located in the other countries of the region are only slightly worse off in terms of CIT rates which provides them with a tax advantage over the old EU-15.

During the 1995-2014 period, Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovakia and Slovenia were attempting to transform their respective tax system in such a way that would allow them to reconcile the fiscal aspects of taxation with the characteristics of post-socialist economies and with their need for sustainable growth. As those objectives seemed contradictory, the governments had to look for solutions innovative to Europe, like deep cuts in tax rates or introduction of flat-rate taxation. Later on, many of the adopted solutions became models followed by other countries of the EU and the Commonwealth of Independent States. At the same time, the solutions adopted had no negative impact on public revenues earned by the CEE countries, instead only shifting the proportions of fiscal efficiency between individual tax types. Logically, the next step in the research of tax system reform outcomes seems to be a look at the correlations between individual components of the tax systems and the economic growth, employment and shadow economy figures.

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DOES SLACK RESOURCE REALLY BENEFIT AMBIDEXTROUS INNOVATION? THE MODERATING EFFECT OF OUTPUT CONTROL MECHANISIM

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Abstract:

This study aims to explore how firms should leverage slack resource to promote ambidextrous innovation under output control mechanism. It investigates the different effects of slack resource on balanced and combined ambidextrous innovation, and the ways in which output control moderates these effects. Using the survey data from a sample of 490 Chinese firms, we find that slack resource has an inverse U-shaped effect on balanced ambidextrous innovation while positively influence combined ambidextrous innovation. Furthermore, our results show that output control weakens the effect of slack resource on balanced ambidextrous innovation while strengthens that on combined ambidextrous innovation. Our study contributes to the ambidexterity literature and provides managerial implication for firms.

Introduction

The consensus has been achieved that maintaining an ambidextrous innovation strategy by simultaneously pursuing exploration and exploitation is more applicable as it makes ends meet of both short-term profit and long-term success (Tushman & O'Reilly, 1996; Cao et al., 2009; Lavie et al., 2010). However, due to the incompatible nature between exploration and exploitation, firms always fail on the way of value creation with ambidextrous innovation strategy (March, 1991). How to effectively manage ambidextrous innovation is the key issue for firms pursuing long-term survival and success.

Resource scarcity has been recognized as the crucial point and scholars have explored the ways that facilitating ambidextrous innovation through effective resource portfolio reconfiguration. Such as build favorable organization contexts (Gibson & Birkinshaw, 2004; Lin & McDonough, 2011) or elaborate institutional designs (Uotila et al., 2009). Despite the significant contributions, there are still unanswered questions on how to leverage resource for ambidextrous innovation. Resource bricolage perspective (Baker

& Nelson, 2005) suggests that slack resource scattered throughout the organization could be gathered together and generates huge potential on resolving resource scarcity of the firms. However, it is still unclear that whether and how slack resource really benefit to ambidextrous innovation. In addition, we are still confused by how resource management mechanism such as output control influences the effects of slack resource on ambidextrous innovation.

This study seeks to explore how slack resource influence firm's ambidextrous innovation under output control mechanism. Specifically, we follow the pioneering work of Cao et al. (2009) and unpack ambidextrous innovation into balanced and combined dimension and explore the moderating effects of output control. In doing these, this study contributes to the literature in two ways. First, we advance the understanding of slack resource as an important antecedent of firm's ambidextrous innovation by providing an extensive analysis of how slack resource differently contributes to the balanced and combined dimensions of ambidextrous innovation. Second, this study contributes to the knowledge of resource management for ambidextrous innovation by highlighting and clarifying an important contingency factor. Thus, we emphasize the fitness between innovation strategy and organizational control mechanism and reconcile the opposing arguments in existing control literature.

1. Literature overview and Theretical Hypothesis

a) The Interaction of Slack Resource and Balanced Ambidextrous Innovation

Balanced ambidextrous innovation requires firms to simultaneously perform exploration and exploitation as emphasizing the balance the relative level of these two contradictory yet interrelated innovative behaviors (Cao et al., 2009). Because innovation is resource-consuming. Slack resources beyond the practical needs are still of important values for innovation by developing its potentials or rebuilding the applications (Baker & Nelson, 2005). First, by providing mobility, flexibility and inclusiveness (Singh, 1986), slack resource alleviates the resource competitions between exploration and exploitation so as to facilitate balanced ambidextrous innovation. Second, slack resource provides the resource buffer of failures and enhances the risk-taking for firms' entrepreneurship on the transitions between exploration and exploitation. Third, slack resource provides the booster of organizational behaviors so as to improve the willingness of firms to try different innovation strategies, which speed up the trade-off between exploration and exploitation.

However, despite these positive influences, we argue that slack resource cannot always be configured to the matching use of exploration and exploitation equally, so as to make balanced ambidextrous innovation is of the "subprime" instead of "optimal". In addition, scholars also suggest that firms with excessive slack resource are inclined to choose more exploitation rather than exploration which might lead to a "success trap"

(Nohria & Gulati, 1996) and be detriment to balanced ambidextrous innovation. Thus, there is a “best” moderate level of slack resource which may help firms to obtain balanced ambidextrous innovation, and over too much or too less slack resource will be disadvantage. Therefore, it is hypothesized:

H1: Slack resource has an inverse U-shaped effect on balanced ambidextrous innovation.

b) The Interaction of Slack Resource and Combined Ambidextrous Innovation

Combined ambidextrous innovation claims that exploration and exploitation is compatible and symbiotic rather than competitive and mutually-exclusive, and can be implemented simultaneously. Slack resource expands the scope of the firms’ resource pools which are easily available and improves the possibility of resource configuration and knowledge creation. In addition, slack resource boost the creative behaviors according to resource bricolage perspective (Baker & Nelson, 2005). In order to efficiently excavate the value of slack resources, firms are bound to experimentally reconfigure and rebound various resources together. That deepens the understanding of resources and provides new knowledge of resource combinations so as to facilitate the synergetic effects and complementary mutual growth of exploration and exploitation. Therefore, it is hypothesized:

H2: Slack resource has a positive effect on combined ambidextrous innovation.

c) The Moderating Effects of Output Control Mechanism

We argue that output control as one of organization mechanisms “used to direct, motivate, and encourage employees to act in the desired ways to meet organization’s objectives” (Ouchi, 1977; Cardinal, 2001) has differently moderating effects on the relationships between slack resource and ambidextrous innovation dimensions. Balanced ambidextrous innovation requires equilibrium of resource allocation for both exploration and exploitation. Relying on programmability and measurability of the goals, output control provides crucial comparable criterion for performance evaluation and links appraisals and bonus of employees closely with target settings such as financial results (Snell, 1992). It may divert employee’s attention to short-term outcomes at the expense of long-term results. Therefore, under output control mechanism, employees would be risk-averse and lean towards allocating more slack resource for exploitative projects rather than exploratory activities with high risk so as to guarantee their profits. Based on these arguments, output control is expected to have negative moderating effect on the relationship between slack resource and balanced ambidextrous innovation.

However, we argue that output control positively moderate the effects of slack resource on combined ambidextrous innovation. As focusing on the final results, firms under

output control mechanism tolerate more on the failures and setbacks during the innovation process. Those firms usually provide employees with enough freedoms and independency rather than close surveillance and instantaneous evaluation (Snell, 1992). Thus, output control may stimulate the enthusiasm of employees to creatively explore or exploit with slack resources portfolio, which greatly improve the possibility of the synergy of exploration and exploitation. As a result, when output control is stronger, the positive relationship between slack resource and combined ambidextrous innovation increase. Therefore, we suggest the following hypothesis.

H3: Output control weakens the inverse U-shaped effect of slack resource on balanced ambidextrous innovation.

H4: Output control strengthens the positive effect of slack resource on combined ambidextrous innovation.

2. Method and results

2.1. Data collection and Samples

Data for this study were collected through a survey on firm resource and innovation. The samples involved in electronics, machinery, pharmaceutical, and processing industry etc. All the respondents were senior executives such as CEO, COO or CFO which had at least three years' management experiences in target firms so as that they well understood status quo of the firms. The original questionnaire was developed from published academic papers in top-tier journals with two-way-back translation method. A pilot test was conducted with 4 managers and 2 academic scholars whose responses were excluded from the final sample. 614 firms finished the questionnaires and 124 samples were excluded because of the data deficiency. We finally received 490 complete and valid questionnaires with an effective response rate of 76.75%. To ensure the validity of the sample, non-response bias was checked by t-tests and Chi-square test according to firm size and age. Both test results were insignificant, which suggested that non-response bias was not a problem.

2.2. Measures

All the measures in this study were compiled based on established scales. Questionnaire items were measured on a 5-point Likert scale in which "1" represents "strongly disagree" and "5" represents "strongly agree". (1) three items were used to measure slack resource according to the work of Tan and Peng (2003) (Alpha=0.936; C.R.=0.834). (2) using the primary scale validated by Li et al. (2010), four items were adopted to measure output control mechanism (Alpha=0.970; C.R.=0.868). (3) based on the classical work of Atuahene-Gima (2005), five items were adopted for exploration (Alpha=0.971; C.R.=0.868) and four items were for exploitation (Alpha=0.870;

C.R.=0.881). (4) Balanced ambidextrous innovation and combined ambidextrous innovation. Based on the classical work of He and Wong (2004), Cao et al. (2009), Jansen et al.(2009) and also Wei et al.(2014), we used the mature formula to calculate the amount of balanced and combined ambidextrous innovation computed from the variables of exploration and exploitation. (5) Control variables. Firm age and firm size had been recognized as basic control variable due to their strong impacts on firms' resource, behaviors and performance. Industrial competition (Alpha=0.848; C.R.=0.886), external resource munificence (Alpha=0.895; C.R.=0.908) and technological turbulence (Alpha=0.893; C.R.=0.887) were also been controlled. All these three environmental variables were verified having strong influences on innovation, and we measured them by rating the extent from "1" (very weak) to "5" (very strong) (Jaworski and Kohli, 1993; Auh and Menguc, 2005).

