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CONTENT:

MUNICIPAL PROPERTY AND ITS USE IN THE SLOVAK REPUBLIC

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Abstract: Community property is used primarily to carry out its tasks, this includes things belonging to the municipality and the property rights community. Of the Municipal System Act clearly discloses the fundamental principles governing the use of community assets, respectively. dealing with it. Each community has nurtured the assets, and enhance their overall value to maintain substantially unabated. These are the basic rules that must be met to ensure proper management of municipal property.

Keywords: Community Property, the Use of Property, the Fair Value of Assets, Assessment of Property Position

1. Introduction

The contribution provides insight into the issues of status and use of municipal property in Slovakia. In assessing the equity position of municipalities in Slovakia, based on data provided by accounts of individual accounts of the municipalities for the period 2005-2008. It is these data give important information to analyze the structure of assets and sources of coverage of the property, based on aggregated data for all municipalities, including financial organizations under their control. Position property assessment is done through mathematical statistical methods and methods for calculating absolute indicators, which points to annual growth of assets and then using the method of calculating the ratios, this indicator shows the percentage of an asset to total assets in the villages in Slovakia. The aim of our contribution is analysis of the state of municipal property of Slovak municipalities using the absolute indicators and particular using of this property. This is way how to point on existing gaps or lack of using of it. Assets acquired and cities in Slovakia Act no. 138/1991 Coll on municipal property, as amended. Under that law, property acquired, which then carry the right to manage the national committees and organizations set up these committee.

Under the Act č.369/1990 Coll. Municipal Act, municipalities retain the right to property, use and dispose of it. The use and disposal of municipal property should be linked to the strategy of social and economic development community [4] The authors further state that the world led to the 2003 value of assets at acquisition prices, because they had no obligation to depreciate assets. For that reason, there was a situation where the community showed assets at fair value. From 01/01/2003 to community assets depreciate its obligation under the Act no. 431/2002 Accounting Act, as amended in accordance with the Act no. 595/2003 Coll on income taxes, as amended, so from that period, the value of the property communities has been made real. In terms of fair value of assets owned by municipalities, however, consideration should be given to the obligations arise from assets that municipalities must meet. Ministry of Finance of the Slovak Republic issued 04/10/2003 methodological Guideline. 8410/2003-93 the procedure for depreciation of tangible and intangible assets of communities and their established budgetary and subsidized organizations, which in § 28 Act no. 431/2002 Z.

z. Accounting provides accounting units depreciate tangible assets other than inventories and intangible assets other than receivables in accordance with accounting principles and accounting methods, unless a specific provision provides otherwise.

Given that other specific rule, it does not depreciation of tangible and intangible assets owned by the municipality and the budgetary and contributory organizations established by the municipality, the municipality, the procedure for depreciation of assets listed in the Act no. 431/2002 Z. z. Accounting and § 19 of the Ministry of Finance Nr. 23340/2002-92 laying down details of accounting procedures and framework Fig. of accounts for budgetary organizations, state funds, municipalities, higher territorial units, some of the contributory organizations and other entities whose principal business is business. On the basis of the above guideline of the intangible and tangible assets are depreciated according to their village assembled depreciation plan, and the community to determine the depreciation by taking into consideration wear of their corresponding normal usage conditions, while true, that intangible asset, apart from debts, must be written off by the entity in five years´ time from its acquisition at the latest [§ 28, para. 4, of Law 431/2002].

According to [1] is the fastest and most effective method of assessing the means of municipalities financial analysis. It is a set of methods which allow businesses to determine the relative position in society and through a set of indicators to carry out the assessment against other organizations. The main tool of financial analysis, design and subsequent interpretation of the indicators. However, the authors also mention in practical decision-making to local authorities, the methods of economic analysis in assessing the efficiency of the municipal property used only to a limited extent AVV actually still prejudices that measurably demonstrate profits and costs of different variant of the use of municipal property, given the need to take public , social or social nature, also need to maintain the democratic decision-making process, it is quite possible.

The purpose and mission analysis of the property should be to increase the level of information about possible options for use of municipal property. It would serve as an argument for obtaining public support and as proof of the correctness of the decisions taken. Table 1 shows the structure of state assets and resources for the coverage of the property in municipalities in Slovakia for the period 2005 to 2008. Since we know that accounting is the application of balance-sheet equilibrium, which implies that if an analysis of the structure of assets in the villages on the other hand, it is necessary to compare the resources that were used to cover those assets to be paid in equal balance these items.