2.3. Construct reliability and validity

Construct reliability and validity were tested. The Cronbach's alpha value and composite reliability values were all above 0.8 (reported in the previous paragraph), which were greater than the cut-off of 0.7. All the factor loadings except one (0.67) were above 0.70 and significantly above the requisite level of 0.6 suggested by Fornell and Larcker (1981). Thus, all the constructs demonstrated adequate reliability and convergent validity. To test the discriminant validity, the average variance extracted (AVE) values were computed. As Table 1 shows, the square root of AVE for each construct with multiple items (in bold) were significantly greater than the off-diagonal elements, which satisfied the criterion for discriminant validity. Taken together, the results showed adequate reliability and validity for the measures in this study. Harman's one-factor test was also conducted for all items to prove no common method bias in this study (Podsakoff et al., 2003).

2.4. Results of regression

Multiple regression analysis was conducted to the model and hypotheses. Table 2 reported the hierarchical regression analysis results step by step. To test Hypotheses 1 and 3 on balanced ambidextrous innovation, Model 1, 2, 3, and 4 were conducted. The results in Model 3 showed that the coefficient of the squared slack resource was weak significantly negative ($\beta=-0.085$, $p<0.01$), which weakly supported Hypothesis 1. Model 4 showed that the interactive effect of output control and the square of slack resource was significantly negative ($\beta=-0.087$, $p<0.1$), suggesting that output control negatively moderated the inverse U-shaped relationship between slack resource and balanced ambidextrous innovation. Thus, Hypothesis 3 was supported.

To test Hypotheses 2 and 4 on combined ambidextrous innovation, Model 5, 6, and 7 were conducted. In Model 6, slack resource was added and the coefficient of slack resource was significantly positive ($\beta=0.267$, $p<0.001$), which indicating Hypothesis 2

was empirically supported. Model 7 showed that the coefficient of the interaction of slack resource and output control was significantly positive ($\beta=0.195$, $p<0.001$). Therefore, Hypothesis 4 was supported.

TAB. 1: Correlation Coefficients and AVE Values

	mean	Std. Deviation	1	2	3	4	5	6	7	8	9
Firm age	3.68	1.120									
Firm size	3.49	1.647	.448*								
Industrial competition	- .000	.79000	.158*	.104*	0.610						
External resource munificence	- .000	.85280	- .112*	- 0.078	0.03	0.712					
Technology turbulence	.002	.85607	.124*	.145*	.366*	.282*	0.662				
Slack resource	.000	.82962	.000	0.036	0.059	.259*	.227*	0.629			
Output control	- .001	.80967	- .002	- 0.089	.181*	.268*	.190*	.269*	0.612		
Exploration	.002	.84302	.063	.129*	.241*	.278*	.532*	.402*	.297*	0.622	
Exploitation	- .003	.85415	.034	.126*	.167*	.210*	.284*	.318*	.335*	.519*	0.64

Source: own processing

Notes: No. of samples is 490. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The diagonal elements are the root of Average variance extracted value (AVE).

TAB. 2: Regressions Examining the Effect of Output Control on the Relationship between Slack Resource and Ambidextrous Innovation

Variables	Balanced				Combined		
	ambidextrous innovation				ambidextrous innovation		
	Model1	Model2	Model3	Model4	Model5	Model6	Model7
Constant							
Firm age	.068	-.095†	-.093†	.098*	.078*	-.092**	-.062
Firm size	.062	.110**	.116**	.062	.151***	.155***	.137***
Industrial competition	-.134***	-.126***	-.118**	-.110**	.053	.156***	.161***
External resource munificence	-.116**	-.102**	-.095*	-.073†	.083*	.152***	.151***
Technology turbulence	.274***	.294***	.292***	.277***	.187***	.304***	.287***
Predictor							
Slack resource		-.073*	-.093*	-.105*		.267***	.232***
Slack resource × Slack resource			-.085†	-.071			
Interaction							
Slack resource × Output control				.227***			.195***
Slack resource × Slack resource × Output control				-.087*			
R2	0.191	0.200	0.205	0.252	0.307	0.369	0.395
F Stats	2.620**	2.393**	2.508**	2.580***	9.088***	8.512***	9.035***

Source: own processing

Notes: No. of samples is 490. † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

3. Discussion

We make several important contributions. First, building on a large sample of firms, our study advances innovation literature as it takes a dynamic view in demonstrating slack resource as an important antecedent of ambidextrous innovation. A finding of this study is that slack resource of primary functions (i.e., augment or complement firms' existing resource stock, providing organizations with buffer to innovation risk, enhancing the motivation of ambidextrous innovation). Second, our study contributes to the studies on ambidexterity by providing new evidence on the different logic principles of two ambidextrous innovation dimensions and deepen our understanding of how the dynamic sourcing of resource exert effects on them. For balanced ambidextrous innovation, the small or moderate amount of slack resource exerts increasing benefit and mitigates the high competition between exploration and exploitation, but too much slack resource exhibits decreasing returns and eventually dampens innovative outcomes. In this sense, we answer a call for a better understanding of how to transfer and deploy resource for ambidextrous innovation. Third, our study proposes a contingency perspective suggesting that output control alters the effectiveness of slack resources in influencing ambidextrous innovation. Output control creates pressures on managerial attention and communication, and may accelerate or slow down the leverage of slack resource on ambidextrous innovation. Specifically, we find its different moderating roles in influencing balanced ambidextrous innovation and combined ambidextrous innovation. When a relatively high proportion of output control is performed, firm may have a decreasing motivation to transfer and assimilate slack resource to the trade-off between exploration and exploitation which alleviates the inverse U-shaped relationship between slack resource and balanced ambidextrous innovation, but an increasing effect of slack resource to synthesizing and integrating exploration and exploitation. In this respect, our finding reconciles the previous debates that output control benefits (i.e., Lorsch & Allen, 1973), damage (i.e., Snell & Youndt, 1995; Eisenhardt, 1985) or curvilinearly influence innovation (i.e., Li et al., 2010) in extant literature. By highlighting the opposite moderating effects of output control, our study pinpoints the importance of matched organizational mechanism in innovation strategy choice and suggests that innovation depends on the joint effect of resource leverage and managerial institution.

Although our study provides important insights regarding the role of slack resource as an antecedent of ambidextrous innovation, it still can be extended in several ways. First, we analyze organization control mechanism by only focusing on output control. However, previous researches have incorporated other types of control mechanisms such as behavior control, clan control and so on. Analyzing other types of control and comparing their different effects would provide a more complete understanding of how control mechanism influence ambidextrous innovation through resource management. Second, although we testified our hypotheses with cross-sectional data from elaborate questionnaire survey, a longitudinal research design would provide additional

confidence in the causal links between slack resource and ambidextrous innovation because of a time lag between the measurement of the independent and dependent variables. Third, there is reason to be cautious in generalizing conclusions from China which is an emerging economic country to another country especially that in developed economics because of the context-specificity. More researches and closer examinations of contextual differences are necessary before generalizing these findings to other settings.

Conclusion

This study argues that slack resource is an important antecedent of ambidextrous innovation and how firms can leverage slack resource to enhance different dimensions of ambidextrous innovation. Our results show that slack resource has an inverse U-shaped effect on balanced ambidextrous innovation whereas it has a significantly positive effect on combined ambidextrous innovation. Furthermore, this study also aims to investigate if the effects of slack resource on ambidextrous innovation are contingent under different level of organizational output control. Our results show that output control negatively moderates the inverse U-shaped relationship between slack resource and balanced ambidextrous innovation whereas positively moderate the relationship between slack resources and combined ambidextrous innovation. Thus, this research extends our knowledge on how firms should dynamically reconfigure slack resource to leverage innovation strategy of ambidexterity, and extend the organization literature on the debate of the role of output control mechanism by noting its contingent effects on the relationship between slack resource and different dimensions of ambidextrous innovation.

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AMBIDEXTERITY IN OPEN INNOVATION: IMPLEMENTING EXPLORATION AND EXPLOITATION WITHIN AND ACROSS ORGANIZATIONS

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Abstract:

Prior research on ambidexterity mainly concerns balancing exploration and exploitation within organizations. As the problem of implementing exploration and exploitation in open innovation arises, managing multiple tensions from internal exploration, internal exploitation, external exploration, and external exploitation should be explored. Thus, the study presents the framework of ambidexterity in open innovation to understand how to manage the tensions of exploration and exploitation within and across organizations. This paper contributes to the exploration and exploitation literature by extending the internal organization across the organization boundary, and contributes theoretically to the open innovation literature from ambidexterity perspective.

Introduction

In recent years, open innovation has attracted increasing attention in innovation strategy literature and innovation practice (Cassiman & Valentini, 2015; West & Bogers, 2014). Open innovation was defined as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively” (Chesbrough, 2006). Multiple tensions among different knowledge management processes rise in the open innovation process, such as the tension between the exploration and exploitation knowledge management process (March, 1991), and the tension between the internal and external knowledge management process (Rothaermel et al., 2009). The firm should manage the trade-off between the internal or external knowledge exploration and exploitation which marks a vital but challenging managerial responsibility.

Following Duncan's research on dual structures to manage trade-offs emerging from a simultaneous focus on alignment and adaptation, the concept of ambidexterity has attracted increasing attention in strategy, organization, and innovation research, and the ambidexterity paradigm has been applied in various organizational contexts. An

ambidextrous organization is capable of dealing with different and contradictory knowledge management processes simultaneously (O'Reilly & Tushman 2007). Some discussions suggest that an ambidextrous ability can reconcile the trade-off and tensions between exploration and exploitation, and can improve a firm's performance (He & Wong 2004; Cao et al., 2009). However, while existing literature focuses on the internal ambidexterity, there is limited research which discusses the tension from external and internal knowledge management in open innovation from the ambidexterity perspective (Lichtenthaler et al., 2009; Rothaermel et al., 2009; Su and McNamara, 2012). As such, there is a lack of consideration about the balance and combination of exploration and exploitation via external and internal domains. Thus, to address these gaps, drawing upon organization learning theory and the organizational ambidexterity perspective, the research proposes to extend the ambidexterity concept more broadly by studying the combination and balance between multiple tensions from the external and internal exploration or exploitation across the firm's boundaries in an open innovation context. The main research questions are: In open innovation, how to implement exploration and exploitation across the organization's boundary? Specifically, how to manage tensions between the internal and external knowledge sourcing and the tension between exploration and exploitation in open innovation?