Tab. 1: The structure of assets and sources of coverage in the municipalities, including the budgetary organizations in Slovakia for the period 2005-2008 in mill. Sk

Assets	2005	2006	2007	2008
Long- term Intangible assets	337	350	457	526
Long- term Tangible assets	219 886	239 372	252 471	264 774
Long – term financial property	43 098	48 214	49 607	50 138
Stock	336	341	283	273
Clearance between government entities	-	-	-	20 917
Accounts payable	12 921	12 428	12 208	11 152
Financial accounts	13 209	13 591	15 078	17 878
Accruals	129	168	117	376
Total Assets	**289 916**	**314 464**	**330 221**	**366 034**
Liabilities				
Own funds assets	260 370	281 706	292707	270 517
Commitments	29 526	32 737	37 457	58 665
Accruals	20	21	57	36 852
Total Liabilities	**289 916**	**314 464**	**330 221**	**366 034**

Source: Final Public Administration Account for the period 2005-2008

The above structure shows that the state assets for the period increased in each item. As confirmed by absolute ratios and their calculation. In the analysis of absolute and ratios it was necessary to divide the period into two units and the information given from 2005 to 2007 and information for 2008. This is because from 1.1.2008 has changed accounting methodology and data for 2008 to follow in the balance sheet in column 4 and 6 now show. In the accounts, however, add a new line and clearing the bodies of public administration.

Tab. 2: The Analysis of absolute and ratios for the period from2005-2008 in Slovakia in mill. Sk

Assets	Absolute indicators-year increase in mill. Sk			Ratios in %			
	2006/2005	2007/2006	2008/2007	2005	2006	2007	2008
Long- term Intangible assets	+13	+107	+69	0,1	0,1	0,1	0,1
Long- term Tangible assets	+ 19 486	+ 13 099	+12 303	75,9	76,1	76,5	72,5
Long – term financial property	+ 5 116	+ 1 393	+531	14,9	15,3	15,0	13,6

Stock	+5	- 58	-10	0,1	0,1	0,1	0,1
Clearance between government entities	-	-	+20 917	-	-	-	5,7
Accounts payable	- 493	- 220	-1 056	4,4	4,0	3,7	3,1
Financial Accounts	+ 382	+ 1 487	+2 800	4,5	4,3	4,6	4,8
Accruals	+39	-51	+259	0,04	0,05	0,03	0,1
Total Assets	**+ 24 548**	**+ 15 757**	**+ 35 813**	**100**	**100**	**100**	**100**
Liabilities							
Own funds assets	+ 21 336	+11 001	-22 190	89,8	89,6	88,6	73,9
Commitments	+ 3 211	+4 720	+ 21 208	10,2	10,4	11,4	16,0
Accruals	+1	+36	+36 795	0,006	0,006	0,01	10,1
Total Liabilities	**+ 24 548**	**+ 15 757**	**+ 35 813**	**100**	**100**	**100**	**100**

Source: Own calculatiions

Absolute value municipal property indicators provide information on the value of assets of (in net terms). In 2008, the property in comparison with 2007 increased by 35,813 million. Sk, with specific types of fixed and current assets reported variable development. All items other than inventories and receivables in assets and own property in the resource envelope has been increase in liabilities. If we wanted to evaluate the assets of the municipality, the highest proportion of our total assets consisted of tangible assets and more than 70% in assets and owns assets in reserves to cover liabilities that were in the range of 73.9 to 89.8%. On the other hand, we were the lowest share of accrual accounts, which ranged from 0.03 to 0.1% of assets in the range 0.006 to 10.1% in liabilities. When comparing the years 2006 and 2005, this same development (see Table 2). In accordance with the new accounting methodology, the structure of assets and liabilities of self-reported and clearing relationships with other government entities, from the new concept of accounting transfers. Claims from the Settlement to 12.31 achieved in the municipalities and the amount of municipal budgetary organizations 20 917 million. Eur. Even [4] indicate that the proportion of assets that are bound in the village buildings and structures, yet maintain that these assets are a significant proportion of the total value of the property and it is important to choose the right strategy for its use to offer not only the effects form of public benefits, but also in terms of revenue to the municipal budgets.