This study makes the following important contributions. From a theoretical viewpoint, the study proposes a conceptual model to explain the tensions across organizational and knowledge boundaries, which extend ambidexterity more broadly to understand the internal and external learning process in open innovation. The study also discuss the differentiation and integration approach to achieve ambidexterity in open innovation. From a practical viewpoint, the discussion goes beyond transaction costs theory (Santos & Eisenhardt, 2005) to help the manager to make decisions about pursuing exploration and exploitation across the organizational boundary.

1. Theory Background

March (1991) views exploration and exploitation as two disparate learning activities, and suggests these two activities require contradictory organizational routines and they compete for scarce resource. On the one hand, exploitation consists of refinement and extension of existing competencies, technologies, and paradigms building on the existing learning trajectory, which is aimed at improving existing product-market domains (Nonaka, 1994; Harry & Schroeder, 2000). On the other hand, exploration consists of experimentation with new alternatives shifting to a different learning trajectory, which is aimed at entering new product-market domains, (March, 1991; Nonaka, 1994; Atuahene-Gima, 2005).

As the two different learning activities have been put forward by March, the tension and the trade-off between exploration and exploitation have been discussed in a wide range of management research areas. Following March's research, the question about how to

make choices between the two different learning activities have existed in the ambidexterity literature, the combination of exploratory learning and exploitive learning are viewed as substitutions (Uotila et al., 2009; Atuahene-Gima, 2005; Benner and Tushman, 2003), because the limited resources firms own could not support them to simultaneously pursue effective exploratory learning and exploitive learning (March, 1991; Atuahene-Gima, 2005; Benner and Tushman, 2003). Other scholars argue that exploratory and exploitive learning do not necessarily conflict (Gupta et al., 2006; Tushman and O'Reilly, 1996; Jansen et al., 2006). Rather, when firms can effectively allocate their resources, the two kinds of learning activities produce positive interactive outcomes (Katila and Ahuja, 2002; Raisch et al., 2009). Consistent with this perspective, researchers in this stream state that exploratory and exploitive learning are complementarities.

Centering on the divergence of ambidexterity, empirical studies confirm the benefits of ambidexterity and derive the ambidextrous criterion from two dimensions. He and Wong (2004) propose that the interaction of exploration and exploitation is positively related to firm performance in areas such as sales growth rate, and an imbalance between exploration and exploitation is negatively related to the sales growth rate. Following this stream of research, Cao et al. (2009) use the balance dimension of ambidexterity as the absolute value of exploration minus exploitation, and the combined dimension as exploration multiplied by exploitation, and they demonstrate that there is both a positive effect of the combined dimension on performance and a positive relationship between a balanced dimension and performance. These results support the idea that an equal and simultaneous pursuit of exploration and exploitation at a high level is the optimal choice for firms, and that the combined effect of exploration and exploitation on the firm's performance is complementary.

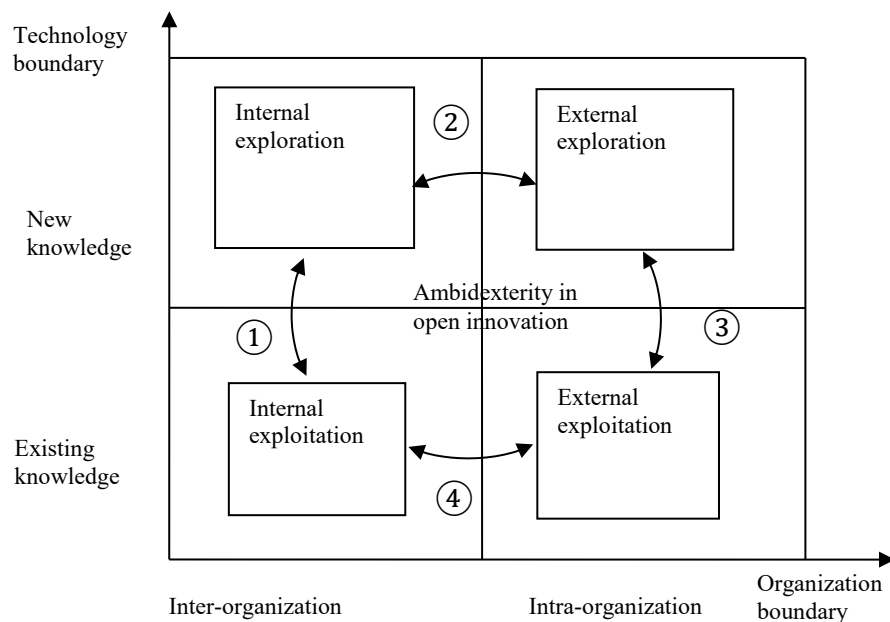
Changes in both external and internal environments made firms consider opening up innovation processes as a way to implement exploration and exploitation. Firms using open innovation can leverage outside knowledge, resources, and technology to efficiently accelerate internal innovation. Dougherty (1996) depicts firms as confronting multiple innovation tensions, such as conflicts between outside-inside, new-old, determined-emergent, and freedom-responsibility. Chesbrough (2003) explains the increasing importance of external technology sourcing by advancing several factors that necessitate a shift in the knowledge landscape from closed innovation to open innovation. Many themes in open innovation are about the types of open innovation, the relationship between open innovation and innovation performance, the process of open innovation, the degree of open innovation, and so on. The degree of open innovation discusses how to solve the tensions of the internal and external knowledge sourcing, specifically, how to balance and combine internal and external innovation. Thus, from the ambidexterity lens, the core of the ambidexterity literature deals with the tensions of differentiated activities. Some researchers have indicated that external and internal

knowledge management should be combined and balanced. Multiple authors have underlined the critical role of combining internal and external knowledge in innovation processes (Andersen & Drejer, 2008; Hargadon & Sutton, 1997; von Hippel, 1988). Lichtenthaler et al. (2009) distinguish internal and external knowledge exploration, retention, and exploitation, including internal knowledge exploration, internal knowledge exploitation, internal knowledge retention, external knowledge exploration, external knowledge retention, and external knowledge retention.

2. The framework of ambidexterity for open innovation

Ambidexterity in open innovation is the trade-off between new knowledge and existing knowledge, and the trade-off between internal knowledge and external knowledge sourcing. Many researchers have suggested that external knowledge can enhance innovation (Ettlie & Pavlou, 2006; Spencer 2003). In the open innovation system, external knowledge sourcing, such as technology permissions, strategy alliances, joint ventures, and acquisitions can be the source of innovation (Stettner & Lavie, 2014; Cassiman & Veugelers 2006, Laursen & Salter 2006, Rothaermel et al. 2006, Vanhaverbeke et al. 2002, Veugelers, 1997). By applying ambidexterity to open innovation, the study emphasizes the importance of knowledge management in boundaries research and goes beyond transaction costs analysis.

FIG. 1: The framework of ambidexterity in open innovation



Source: Author

Thus, the firm needs to manage the tension between external and internal knowledge sourcing, and the tension between new knowledge and existing knowledge, to make the decision between internal exploration and internal exploitation, between external

exploration and internal exploitation, between external exploitation and internal exploration, and between external exploration and external exploitation.

2.1. The internal ambidexterity - the trade-off between internal exploration and internal exploitation

To manage the trade-off between internal exploration and internal exploitation (see the arrow curve① in Figure 1), the firm has to solve two problems: The first is the combination level of exploration and exploitation; the second is the comparative balance level between exploration and exploitation. As the resource condition firms operate in is a key factor which influences the interactive effect of the ambidexterity (Lin et al, 2007; Smith & Tushman 2005; Atuahene-Gima, 2005; Gupta et al, 2006), the lower level of the combination of exportation and exploitation needs fewer resources to invest (March, 1991; Atuahene-Gima, 2005; Gupta et al, 2006). In this case, firms can concentrate on the synergy of exploratory and exploitive learning to leverage resources more efficiently. However, when the combination of exploratory and exploitative learning is too high, the competition for resources between exploratory and exploitive learning occurs (March, 1991), and firms have to face serious pressure from their resource constraints in leveraging organizational ambidexterity. In this case, it is too difficult for firms to pursue ambidexterity effectively by using limited resources. Therefore, high levels of combined exploratory and exploitative learning can diminish the firm's competitive advantage.

Some studies suggest that approaches to achieve an absolute balance between exploration and exploitation can achieve better performance (He & Wong, 2004; Cao, et al, 2009). However, the right balance between exploration and exploitation depends on the relative importance of exploitative and explorative activities (Gulati & Puranam 2009). The firm needs to consider the current competitive condition and the purpose of innovation ambidexterity when choosing exploration and exploitation. As sufficient resources to compete with firms in developed countries are lacking (Peng, et al. 2009; Wright, et al., 2005), along with the serious lack of exploration (Li et al., 2008), it is urgent that firms in developing countries engage in exploration.

2.2. Ambidexterity across organizational boundaries - the trade-off between internal and external knowledge sourcing

Ambidexterity across organizational boundaries means managing the tension between internal and external knowledge based on the internal trade-off between exploration and exploitation. When knowledge can be achieved externally, firms will have little pressure from their resource constraints in leveraging organizational ambidexterity and will take a lower level of risk from internal exploration (March, 1991). Thus, as innovation systems develop, many innovation opportunities have emerged, such as the increasing availability of external options to commercialize ideas, and the increasing

capability of external acquisition and cooperation. The firm has to maintain its internal innovation capability and also develop its external innovation capability, and manage the tension between the internal and external knowledge sources, as the arrow curves in Figure 1 ②④ indicate.

First, the firm has to solve the problem “how to manage the trade-off between the internal exploration and external exploration”, as shown by the arrow curve ②. Firms have to decide whether new technologies are generated internally or acquired from external sources (Cassiman & Veugelers, 2006). The new knowledge that was either developed internally or acquired from external sources is integrated in a firm’s technological resource base. Internal knowledge exploration refers to generating new knowledge inside the firm, e.g., inventions resulting from research (Smith et al., 2005). External knowledge exploration describes the acquisition of knowledge from external sources (Lane et al., 2006). As there is the high level of risk in exploration, acquiring external knowledge and assimilating new external knowledge can reduce the risk and enhance the efficiency of exploration. While a firm which places its only emphasis on external exploration will be trapped in dependence on the partner, similarly, a firm with the only emphasis on internal exploration will lose the opportunity to obtain valuable new knowledge, thus, the external and internal exploration should be maintained at a comparative level of balance.

Second, the firm has to solve the problem “how to manage the trade-off between the internal exploitation and external exploitation”, as the arrow curve ④ indicates. Consistent with internal and external technology exploration, technology exploitation can be organized inside or outside the organization. As the size and quality of the technological resource base affect the exploitation potential of a firm (Arora et al., 2001), the firm should make the choice between internal exploitation and external exploitation. Lichtenthaler et al. (2009) examines the complementarities of internal exploitation (eg., product development) and external exploitation (eg., licensing) in leveraging technological sourcing to enhance new product revenues, licensing performance, and firm performance. Thus, the combination of internal exploitation and external exploitation can enhance the firm's performance.

2.3. The external ambidexterity - the trade-off between external exploration and exploitation

External ambidexterity is managing the tension of the transfer of knowledge outward and inward knowledge acquisition, as the arrow curve ④ in Figure 1 illustrates. The firm has to make strategic decisions in management trade-off between external exploitation and exploration in that they need to decide how resources are allocated to the refinement of existing partner relationships or licensing, as compared to the development of new network relations to acquire novel knowledge and resources. Consistent with the trade-off between internal exploration and exploitation, external

ambidexterity is also confronted with two problems: how to combine external exploration and exploitation to create a synergy effect, and how to balance the external exploration and exploitation to achieve the best match between new knowledge and existing knowledge. Thus, external ambidexterity should ensure a sufficient coordination and alignment of external knowledge. Moreover, external ambidexterity needs to be combined with internal ambidexterity to generate synergistic outcomes.

3. The management approach for achieving ambidexterity in open innovation

Researchers have identified four models for balancing exploration and exploitation, namely, contextual ambidexterity (Gibson & Birkinshaw 2004), organizational separation (He & Wong, 2004), temporal separation (Tushman & Anderson 1986) and domain separation (Lavie & Rosenkopf, 2006).

Organizational ambidexterity suggests that effective organizational structures can ensure firms pursue exploration and exploitation simultaneously and achieve better performance (Tushman & O'Reilly, 1996; Su et al., 2011; Jansen et al., 2006; Jansen et al., 2009). Many researchers proposed that structural differentiation can help ambidextrous organizations to maintain multiple inconsistent and conflicting demands. Meanwhile, differentiated exploratory and exploitative activities also need to be mobilized, coordinated, integrated, and applied, thus, others point out the importance of the integration mechanisms.

3.1. Differentiation approach - Organisational separation and domain separation

To manage and attenuate the tensions, the first approach is to differentiate between the internal exploitation, internal exploration, external exploitation, and external exploration in different organizational units and forms. By varying the nature of work at different organizational units and domains, the firm can mitigate the paradox and the tension between conflicting routines, focus on exploring the technology, and thus gain a specialization advantage.

Through implementing the different activities in internal R&D units and strategy alliance and acquisition models, the firm can pursue exploration and exploitation simultaneously. The firm can build internally separate R&D units to balance exploration and exploitation, such as a development laboratory to refine the product, and a research laboratory to explore new technology. To leverage the external knowledge and technology, as different domains of exploration and exploitation in alliance, the firm can build an exploitative alliance with existing network partners, similar technology partners, or marketing development partners, to achieve economies of scale, and build an exploratory alliance with new network partners or different technology partners to co-explore the new fields and new technologies. Acquisition is another method to obtain external exportation knowledge and exploratory knowledge. By balancing

exploration and exploitation across acquisition models, the firm can leverage its established knowledge by acquiring a firm with a closely related business to focus on market and product development via exploitation acquisition, thus extending its knowledge base by taking ownership of another firm with a remotely related business via exploratory acquisition.

3.2. Integration approach - Realizing Integrative Value Across Differentiated Exploratory and Exploitative Units

The integration of exploratory and exploitative across differentiated organizational units is an important approach in achieving ambidexterity and realizing the value of open innovation. The differentiated units focus on distinctive objectives and generate knowledge within different domains, thus, the formation of a unified force with strategic intents is a necessary step to mobilize, coordinate, and integrate dispersed exploratory and exploitative efforts. Conformed strategic intents should be achieved by means of contextual mechanisms, which refer to formative visions reconciled with the long term goals and short term profits. Communication is also necessary to exchange and relocate information, technology, and resources for achieving ambidexterity in open innovation, which requires designing the interaction and cooperative processes.

4. Discussion

The paper extends the ambidexterity paradigm to wider applications. The ambidexterity paradigm suggests that the organization needs to balance, combine, and consider the different activities with tensions. As the external technology sourcing increasing and the external market booming, the firm should break its innovation boundaries with the aid of external forces under the limited resources and transform from the closed innovation system to an open innovation system. The study contributes to the stream of ambidexterity in open innovation.

The study deconstructs the internal ambidexterity, cross-organization-boundary ambidexterity, and external ambidexterity, discusses the approaches to achieve ambidexterity, and presents the structural differentiation and contextual integration mechanisms which can manage the tensions between internal exploration, internal exploitation, external exploration, and external exploitation, to achieve the different types of ambidexterity. The study extends the ambidexterity literature theoretically and provides suggestions for enterprises to achieve the internal\external exploration and exploitation synergy effects and to construct an innovation network when facing the practical challenge of transforming from closed to open innovation systems. Further cases study or empirical study could discuss the determinates of the ambidexterity framework in open innovation, or test the related performance consequence in different context.

Conclusion

The main purpose of this study is to explain ambidexterity in open innovation based on an understanding of ambidexterity as a firm's ability to simultaneously pursue different activities in a trade-off situation. The study develops a framework to illustrate the trade-off between internal and external technology sourcing, and the trade-off between new knowledge and existing knowledge, provides an illustration for understanding internal ambidexterity, cross boundary ambidexterity, and external ambidexterity. Thus, the study compares the approaches to manage the tensions among internal exploration, internal exploitation, external exploration, and external exploitation to achieve ambidexterity in open innovation. The discussion goes beyond transaction costs theory to help the manager to make decisions about pursuing exploration and exploitation from the organizational ambidexterity perspective. The firm should combine and balance the internal and external technology sources, new and existing knowledge to be an ambidextrous organization in an open innovation context.

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FISCAL COMPOSITION OF GOVERNMENT AND ECONOMIC GROWTH

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JEL classification: H11

Abstract:

Many developed countries have an extensive government sector, which can lead to negative ramifications to the economic subjects and overall macroeconomic stability. Aim of this paper is therefore to evaluate possible effects of scope of the government to economic growth. Fiscal composition of government sector is represented by both revenue and expenditure side. Fixed-effect panel estimator was used as a tool of an analysis. Annual data and five-year averages from 31 OECD countries were used to detect both short and long-term effects of government size in period from 1995 to 2014. Results are indicated a statistically significant negative correlation between economic growth and change of total revenues. There were also no significant results for change of government expenditures.

Introduction

Role of the government in modern and developed economies is utmost important and irreplaceable. It secures basic protection, security and justice to all of the citizens. However the scope of government can intervene into economic affairs and create distortionary tendencies in economy.

Governments also need to secure sufficient resources through tax collection to cover their policies and expenditures. Bigger the scope of government, larger the tax funds they need. It is crucial to look on both sides of government budget in order to determine their effects on economy for that reason.

The aim of this paper is to evaluate these effects on economic performance of selected countries. I tried to examine effects of overall taxation or expenditures to more details, so I decomposed these indicators to individual tax or expenditure categories as seen in methodology section.

1. Literature overview

Relationship between the economic growth and level of total government expenditures was described by Armey (1995). He quantified it as a reverse U-shaped curve. Countries with the lower level of public expenditures should therefore have higher economic growth than countries, which exceeded the maximum of the Armey curve. Additional expansion of public expenditures in these countries then causes adverse effect on their economies. Herath (2012) endorsed this hypothesis and added that in countries with a low level of public expenditures, these expenditures are used mainly for improvements in infrastructure, public goods, establishing law and order, creating a positive environment in economy, which is ultimately growth-enhancing.

Some authors extended their analysis and focused also on the revenue side of the government budget. Agell et al. (1997) examined influence of government expenditures together with government revenues on the growth rate. They described a negative relationship, which can be also found in the study of Dar and AmirKhalikhali (2002).

Fölster and Henrekson (2001) determined negative effects of government expenditures to be 0.7-0.8 percentage points (pp.) of the economic growth rate if the expenditures are increased by 10 pp. Their research was focused on 29 rich countries and also 7 developing countries to check robustness of their results. Agell et al. (2006) also conducted research on 22 advanced economies and found out results in Fölster and Henrekson (2001) to be weaker if you include only advanced economies.

Not all authors have discovered a negative relationship. Colombier (2009) worked with a new regression estimator and found small but positive effect of government size on per capita growth rate. Bergh and Öhrn (2011) critically evaluated Colombier's work. They repeated his research with the same dataset and used several econometric methods. They concluded that Colombier (2009) omitted control variables, which caused bias in his results. Control variables were used in research of Afonso and Furceri (2010). They examined impacts of government size in both EU and OECD countries on 5-year averages of fiscal variables.