1.1 The use of municipal property

When the property management community to decide between several options and ways of its use. The first way is if the property is used directly by the municipality. Other measures include:

- **the sale of assets** at market or non-market price,

- **rental property** at market or non-market rents,

- **custody of assets** in the Budget report, contributory or non-profit organization, which for this purpose set up or established,

- **inserting the property** as part of the basic equity in a company, while creating some form of joint venture with other legal or natural persons, such as (public entities, private as well as non-profit or third sector),

- **use assets as security** for loans or issuance of municipal bonds.

Decisions on how to use municipal assets should follow the principles of managing municipal property, the community development program or a specific program using community assets. If the municipality disposes of its assets, income from the sale must be used exclusively for development, investment programs, which will generate any additional revenue to replace the loss of assets sold. In practice, however, faced with the fact that income from property sales are often used to cover normal operating expenses of the municipal council, and it established or established organizations.

Common property under the statutory purposes of exploitation can be divided into three groups: the property that serves to exercise self-government, property used for public purposes, particularly to ensure local public services, and property used for business.

Exploiting the power of government property is legally obligatory priority. This relates in particular to the provision of pure public good, and is associated with those elected, executive, supervisory, consultative, police and other authorities of the village.

The second group is the use of property assets used by the municipality for a public purpose, namely the property is used for the provision of local public services which are pure or mixed nature of public goods. According to local conditions municipality for the purpose of divide immovable and movable property, as well as financial assets. In accordance with the Municipal Act and the Act on the transfer of certain competencies of local state administration to municipalities and higher territorial units in this group include such activities here.: construction and maintenance of local roads, installation and maintenance of public green areas and public spaces , operation and maintenance of public lighting services in the drinking water supply, drainage and sewage treatment services, local public transport, collection and disposal of municipal waste and small construction, social services, nursery schools, primary schools and other educational establishments, local culture services, sport and recreation and more.

The third group is the use of the property is community property, which is used for business. The village operates either as a legal entity in its own name or business carried out by the municipality established or subsidized organization based company, municipality or its assets encourages entrepreneurial activity of other entities located in

its territory. However, it is necessary to ensure separation of ancillary business from the main activity for which the allowance organization established. Municipalities as legal persons carrying on business on a small scale. For this activity, often up their own businesses or joint, either with other municipalities or with private sector actors. The most frequently used by organizational-legal forms of entities, which are based on the implementation of government business, including limited liability companies and joint stock companies. For all municipalities is that the community as a legal person shall have the same rights and responsibilities in a business like any other business entity.

Multi-use property is an important factor for increasing efficiency in the management of property and undoubtedly contributes to its better and more purposeful use, Effective property policy and systematic approach to dealing with many assets may help supplement the budgets of municipalities and thus overcome the current crisis period. [5]

2. Closure

Finally, we note that even though we have analyzed the different purposes of using the property as three relatively independent areas of Slovakia introduced as a generally applicable rule that one and the same assets used in carrying out responsibilities for more than one purpose. In practice this means that the property is used for two or all three purposes, in a certain period of time under current needs. This is an important factor for increasing efficiency in the management of property and undoubtedly contributes to its better and more purposeful use. The analysis of absolute and ratios showed that the monitored period, the assets and sources of coverage in the municipalities in Slovakia increased. If we analyze the property in the villages from any perspective, we can say that the property is an essential element for ensuring economic roles and functions of local government performance. Without it, the government carries out its mission is difficult and only partially known to produce public goods, and it would not take. The vast majority of the assets acquired ownership of local government transition from state affairs or in the process of privatization, restitution, purchase, or own investment business in the business. It depends only on the ability of elected officials and government employees, how and with what effect will this property be used for socio-economic development, for the benefit of their people and for the protection of environment.