2. Methodology

Methodology used in this research is similar to one in Afonso and Furceri (2010). Focus is set on 31 OECD countries. The scope of government was examined based on a share of total government expenditures and revenues to nominal GDP. I created a baseline model, which is derived from the endogenous growth model and is expanded by government size and control variables similar to those in Afonso and Furceri (2010). Revenue and expenditure approach is analysed separately, so we can get two econometric equations to test effects of the government size on economic growth:

$$g_{i,t} = \alpha_i + \beta_1 E_{i,t-1} + \beta_2 C_{i,t} + \mu_{i,t} \quad (1)$$

$$g_{i,t} = \alpha_i + \beta_1 R_{i,t-1} + \beta_2 C_{i,t} + \mu_{i,t}, \quad (2)$$

where $g_{i,t}$ is growth of real GDP in year t in country i , α_i is intercept, E is total government expenditures, R is total tax revenues and C is a vector of control variables. All used variables with their definitions can be found in Table 1. The source of data was OECD Statistics.

TAB. 1: Description of variables

Variable	Description
GDP	Real GDP growth in %
Cap	Growth of capital formation in %
Employment	Change in employment in %
Trade	Annual growth rate in international trade in %
Exp	Total government expenditures in ratio to a nominal GDP in %
Rev	Total tax revenues in ratio to a nominal GDP in %
Direct	Share of direct taxes on nominal GDP in %
Indirect	Share of indirect taxes on nominal GDP in %
Consum	Annual growth rate of Government final consumption in %
Social	Total social expenditures in ration to a nominal GDP in %

Source: own processing

These two panel regressions are calculated from annual data in time period of 1995-2014 with and without time fixed-effects to get robust results. Problem with annual data is that they only show short-term effects, which can be affected by business cycles. Many authors therefore used time averages to minimize this kind of bias. I used 5-year averages beside annual data in this research for this exact reason.

All annual fiscal variables are lagged in regressions because fiscal variables tend to have delayed effect on economy. For five-year averages this delayed effect is not count for. To add problematics of fiscal composition to results of this study not only overall size of government is analysed. Tax revenues were divided into two categories based on who the taxpayer is – to direct and indirect taxes. Expenditures were divided to total government social expenditures and government final consumption.

To ensure that all used variables were stationary, ADF and KPSS were conducted. Although both tests have an opposite hypothesis, results did not indicate presence of unit-root in time series. Only exceptions were fiscal variables of total revenues, expenditures and their decomposition. Those variables were replaced by their first differences and additional testing showed that this procedure fix the problem with non-stationarity of time-series. Fixed-effect panel estimator was used to obtain estimates and you can see results in next chapter in tables 2 and 3.

3. Results

Table 2 shows results of the baseline model. Results in columns 2, 4 and 6 correspond to econometric equation (2). Results in columns 3, 5 and 7 similarly apply to econometric equation (1).

TAB. 2: Panel regression – size of government

Regression	FE	FE	FE, time	FE, time	5-year AVG	5-year AVG
const.	0.691*** (8.477)	0.686*** (8.003)	0.526*** (3.013)	0.430** (2.388)	0.883*** (4.054)	0.689*** (2.962)
Cap	0.092*** (3.301)	0.095*** (3.327)	0.089*** (3.238)	0.092*** (3.368)	0.164*** (3.230)	0.155** (2.604)
Employment	0.428*** (5.575)	0.445*** (5.352)	0.407*** (5.552)	0.422*** (5.317)	0.311*** (3.415)	0.406*** (3.295)
Trade	0.199*** (10.590)	0.194*** (10.360)	0.151*** (7.037)	0.148*** (6.993)	0.155*** (3.082)	0.175*** (3.110)
d_Rev	-0.145*** (-3.143)		-0.115*** (-2.776)		-0.567*** (-2.777)	
d_Exp		0.054** (2.064)		0.060* (1.859)		0.053 (0.569)
Observations	548	548	548	548	122	122
Within R ²	0.77	0.77	0.81	0.81	0.81	0.78
D-W	1.839	1.743	1.923	1.850	1.809	1.952

Source: own processing

Appropriate t-statistics to each variable are listed in parenthesis. Number of stars next to a coefficient represents the significance level. For (*) it's significance level 10%, for (**) it is 5% and for (***) it's 1%. All results are round off to three decimals. Robust (Arellano) standard errors were used for estimation. Same applies for results in table 3.

Effects of overall taxation or government expenditures are decomposed in table 3 to direct and indirect taxes, government social expenditures and final government consumption.

TAB. 3: Panel regression – decomposition of government size

Regression	FE	FE	FE, time	FE, time	5-year AVG	5-year AVG
const.	0.686*** (8.132)	0.443*** (4.706)	0.482*** (2.725)	0.479*** (2.848)	0.706*** (3.602)	0.357 (1.446)
Cap	0.093*** (3.353)	0.096*** (3.274)	0.089*** (3.129)	0.091*** (3.151)	0.175*** (3.571)	0.125*** (2.055)
Employment	0.427*** (5.711)	0.371*** (4.954)	0.414*** (5.548)	0.387*** (4.757)	0.247** (2.525)	0.081 (0.774)
Trade	0.198*** (10.590)	0.200*** (9.417)	0.146*** (6.830)	0.152*** (6.554)	0.185*** (4.210)	0.170*** (3.130)
d_Direct	-0.008 (-0.147)		-0.013 (-0.168)		-0.414 (-1.633)	
d_Indirect	-0.240 (-1.429)		-0.084 (-0.522)		-1.649*** (-4.620)	
d_Social		-0.029 (-0.264)		0.028 (0.232)		-0.563*** (-2.978)
Consum		0.148*** (5.021)		0.084*** (2.771)		0.409*** (5.246)
Observations	551	545	551	545	122	121
Within R ²	0.77	0.78	0.80	0.81	0.83	0.86
D-W	1.825	1.951	1.911	1.965	1.811	2.049

Source: own processing

First, I would like to point out to the coefficients of control variables (Cap, Employment and Trade), which are mostly significant and positive. This was expected because all of these variables have important aspect on economic activity of countries. Coefficients of control variables are similar in all regressions, one difference is visible nevertheless. Physical capital accumulation has bigger effect in 5-year averages than in all other cases.

Coefficients of fiscal variables are more difficult to interpret. Variables of overall size of the government sector (d_Rev, d_Exp) have different signs. Total revenues in all three regressions in table 2 are negative and statistically significant at 1% level. Coefficient size in first regression means that 1 percentage point increase in ratio of total revenues should be accompanied with decrease in real GDP growth rate of 0.145 pp. Same applies in all regressions. Change in total government expenditures tends to have positive effect on economic growth but if we use FE estimator with time dummies, coefficient is less statistically significant and for five-year averages, we cannot reject a null effect hypothesis. Based on these non-robust results it is not possible to unambiguously decide on effect of government expenditures.

I tried to decompose effect of government size in greater detail in table 3. Unfortunately division to direct and indirect taxes resulted mostly in statistically insignificant coefficients. That was unexpected given the significance of total revenues. Only statistically significant results were obtained for government final consumption (Cons). Coefficients are positive in all three regressions.

Last remark is quality of the estimation method and chosen model. Coefficient of determination is relatively high in all regressions (0.77-0.86), so there is strong explanatory power of the presented model. Durbin-Watson statistic is close to the ideal value of two in all cases, which indicate no presence of autoregression.

4. Discussion

Based on the results in this paper, a negative correlation between the change of total tax revenues and real GDP growth rate was found. However effect of change in total government expenditures was not robust enough to establish any certain relationship between economic growth rate and expenditures. Alonso and Furceri (2010), who did similar research on OECD countries, also found a statistically significant negative correlation in case of total tax revenues. They even found a negative correlation between expenditures and economic growth. According to them 10 percentage points increase of tax quota leads to 1.2 percentage drop of economic growth.

You can find similar results in this paper for fixed-effect and also time fixed-effect annual data regressions. For five year averages this effect is almost five times bigger. Alonso and Furceri (2010) also decomposed effect of taxation to three categories – direct/indirect taxes and social security contribution (SSC). They did not found significant effect of direct taxes but their results indicated negative effect of indirect taxes and stronger negative effect of SSC. Effect of SSC was omitted in this paper due to systematically different social contribution approaches across OECD countries. This obstacle can be solved in future with deliberate choice of OECD countries with similar SSC system.

Conclusion

The aim of this paper was to evaluate possible effect of government size on real GDP growth. Two aspects were examined. Total government expenditures and total tax revenues in relation to a nominal GDP as a government size indicator. I also tried to decompose this overall effect to subcategories on each side of budget. This paper focused on a change of these values in time rather than their levels volume. Main finding was a significant negative relationship between change in tax quota and the economic growth rate. For total expenditures no such robust result was found.

Only other statistically significant finding was a positive correlation between growth of government final consumption expenditures and the economic growth. This could

indicate presence of certain type of expenditures, including growth-friendly government investment. This paper is only a small and first part of a future research aimed to assess government sector and its impact on macroeconomic environment.

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SUSTAINABLE DEVELOPMENT IN THE FUNCTIONING OF SMALL AGRICULTURAL HOLDINGS

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Keywords:

sustainable development – small agricultural holdings – rural areas – agriculture

JEL classification: Q115, Q556

Abstract:

The aim of this paper is to present the essence of sustainable development in agriculture and rural areas and to determine the extent to which small agricultural holdings fall within the realisation of this concept. The idea of sustainable development of agriculture and rural areas aims at improving the quality of life in rural areas, and the development is meant to be based on economic, social, and environmental elements. In the European Union, small agricultural holdings do not form a uniform group, therefore not all of them fully realise their assigned production, social, or ecological functions.

Introduction

Fast economic development in the second half of the 20th century resulted not only in the increase of prosperity in developed countries, but also in the degradation of nature and the impoverishment of the population. The concept of sustainable development became an answer to these problems. The essence of the concept is assuring a permanent improvement of quality of life of current and future generations by shaping appropriate proportions between three types of capital: economic, human, and natural. The concept of sustainable development regarding agriculture and rural areas is even more important. Including the priority of natural environment in realisation of strategic development goals is especially important in the areas of activity the results of which depend on nature. Agriculture is such a form of activity, and it occurs in rural areas.

1. Methods, literature overview

The main aim of the paper is to present the essence of sustainable development regarding agriculture and rural areas, as well as to present small agricultural holdings as subjects of the realisation of the concept of sustainable development. The paper is based on the study of literature on the required field and EU data.

In the 1970's, the underlying idea of reflection upon sustainable development was the problem of diminishing natural resources in perspective of advancing economic and demographic growth and pollution caused by it. In the subsequent decade, a very general definition of sustainable development was elaborated. According to this definition,

sustainable development is a way of fulfilling the needs of the current generation that does not limit the possibility of fulfilling the needs of the future generation. Another definition, elaborated on the Summit in Rio de Janeiro, gave equal weight to environmental and socio-economic factors. It considered sustainable development a strategy of determining and solving contemporary economic, social, and environmental problems. Therefore, the essence of the concept is assuring a permanent improvement of the quality of life of current and future generations by shaping appropriate proportions between three types of capital: economic, human, and natural [Żmija, 2014; Piontek, 2002, Prusek, 2014, Borowiecki & Siuta-Tokarska, 2016].

The concept of sustainable development regarding rural areas assumes simultaneous aim to improve the quality of life of the population and conducting economic activity in these areas without infringing specific rural resources. A necessary condition is sustaining or developing natural resources, economic and social capital in a way that assures a comparable quality of life for current and future farmers and other habitants of rural areas. The approach is meant to reconcile natural laws and economy [Urban, 2003]. Therefore, the development of rural areas should contribute not only to the increase the effectiveness of agriculture, but also to the maintenance of biodiversity and traditional rural landscape. It is possible thanks to support and promotion of ecological types of activity. A desirable direction of the development of agricultural production is therefore production of high-quality food [Żmija, 2014].

Sustainable agriculture development is an element of sustainable rural areas development. According to FAO, it concerns use and conservation of natural resources and orientation of institution technology that fulfil the needs of current and future population [Wilkin, 2004]. Practically speaking, the essence of sustainable agriculture is simultaneous and harmonious realisation of production, economic, ecological, and social goals. Creating such a method of development in agriculture does not contribute to natural environment degradation, and the method assures economic viability and social acceptance of agriculture without obstructing the realisation of production and ecological goals [Żmija, 2016].

2. Results

Small agricultural holdings in Poland and European Union

A big problem obstructing the analysis of the data concerning the group of small agricultural holdings and forming a policy towards it are discrepancies in their definitions occurring both at the level of the European Union as a whole and in particular EU countries. In the European Union, there is no common definition of small agricultural holdings. Defining and counting small agricultural holdings is difficult, because their sizes can be indicated in physical units or using economical terms [Zegar, 2012; Sarris & Doucha & Mathijs, 1999; Narayanan & Gulati, 2002]. The number of small agricultural holdings, determined using the most common criteria, in the European Union in 2010 is presented in table 1.

TAB. 1: Number of small agricultural holdings in the European Union in 2010 undertaking agricultural activities [in thousands of holdings]

Specification	Number of agricultural holdings				
	Total	Less than 2 ha	Less than 5 ha	Standard output (SO) lower than 2000 Euro	Standard output (SO) lower than 8000 Euro
EU-27	12,015	5637	8056	5132	8507
EU-15	5225	1728	2728	1167	2669
EU-12	6789	3909	5328	3965	5838
Austria	150	16	46	21	55
Belgium	43	4	9	1	6
Bulgaria	370	295	325	254	340
Cyprus	39	29	34	22	32
Czech Republic	23	2	3	1	8
Denmark	42	1	1	1	6
Estonia	20	2	6	5	11
Finland	64	1	6	3	20
France	516	67	129	42	116
Germany	299	14	26	1	34
Greece	723	367	551	236	511
Hungary	577	413	459	359	496
Ireland	140	2	10	18	60
Italy	1621	819	1177	495	995
Latvia	83	10	28	39	64
Lithuania	200	32	117	97	170
Luxembourg	2	0	0	0	0
Malta	13	11	12	5	8
Netherlands	72	8	19	0	9
Poland	1507	355	823	443	1007
Portugal	305	152	230	117	237
Romania	3859	2732	3459	2717	3632
Slovakia	24	9	15	8	18
Slovenia	75	20	45	16	51
Spain	990	270	503	211	538
Sweden	71	1	8	6	29
United Kingdom	187	4	13	16	54

Source: authors' own study based on [Semi – subsistence farming – value and directions of developments 2013].

In 2010, there were almost 8.1 million small agricultural holdings with less than 5 ha of agricultural used area, including 5.6 million holdings of less than 2 ha in the European Union. There are huge differences in the number of small agricultural holdings between particular countries. In 2010, agricultural holdings of less than 5 ha constituted 67% of all the agricultural holdings in the EU-27, but for the EU-15 countries, the corresponding figure was 52.2%, whereas in the countries that accessed the EU in 2004 and 2007, they constituted 78.5% of all the agricultural holdings. Increased fragmentation of agricultural holdings is characteristic for new EU member states. In absolute values, the largest number of small agricultural holdings of less than 5 ha was noted in 2010 in Romania — 3,859,000, in Italy — 1,621,000, and in Poland — 1,507,000.

Distinguishing smallholdings basing on economic value requires stating that the quantitative dominance of smallholdings in the European Union, like in case of the spatial criterion, is significant, because 8.5 million (i.e. over 70% of all examined holdings) produces a standard output of less than 8000 Euro. In the countries that accessed the EU in 2004 and 2007, there are 5.8 millions of such agricultural holdings, which constitute 86% of all holdings engaged in agricultural production in these countries. In 2010, the largest number of agricultural holdings with standard output lower than 8000 Euro was noted in Romania — 3,632,000, Poland — 1,007,000, Italy — 995,000, Spain — 538,000, and Greece — 511,000. It means that such holdings are not typical only for the EU-12 countries, but also for the southern EU-15 countries.

Functioning of small agricultural holdings in the context of sustainable development

The specificity of small agricultural holdings and their functioning affect their ability to realise sustainable development assumptions. Economically, small agricultural holdings contribute to:

- ✓ maintaining employment that is deficit in rural areas, in particular for farmers and their families,
- ✓ generating income from agricultural production — these holdings usually have small production scale, low competitiveness, and often low motivation and lack of possibilities of modernising and extending,
- ✓ food production for own use — these holdings produce food for them own and their production activity contributes to generation of income, which usually is not high, but often provide a living wage for families that are not able to achieve income from other sources, or generate income for bi-professional families.

Moreover, these families can use the infrastructure of their holding for another activity being an alternate source of income and obtain ground rents, which are exceptional benefits resulting from owning, disposing, using, or leasing grounds.

Socially, small agricultural holdings contribute to:

- ✓ protection of rural population against exclusion from labour market,
- ✓ lower demand for social assistance — even small production activity of small agricultural holdings contributes to the decrease of the demand for institutionalised social assistance and assistance provided by family members,
- ✓ preventing poverty —even production for own use contributes to prevention of poverty of particular families by generating income and providing food,
- ✓ obtaining diverse social benefits, such as favourable health and social insurance conditions,

Additionally, small agricultural holdings and people working there are a resource and a reservoir of workforce for other branches of economy, which, in case of critical situations (e.g. economy crisis and exacerbated unemployment), allows them to survive. Small agricultural holdings also have a cultural function related to preservation of traditions, folk customs, and regional products.

When it comes to environment protection, small agricultural holdings contribute to:

- ✓ conducting environment-friendly agricultural activity taking into account the well-being of animals,
- ✓ provision of public goods by sustaining biodiversity and rural landscape diversity,
- ✓ sustaining vitality of problematic areas, e.g. Mountain areas, less-favoured areas, or peripheral terrains.

There are also many barriers resulting from the specificity of small agricultural holdings that make it difficult or even impossible for them to realise the concept of sustainable development. In an open-market economy and advancing globalisation, small agricultural holdings, due to small production scale, small capital resources, and difficulties with access to markets, are less and less competitive on markets, including the local ones. Thus, the percentage of households the basic source of income of which is agricultural production is decreasing. Small agricultural holdings users and their families do not support themselves on agricultural production, but “live by the holding”. Many small agricultural holdings users do not take developing their holdings into account. They want to acquire income mostly from paid employment, not from non-agricultural activities using the infrastructure of their holding [Halamska 2011]. In many cases, these holdings are not agricultural holdings *sensu stricto*, but auxiliary holdings oriented towards benefits from the ownership of arable land, not agricultural production as such. In the social sphere, employment outside agricultural holding (often in town) does not contribute to the preservation of rural lifestyle and farmer’s work ethos. Financial support of small agricultural holdings contributes to the decrease of motivation to accumulate land or modernise the holding in order to increase the income. Moreover, dispersion of small agricultural holdings is a big problem when it comes to construction of infrastructure such as water supply systems and sewage treatment plants, which may affect environment protection and quality of life in rural areas. These holdings poorly fulfil the objectives of sustaining soil production potential (e.g. fallowing) and are not likely to participate in agro-environmental programmes [Žmija 2016].

Conclusion

The idea of sustainable development of agriculture and rural areas aims at improving the quality of life on rural areas, and the development is based on economic, social, and environmental elements. These goals cannot be achieved by realising the concept of industrial agriculture based on economic effectiveness. The problem of functioning of small agricultural holdings in the context of realising principles of sustainable development is important because of their high share in total number of holdings in the European Union, which is characteristic for countries that accessed the EU in 2004 and 2007, but also for EU-15 countries. Small agricultural holdings dominate in southern EU-15 member states, where many of them are holdings of less than 2 ha. This situation contrasts with the spatial structure of holdings from the north-western part of EU-15.

Small agricultural holdings do not form a uniform group, therefore not all of them fully realise their assigned production, social, or ecological functions. Therefore, they do not realise the assumptions of the concept of sustainable development of agriculture and rural areas. Thus, it is rather a postulate and small agricultural holdings need a lot of conceptual works, advice, and public fund support in order to realise it. Socio-economic problems related with functioning of small agricultural holdings should not be solved only within agricultural policy of a state, but also within rural areas development policy, regional policy, social policy, and other developmental policies.