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[3] Ministry of Finance Measure No. 23340/2002-92 laying down details of accounting procedures and framework Fig. of accounts for budgetary

organizations, state funds, municipalities, higher territorial units, some of the contributory organizations and other entities whose principal business is business

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MEASURING THE IMPACTS OF FINANCIAL SUPPORTS BASED ON INPUT-OUTPUT ANALYSIS

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Abstract: The article deals with an evaluation of financial supports. It focuses on the Action Plan of the Regional Development Program (AP PRK) in Southern Bohemia and specializes on tourism development. Within the 3 grant programmes supporting tourism, it analyses distribution of financial means to the regions. The disparities among the regions are measured by Gini coefficient. Moreover, using an input-output analysis, the direct and indirect impact of financial support on regional production is considered.

Keywords: Input-output Analysis, Tourism, Financial Supports, Regional Development

1. Introduction

Multiplier effects are commonly measured as impacts arising from the effects of tourist expenditures on production, income or employment. To evaluate these tangible impacts, several methods may be used. In the past Base Theory models or Keynesian multiplier models were used. [see 3] From Keynes' multiplier several ad hoc models evolved. Finally these models were extended and an input-output model derived. Daniel Stynes used these models for evaluating tourism impacts in the U.S.A. [9, 10] Based on multiplier effects he developed his General Money Model. Other authors applied Social Accounting Matrix or General Equilibrium Model to measure tourism impacts. [see 1, 11, 13] Whilst some authors considered the input-output model as obsolete. [see 2] However other authors think that the input-output models are still appropriate, especially for local economies. [see 4]

The multiplier is defined as a system of economic transactions that follow a disturbance in an economy. The multiplier effect has three components: direct, indirect and induced effects.

- A direct effect is the change in purchases due to a change in an economic activity

- An indirect effect is the change in the purchases of suppliers to those economic activities directly experiencing change

- An induced effect is the change in consumer spending that is generated by changes in labour income within the region as a result of the direct effects of the economic activity.

2. Input – output analysis

Input-output economics was founded and popularized by Wassily Leontief, Nobel Laureate In Economic Sciences 1973. He introduced a model based on the equilibrium of sources (supply) and consumption (demand). Leontief defined the matrix of

complex coefficients. He declared that the changes in final demand for production of individual products may be quantified by the matrix of complex coefficients.

After Leontief constructed the first input-output table for the U.S.A. in the early twentieth century, governments of major industrialized countries began to adopt their own input-output tables, among them Japan and several European countries. Due to its comprehensive yet easy to understand description of complex economic systems, input-output analysis has become one of the primary statistical tools for most economically advanced countries. Generally, input-output analysis divides the economic system into a number of sectors, and considers the flows of commodities and services in and out of each sector. Each sector needs other products from supplier sectors to produce its own outputs. The principle of structural analysis is the study of the system of n sectors in which the interchange of the products is realized. [5]

The basic instrument for structural analysis is the input-output model. This model quantifies the interchanges of products and describes connections in the economy. The quantified links between the input and the outputs of individual sectors are characterized in the model. These links may be divided into four sectors: The first sector is the core of the input-output model. It is a square matrix of consumption of inputs, in which the rows and columns are structured similarly. The rows and columns are structured as product x product, or sector x sector. The columns represent the structure of the inputs. It characterizes the amount of products (inputs) used for the production of specific products (output). In short, the change in demand for outputs leads to the change in demand for inputs. [6] The second quadrant of the input-output model characterizes the links between supply production sectors and autonomous sectors producing final products. The third quadrant shows the value added. The value added includes labour costs, consumption of fixed capital, taxes and profits. The fourth quadrant defines direct links between the primary actors and final consumption. [8]

Pricing using indexed prices is recommended. This approach is more homogenous and the links between inputs and outputs expressed by currency better identify the technological relations. ESA[1] 95 recommends to arrange the input-output models in the structure of product x product because this structure enables a more homogenous description of the production process. However there are some arguments advocating input-output tables using the sector x sector structure as it can be prepared under weaker presumptions. [12]

The symmetric input-output tables are specified as follows: the matrix of input in the size of n x n, z_{ij} represents the supply from the sector i to the sector j. y represents the vector of final consumption in the size of n x 1 (private consumption, investments, net export); v represents a vector of value added in the size of 1 x n (payments for labour and capital, net indirect taxes and profits). The sum of i-th column equals to the sum of i-th row and it equals to final production x_i. [8]

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[1] European System of Accounts

Table 1: The model of symmetric input-output tables

Sector	1	…	j	….	N	Final consumption	Total
1	z_{11}	…….	Z_{1j}	…….	Z_{1n}	y_1	x_1
……	…….	…….		…….	…….	…….	
I	z_{i1}	…….	Z_{ij}	…….	…….	Y_i	x_i
…….	…….	…….		…….	…….	…….	
N	z_{n1}	…….	Z_{nj}	…….	Z_{nn}	y_n	x_n
Value added	v_1	…….	V_j	…….	V_n	…….	
Total	x_1	…….	X_j	…….	X_n	…….	

The matrix of coefficient of inputs is calculated by normalization of symmetric input-output tables according to the row - aij=zij/xi. The matrix of distributive coefficients is calculated according to the columns - bij=zij/xi.

In the matrix expression:

$$A = Zx^{-1} \qquad (1)$$

$$B = x^{-1}Z, \qquad (2)$$

Where x represents the diagonal matrix with xi elements on the diagonal and other elements that equals zero. Z represents the supply matrix, A is the matrix of direct coefficients (coefficients of inputs), B is the matrix of distributive coefficients.

The direct coefficients identify the value of individual products spent in the production of a single unit of product (the supplier view). Distributive coefficients identify the ratio given from single units to the sectors. Besides direct consumption, indirect consumption is visible. The sum of direct and indirect consumption represents complex consumption as described by the following equation:

$$Ax + y = x \qquad (3)$$

$$X - Ax = y \qquad (4)$$

$$(I - A)x = y \qquad (5)$$

The solution to the above determined system of linear equations is

$$X = (I - A)-1y, \qquad (6)$$

Where L = (I − A) -1 is the matrix of coefficients of complex consumption. The coefficients are also presented as multipliers of production.

The multipliers include both the direct influence of final demand on the production of single products and the indirect influence arising from the production process. The indirect effect is caused by the fact that the output of a single sector is concurrently the input for other sectors of the national economy.

These multipliers include both the direct influence of final demand for production of tangible products and the indirect effects arising from the multiplication of the manufacturing process. An output from one industry is an input for another industry and vice versa – this causes the multiplier effect. The sum of all multipliers for

individual industries represents the multiplier for the sector, so called measuring backward linkages. The backward linkages are demand orientated.

Besides backward linkages there are forward linkages (front). These linkages are supply-orientated and measure the power of individual sectors in relation to their consumers. The higher the value of the multiplier, the greater the impact i.e. the increase in prices on the price level in the economy. The interpretation of forward linkages is not as explicit as interpreting backward linkages.

The multipliers of backward linkages can be interpreted as follows: if the final demand increases by 1 unit, the total production in all sectors will increase by the value of the multiplier.

Leontief's model and hence the input-output analysis, is based on the following presumptions:

- Supply conforms totally to demand, manufacturing capacities are not limited
- The products are produced within a fixed structure, including the structure of VAT
- There are no economies of scale to production in an industry (the proportion of inputs used in industry's production processes do not change regardless of the level of production.
- The technology does not change over time
- Production processes are spatially invariant and are all represented by the nation's average technology (especially for regional models)

The assumptions the model makes are relatively large, and so misrepresent the real changes in final demand. Technical coefficients cannot be considered as constant in the long run, they adapt to prices of inputs and respect new technologies in time. Because of this, it is recommend limiting the use of this model to modelling short-term impacts. That said, the changes in final production need some time to show up, so the changes cannot be expected to be visible in a really short time frame. Both factors are running contrary to each other, this has to be taken into consideration whilst modelling impacts.

Furthermore the assumption that supply conforms to demand does not follow in all economic cycles. It is stronger during a recession because there is spare manufacturing capacity. The quantification of impacts determines the optimal impacts. Customizing processes tends to eliminate these impacts.

3. Methodology

Tourism development can be supported within the 3 grant programmes of the Action Plan of the Regional Development Program (AP PRK), South Bohemia Region. However the distribution of financial means is not equal to all regions, it depends on the number of supported projects and of course on the cost of each project. This article looks in detail at the distribution of financial means to the regions within the South Bohemia Region. According to the number of realized projects and financial allocation it identifies more and less successful regions. The monitored period was 2006-2008. Disparities among regions are measured by the Gini coefficient. The Gini coefficient

measures the differences between the areas under an ideal Lorenz curve and those under a real Lorenz curve. It may be expressed as follows:

$$G = \frac{A - B}{A} \quad , \qquad (7)$$

Where G is the Gini coefficient, A represents the area under an ideal Lorenz curve, B represents are under a real Lorenz curve. The coefficient runs between 0 and 1 (0 means absolute equality and 1 represents absolute inequality).