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FACTORS WITH POSITIVE AND NEGATIVE IMPACT ON LEARNING ORGANIZATION

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Keywords:

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JEL classification: M12

Abstract:

Transition to learning organization can be benefit for some organizations. For this transition is necessary to fulfil some conditions and to overcome barriers bounded to employees, certain sectors or to company. Different studies meet in view, that positive impact on learning organization has factors as teamworking, leadership, information sharing, innovation, internal consistence, learning communities etc. It is needed to take account the obstacles for the effective application of these factors too. Some of them are poor communication, inactivity of managers and employees or unwillingness to do more work.

Introduction

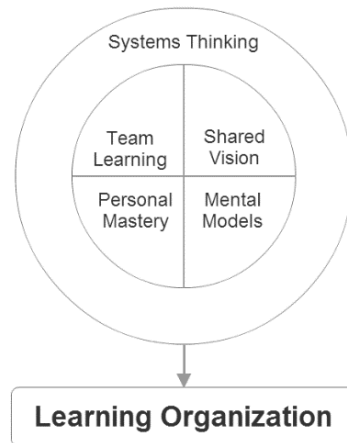
Learning organization currently represents the highest level of evolutionary development of organizational culture. (Míka, 2004) The basic principles of a learning organization are collective thinking and learning of employees, continuous improvement of employees' skills, support employees, and dynamic new models of thinking and achievement of wanted results. (Senge, 2009) In ideal learning organization is flexible teams, information is captured and shared, relationship with the external environment is formative, managers' role is to facilitate instead of control and learning takes place through work. (Míka, 2004; Smith & Taylor, 2000; Randhir, 2002) In the model of a learning organization is a source of future success education and training. (Šuleř, 2003; Kubr, 1995). Learning organization is changed constantly and enables organization to achieve competitive advantages. If the traditional control methods in the organization are not already sufficient, then the transition to a learning organization is a benefit. (Míka, 2004)

1. Methods, literature overview

For the proper functioning of a learning organization should be meet some characteristics as well it should be ensured their functioning in practice. Concerning the organizations interested in becoming a learning organization, it is necessary to choose a strategy that enables learning and to ensure a supportive learning atmosphere in the organization. Employees (everyone or the majority of them) should participate in the development of a strategy and each had the opportunity for personal development. For mutual sharing of information and experience among employees is essential to use the information technologies. (Tichá, 2005; Adamec, 2010) Internal exchange of information and knowledge in these organizations is characterized by a high frequency of internal exchange of information and experience that takes place between different departments, functions, units and other parts of the organization. Under their own initiative all employees have the possibility and the opportunity to participate in solving key issues through information systems. (Tichá, 2000; Cranfield University, 2009) In the learning organization it should work both organizational learning and inter-organizational learning. While organizational learning is a learning done in individual, group and organizational levels, in inter-organizational learning experience from other organizations are used.

Supporting the learning and development of employees in the organization and flexible pay system must work simultaneously and in the accounting can be determine the mode of operation of the finance from accounting, budgeting and reporting systems. (Tichá, 2005; Adamec, 2010) In the Fifth Discipline book Senge presents five disciplines necessary to become a learning organization. These disciplines are personal mastery, mental models, shared vision, team learning and system thinking. The summary of these disciplines lead to perfect management of the employee's role, trust, empathy and communication among the employees, effective team learning, sharing visions about the organization's future and to working with mental models that enables learning of new information and implementation of institutional changes. The most important of all disciplines is the system thinking (Fig. 1) (Senge, 2009; Adamec, 2010)

FIG. 1: Basic disciplines in learning organization



Source: Senge (2009)

For effective transition to learning organization is necessary to find problem areas (such as individualism, short-term planning or poor relations between employees etc.) and the causes of obstacles in organization. (Hrabalová, Klímová & Nunvářová, 2005) In transition to learning organization is necessary to create a vision of future organization and achieve short-term wins/successes and into the implementation of the vision should be engage the leadership of organization. (Marquardt, 1996) The main problems leading to changes in the organization include fail of procedures, quality and image improvement, the increasing pace of changes or competition. (Tichá, 2000)

The basic knowledge of business organizations is the knowledge management. Knowledge management consists of creating and distributing knowledge. Knowledge management and learning organization depend on each other on the way to success. changes in knowledge management are reflected in changes in the organization and vice versa. An organization that wants to become a learning organization must therefore devote parallel attention to management and learning organization. (Dust, Dehaghi & Demneh, 2014; Aggestam, 2006; Loermans, 2002) The introduction of knowledge management has a positive effect on the quality of the speeches and innovation, learning, increase profits and efficiency of the organization and creating new opportunities. (Bureš, 2007) Besides this, the knowledge management leads to better targeted marketing and proactive marketing. (Alavi & Leidner, 1999) When implementing knowledge management is necessary to overcome some of the barriers, most often it is a lack of rewards for the effort in knowledge transfer.

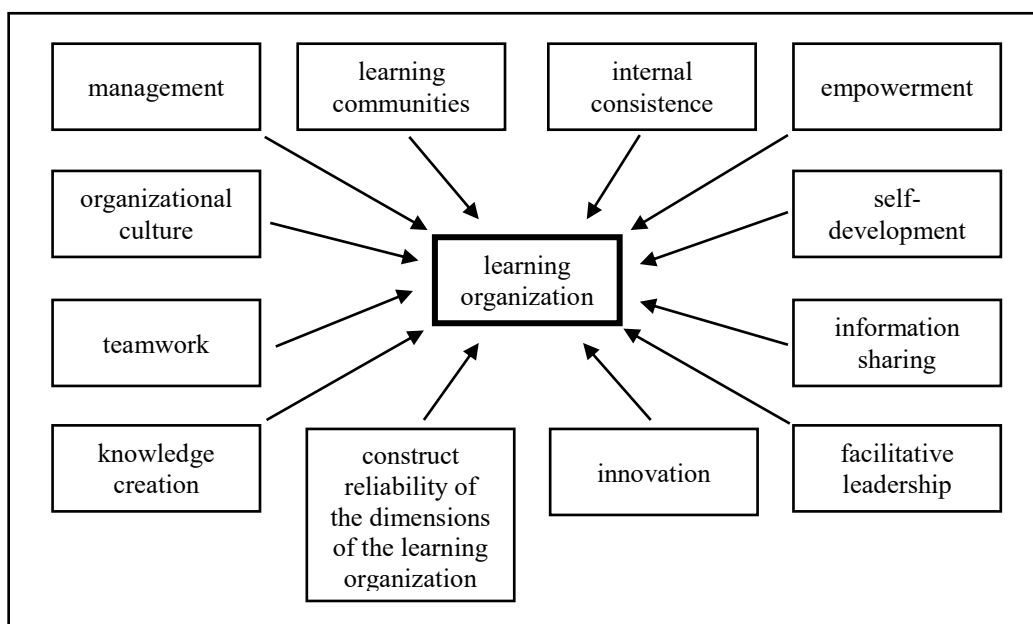
2. Results

From different studies targeted to learning organization and organizational learning the summary of factors with a positive impact on learning organization have been done. (Fig. 2)

The impact of these factors can be reduced by barriers. To achieve an effective learning organization should be these barriers avoided. According to some sources, the main barriers in team working is unproductive, poor communication, not clearly defined goals, poor planning and poor leadership. (Incedo, 2012)

Another type of barrier concerning learning could be that employees do not have responsibility for overall result and this consequently lead to errors, blaming, etc. If the employees solve the problems late the situation could worsen so the problems should be solved as soon as possible to avoid this barrier. Organizations should monitor long-term changes in order to avoid the effect of “boiled frog” too. (Senge, 2009; Šuleř, 2003)

FIG. 2: Factors with positive impact on learning organization



Source: author

According to knowledge management is very important to ensure enough of trust and involvement of managers. If employees see managers’ inactivity, poor information exchange, they are not motivated to do this activity in different way. From the employees’ point of view are some examples: the lack of initiative, unwillingness to do more work, fear of making mistakes and its consequences, the inability to use the new technologies and the inability to take criticism and constructively criticize. The barriers in knowledge management are not just in employees’ level. They can be divided into corporate, sectoral and economic level too. (Ujwary – Gil, 2011)

Conclusion

Learning organization model allows organization to achieve competitive advantages. The transition to learning organization can help some organization to improve their

status, but it must always be taken into account the barriers connected with factors influencing learning organization. However, the theoretical data were summarized but this theme need more research on real organizations clearly defined as a learning. It would also be interesting a preview of employees and managers on the list of key factors positively affecting the learning organization. Their views from practice could have benefit in creating of specific methodology for transition of the organization to a higher level of knowledge sharing within the organization.

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SUPPORT FOR RURAL TOURISM

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Keywords:

diversification – countryside – tourism – subsidy

JEL classification: Q 13, R 11

Abstract:

This article deals with the possible support of rural tourism Rural Development Programme 2007-2013. It deals with the quality of life in rural areas and diversification of the rural economy. It describes the socio-economic situation in the Czech Republic are evaluated indicators measure of support to tourism. They describe the results that demonstrate the performance indicators for December 31, 2015. The results show that interest in building rural tourism is extraordinary and the future here there is potential for further development of rural tourism as a tool for diversification.