The value of the multiplier of financial support was derived from the input-output analysis and the structure of supplies for individual projects. In order to find out the appropriate information about realized projects, successful applicants were interviewed. Applicants were asked about supplier data, specifically about the registered place of business and the sphere of business. 51 interviews were compiled.

The value of the multiplier of financial support was based on the multipliers derived from the input-output analysis and the ratio of individual sector on the realized projects. As the Southern Bohemia region is an open economy, economic leakage was taken into consideration. The impacts of financial support were estimated and evaluated allowing for different economic leakage scenarios.

4. Evaluating financial supports

151 subjects applied for support from 3 grant programmes within the Action Plan of the Regional Development Program supporting tourism development in 2008. The programmes were:

- Grant programme Products and Services in Tourism
- Grant programme Support of Incoming Agencies and Tourist Centres
- Grant programme Development of Infrastructure Supporting Sustainable Tourism

4.1 Distribution of financial support

4.1.1 Grant programme Products and Services in Tourism

The grant programme Products and Services in Tourism supported 40 projects totalling 4 100 000 CZK in 2008. The financial allocation exceeded the original allocation over 100 000 CZK. The financial support ran from 50 000 – 250 000 CZK for each project (the average financial support for each project was 102 500 CZK). The highest amount of supported projects was attained in the České Budějovice region (13 projects with a total of 1 400 000 CZK of funding). This financial support corresponded to double of financial support given to the Tábor region (here only 4 projects were realized). The region with the lowest level of financial support was the Prachatice region. Projects that represented the whole South Bohemian region gained a mere 5.4% of financial support.

The disparities among regions within the grant programme Products and Services in Tourism verified the Gini coefficient with the following values from the monitored period: 0.3555 (2006); 0.306 (2007), 0.3355 (2008)

4.1.2 Grant programme Support of Incoming Agencies and Tourist Centres

The grant programme Support of Incoming Agencies and Tourist Centres supported 20 projects with a total of 1 900 000 CZK of financial allocation in 2008. The financial support represented 40 000-170 000 CZK for individual projects. More than 20% of financial means supported projects were in the České Budějovice region – the highest support among the regions. The significant part of financial means went to the Jindřichův Hradec region. However there were no projects realized in the Český Krumlov region (there were no projects realized in 2007 also). Projects realized in other regions represented less than 10% of the total financial allocation within the programme (region Prachatice 2.1%; Písek 3%; Strakonice 5.4%)

The disparities among regions within the grant programme Support of Incoming Agencies and Tourist Centres in tourism verified the Gini coefficient with the following values from the monitored period: 0.3217 (2006); 0.4836 (2007); 0.4957 (2008).

4.1.3 Grant programme Development of Infrastructure Supporting Sustainable Tourism

With the grant programme Development of Infrastructure Supporting Sustainable Tourism there was an allocation of 5 100 000 CZK to 35 projects in 2008. The financial support ran from 50 000 CZK to 450 000 CZK for individual projects. With respect to the number of supported projects and amount of funding allocated the České Budějovice and Jindřichův Hradec regions were the largest benefactors. Projects realized in the České Budějovice region gained 32% of total financial allocation in 2008 (however in previous years the amount of financial support was lower, in 2007 only 7 %). On the other hand the lowest ratio on the total financial allocation in the monitored period originated from the Písek region. Here the ratio was only 10 %. However the most significant decrease in financial allocation during the monitored period is identified as the Tábor region (in 2008 only 5%).

The disparities among regions within the grant programme Development of Infrastructure Supporting Sustainable Tourism verified the Gini coefficient with the following values from the monitored period: 0.2724 (2006); 0.2424 (2007); 0.297 (2008).

Fig. 1 shows the allocation of funds within the South Bohemia region.
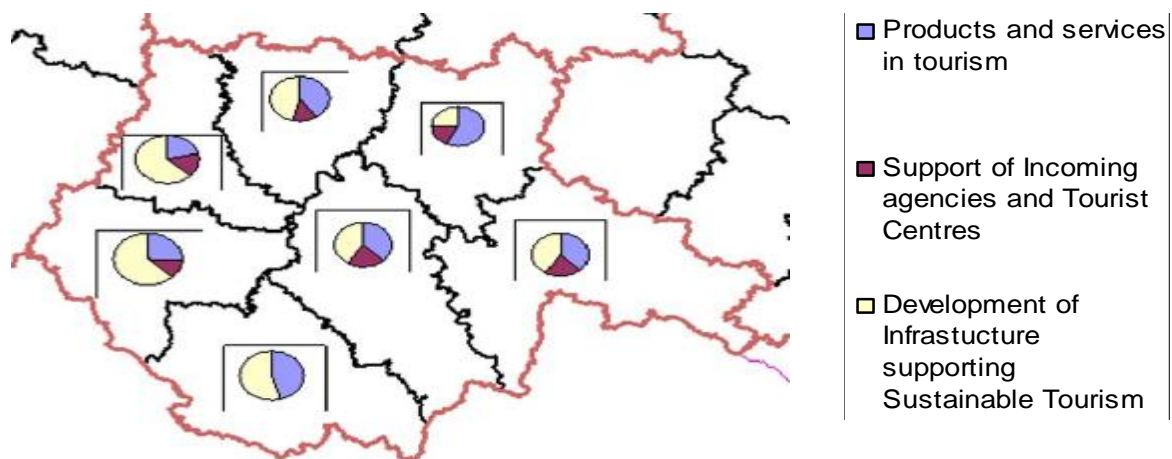
Fig. 1: Financial allocation among regions in 2008

Source:Author's calculation based on data supplied by South Bohemian Authority

4.2 Multiplier effects on regional production

4.2.1 Direct effects

The data from the primary research proves that funding from the Action Plan of the Regional Development Program went overwhelmingly to supporting the South Bohemia Region (almost 89%). Table. 2 shows the primary influence on the other regions. A smaller part of financial support went to Karlovy Vary region (2 %) and around 1 % to the region of Vysočina and Pardubice. Other parts of the Czech Republic were not influenced significantly (less than 1%).

Table 2: Primary effects of financial supports on Czech regions - %'s (2008)

Southern Bohemia	88.834
Hradec Králové region	0.894
Karlovy vary region	2.012
Prague	0.559
Plzeň region	0.559
Souhern Moravia	0.366
Pardubice region	0.895
Vysočina region	1.321
Olomouc region	1.524

Source: Author's calculations based on primary research

The reasons for choosing suppliers from regions other than South Bohemia may be divided into three main categories:

- Economic factors – suppliers from other regions were able and willing to offer lower prices for the same product or service

- Localization of suppliers of specific products – these products (e.g wellness equipment) are not manufactured in the region and therefore must be purchased from outside

- Personal preferences – personal relationships with a supplier, long-term cooperation, other advantages gained through partnerships.

To conclude the results, each 1 CZK from the Action Plan of the Regional Development Program, supported the production of the region by 88 %. From each 1 CZK of financial support 0,883 CZK remained within the region. According to the character of realized projects these influenced several sectors of the regional economy.

4.2.2 Indirect effects

The multiplier of financial supports was calculated from the structure of influenced sectors and the multiplier of individual products (see Table. 3). The multiplier of financial supports may be calculated as 2.32. This value represents the indirect effects of financial supports. Each 1 CZK of financial support influenced the regional production by 2.32 CZK.

Table 3: Calculation of multiplier

Product	Multiplier values	Supplies/ratio	Multiplier calculation
Other enterprise services	2.36	0.716	1.69
Electronics	3.49	0.083	0.29
Furniture	3.02	0.038	0.11
Building services	3.01	0.051	0.15
Data elaboration	2.37	0.032	0.08
Multiplier	**2.32**		

Source: Author's calculations

The multiplier shows that financial support of 50 000 CZK increased production by 116 000 CZK; financial supports of 120 000 increased production by 278 400 CZK and financial support of 200 000 increased production by 464 000 CZK.