Introduction

Rural areas currently does not create new jobs, because they are interested in working from the farms is very low. Countryside is an actual problem solving stabilization of rural population through diversification of agricultural enterprises. Diversification of farms used to obtain new sources of income for farmers. Beneficiaries are natural and legal persons or entities registered in the register of independent farmers whose income is derived from agricultural production, operated as permanent and independent activity under his own name, on his own responsibility for profit. The subsidy is intended for the development of existing and new agricultural activities. One option is to promote tourism. In tourist areas, it is necessary to support activities aimed at diversifying the rural economy through the development of agro-tourism. Diversification in rural areas should primarily develop activities that will, among other things, alternative employment opportunities for the unemployed in agriculture. As a possible solution is the use of the Rural Development Programme. In 2015, it was amended Regulation (EU) no. 1310/2013 laying down certain transitional provisions on support for rural development by the European Agricultural Fund for Rural Development (EAFRD). Rural development program includes solution design and definition of priorities. The Czech Republic submitted a Rural Development Programme, which is defined and designed for the whole territory of the Czech Republic, with the exception of Prague. The main opportunity for the development of Czech agriculture and rural is exploitation of the potential of the rich cultural traditions of the Czech countryside and non-

productive functions of agriculture to the development of sustainable forms of tourism. In connection with the lack of jobs in the country that leads to the gradual rural depopulation, the aging population, decline in business activity and a drop in purchasing power of the rural population. The low number of jobs has resulted in the departure of young and skilled workforce to more attractive locations with larger and more diverse job opportunities.

1. Methodology, research

It was used SWOT analysis of the quality of life in rural areas. To evaluate methods were used comparative and analytical and descriptive statistics. It was conducted to collect information to analyze inputs and outputs, collecting information to calculate the result and impact indicators and gathering information about the industry. For the realization of evaluation activities were used analytical techniques. In the structuring phase were within secondary data analysis of revised information on the socio-economic situation in the Czech Republic. Data collection was conducted in key economic indicators and those related to the agricultural sector. (Czech Statistical Office, Eurostat). At the same indicators were evaluated measures Promoting tourism in the Rural Development Programme 2007-2013.

Growth of the Czech economy in 2015 was the highest since 2007 (Eurostat 2016). Gross domestic product at constant prices grew by 4.3%. Real growth in gross domestic product in the year 2015 in the Czech Republic is higher than what showed euro zone (1.6%) even than the reported EU 28 as a whole (1.9%) (Eurostat 2016). Gross value added in the economy in 2015 at constant prices, after seasonal adjustment increased by 3.7%, the highest gross value added in manufacturing (by 7.3%) and information and communication activities (7%). The slowest growing is added gross value of agriculture, forestry and fisheries, 0.7%. In terms of current prices in 2015 compared to 2014, there was a decline in gross value added of agriculture, forestry and fisheries 8%. The agricultural sector accounted for according to the national accounts statistics in 2015 to total gross value added at basic prices (ie. In the price per unit of output tax, but including subsidies for this unit) 1.68%, representing a decrease of 0.23%. According to Czech Statistical Office data, the number of employees in agriculture, forestry and fisheries in 2015 against 2014 declined by 0.3% and in real terms it represents 98,300 employees in this sector. At the same time the share of employees dropped by 0.06% to 2.54%, and even in the fact that the number of employees in the national economy increased. The number of employees in agriculture alone rose slightly to 84,200, and 2.19% did so. The average wage in agriculture in 2015 reached 79.6% of the average wage in the Czech Republic. Growth in nominal wages of employees in agriculture FTE was 1.1% and was thus 2.3% lower than the overall average wage in the Czech Republic. A positive feature is that there was an increase in real wages by 0.8%. Agriculture's share of state budget expenditures in 2015 decreased by 0.26% to 3.59% (Ministerstvo zemědělství České republiky 2015). Although the state budget

expenditures increased by 7.1%, state expenditure in the agricultural sector decreased compared to 2014 by 0.3%. The general unemployment rate in 2015 compared to 2014 decreased by 1.1% and amounted to 5.0% throughout the year. The average unemployment rate in EU member states and 9.4% in the euro area was 10.9%. SWOT analysis indicated in the analysis of quality of life in rural areas, that strength is the attractive landscape for foreign and domestic tourism, the wealth of the cultural heritage of the Czech Republic, a dense network of hiking and biking trails and a dense railway network. The weaknesses include unfavorable age structure of rural depopulation and of working age, as well as lack of job opportunities in rural areas, low diversity of activities in the non-agricultural enterprises and the lack of tourism infrastructure. Opportunities is growing interest in the EU and the Czech Republic on rural development, the possibility to use cheap unused buildings and free labor. Also, there is an opportunity within the possibility of using the cultural specificities of regions tourists' interest in the Czech Republic and the Czech countryside. Europe is growing interest in understanding the diversity of natural and cultural heritage of individual member countries (Buckley 2010). Under threat are considered unsuitable conditions for business, the instability of the business environment made it difficult to start new businesses and microenterprises. Czech Republic in this regard interferes with the conflict of inappropriate development plans with the requirements for sustainable development of communities and nature and landscape protection(Šimková 2015).

2. Results

The analyzes showed that the measures that are being taken in support of tourism lead to the diversification of the rural economy. Support of Tourism from the Rural Development Programme, especially in connection with the use of natural and cultural heritage can significantly promote the stability of the rural population, because it leads to the creation of new jobs. Measures to promote tourism was intended to

- build hiking trails and roads in the intent
- the construction of small-scale accommodation and
- catering facilities, sports equipment rentals and facilities and areas for sports and recreational use.

In 2012 took place last intake of applications for subsidies from 2007-2013 programming period. Implementation of the approved projects was still underway in full year 2015.

TAB. 1: The overview of performance indicators cumulative 2007- 2015

Indicator	Target	Cumulatively achieved state	Execution rate
The number of supported new tourist activities	1050	581	55%
The total volume of investments (in the thousands EUR)	144 765	151899	105%

Source: own research

Under the measure the support of tourism should be supported 1,050 projects. In the period 2007 - 2015 was financially supported but only 581 projects, which is only 55% of the target value. This indicator was therefore only half fulfilled. The reason was the focus of most completed projects, which were directed mainly to the modernization of accommodation, which are costly projects. For completed projects was a total invested amount of 151,899 thousand. EUR, while the estimated value of the indicator should be 144,765 thousand. Euro. Of the 581 completed projects were supported to build 96 tourist routes and trails. It was realized 455 km of hiking trails, 153 km of horseback riding trails, 12 km of wine trails and 66 km of other thematic trails. Most of the completed projects (83%), but is focused on the construction or refurbishment of accommodation and catering facilities, bed capacity created through projects to support tourism is 7,797 beds.

TAB. 2: Support tourism cumulatively 1.12.2007-31.12.2015

Promotion of tourism	the number of applications/projects	Public expenses (the thousands EUR)
Registered applications	2069	210900
Rejected or unapproved applications	1482	151530
Approved projects	587	59370
Paid applications/ realized projects	581	61598

Source: own research

As the following table shows, more than half of the applications were rejected or disapproved. Even within the approved and reimbursed projects was created 863 jobs, representing about 1.5 jobs per project. A very positive phenomenon may indicate that they are jobs in rural areas, where the supply of jobs and a less positive aspect here is that it is the job opportunities for women. The value of the indicator under the Rural Development Programme was set to create 400 new jobs, to December 31, 2015 were created 863 jobs and, therefore, the implementation rate of the indicator is 215%.

3. Discussion

Although the Czech Republic is at a very good level in terms of economic growth and low unemployment rate, but it is questionable why not indicators of job creation set are so that at least each individual project was the need to create one job. Within indicator promotion of tourism, the target of 1050 to support projects. The value of this indicator is the suggested value of 400 jobs created is very low and in my opinion does not correlate with a target value of funded projects, which, although ultimately it was 581, but it is a gross number of jobs created in the amount of 400 very low. Rural and agricultural tourism is the best option for smaller family farms, because it provides a classic agricultural activities other source of income in the place of business. Current tourism statistics following separate figures for rural tourism, so it is not possible to accurately determine the proportion of rural tourism in the overall tourism Czech Republic. Currently we are offering rural tourism engaged with us more than a thousand

businesses with a total capacity of several tens of thousands of beds. In practice this means that the market in our country is not yet saturated. For example, in neighboring Austria, is bed capacity of about 500,000 jobs. Although the situation in the Republic of Austria due to a number of private cottages and houses different, but we can expect further growth in demand. When carried out the survey, most farmers say they have often crowded out before the start of tourist season. Visitors agritourism farms are growing every year from both domestic and foreign guests. In 2015 benefited agritourism offers in the Czech Republic, according to Eurostat, 4,000 foreigners. Support from the EU Rural Development Programme, aimed at promoting rural tourism and agrotourism is obviously insufficient, because, in addition to allowing the diversification of agricultural activities, it also brings new jobs. Multiplier effect is the stabilization of settlement land, increase the income of the population, increasing employment opportunities, maintaining traditions and other habits that are associated with the countryside. Support for rural tourism is an alternative for non-productive forms of agriculture, and for this reason should be more widely promoted. Agrotourism business has particular relevance to the area agriculturally unproductive, which is necessary with respect to maintaining the population and a certain level of landscapes give the population the possibility of additional income. Entrepreneurship in rural tourism also requires a change in attitudes of rural residents and the ability to navigate the market conditions. Within the project a) has been used the most funds on nature trails, which are designed to acquaint visitors with the sights around on boards. Especially various municipal associations, unions and local action groups trying to promote their territory, which is a possible example. Just nature trails. As part of the project b) has been used the most funds for the construction or reconstruction of accommodation and catering facilities. Compared to the mountain trails are accommodation and other devices able to generate profit applicants, therefore, are more attractive to applicants. Their implementation is also more expensive, which is why it was much more funds allocated to the project just b).

Conclusion

Revision of available datasets Rural Development Programme 2007-2013, the measure Support of Tourism shows that major opportunities for the development of Czech agriculture and rural is exploitation of the potential of the rich cultural traditions of the Czech countryside and non-productive functions of agriculture to the development of sustainable forms of tourism. But they were given to projects with high financial demands and it caused fewer than 2,069 registered applications were approved only 587 applications. This indicator was not met and will certainly depend on the attitude of the European Commission, as the only indicator to meet the 55% range. Given that the report on implementation of the Rural Development Programme for 2007 -2013 to be submitted by December 31, 2016 is not possible to predict whether the failure indicator will be punished. For further research would be useful to analyze the data, why they

were favored financially demanding projects, or whether the settings are not already implicitly incorporated in the rules for the grant. That would be contrary to equal access and therefore one of the basic prerequisites for obtaining subsidy.

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