4.2.3 Economic leakage

The quantification of indirect effects presumed that there was no economic leakage in these indirect effects. As they may be seen some leakage in the direct effects of financial supports there may be presumed some leakage in indirect effects too. If leakage was 10 % the financial support of 50 000 would increase production by

104 400 CZK. If leakage was 20 % the same projects would influence production by 92 800 CZK; in the case of 30 % leakage the increase would be only 81 200 CZK.

5. Conclusion

The Action Plan of the Regional Development Program (AP PRK) is an important tool for tourism development. Applicants may apply for support from 3 grant programmes. The highest amount of financial support in the monitored period was distributed within the grant program Development of Infrastructure Supporting Sustainable Tourism. However the financial support was not distributed equally, the number of supported projects and financial allocation differed according to the regions. The values of Gini coefficient showed that the highest disparities in allocating financial support among regions were within the grant program Support of Incoming Agencies and Tourist Centres. On the other hand, the lowest disparities were proven within the grant programme Development of Infrastructure supporting Sustainable Tourism.

The analysis of financial allocation with the Action Plan of the Regional Development Programs showed more and less successful regions. According to the chosen indicators (number of supported projects, share of financial allocation) the regions may be ranged as in Table 4.

Table 4: The success of individual regions in the grant programmes

Products and Services in Tourism	Support of Incoming Agencies and Tourist Centres	Development of Infrastucture Supporting Sustainable Tourism
PRACHATICE	*ČESKÝ KRUMLOV*	*PRACHATICE*
TÁBOR	*PÍSEK*	*PÍSEK*
PÍSEK	*PRACHATICE*	*TÁBOR*
STRAKONICE	*TÁBOR*	*ČESKÝ KRUMLOV*
JINDŘICHŮV HRADEC	*STRAKONICE*	*JINDŘICHŮV HRADEC*
ČESKÝ KRUMLOV	*ČESKÉ BUDĚJOVICE*	*STRAKONICE*
ČESKÉ BUDĚJOVICE	*JINDŘICHŮV HRADEC*	*ČESKÉ BUDĚJOVICE*

Source: Author's calculations

Taking into account the evaluation of the regions in all 3 grant programmes in the monitored period 2006-2008 the most successful region is České Budějovice, followed by Český Krumluv, Jindřichův Hradec, Písek, Prachatice, Strakonice, and the least successful region was Tábor.

The indirect effects of financial supports may come out as the increase of production in the region. Zero economic leakage defined that each 1 CZK of financial support increased the production in the region by 2.32 CZK. In the case that the multiplier effect was weaker the increase in production was lower too. The structure of

multipliers taking into consideration some economic leakage is demonstrated in Fig.. 2. In case of 90% multipliers effects (10% economic leakage) 1 CZK supported regional production by 2.06 CZK. In case of 20% economic leakage the regional production increased only by 1.85 CZK.
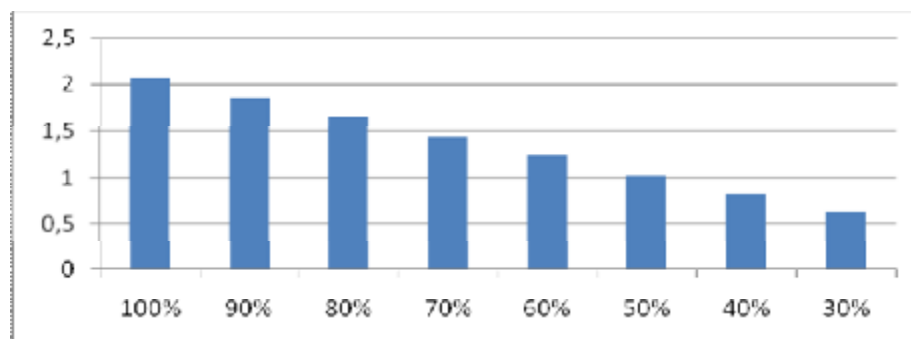
Fig. 2: Multiplier effects on production taking into consideration economic leakage

Source: Author's calculation

The input-output analysis is based on many large assumptions. Nevertheless all economic models are based on assumptions. This approach may bring into closer focus the impacts of financial supports. These impacts as well as the analysis of the distribution of financial means among regions may help in the decision making process governing regional development and the further distribution of financial support. Potential efficiencies gained from this methodology may not be limited to tourism strategy and development; rather it has the potential to extend beyond into other areas of economic and regional policy.

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PROVISION OF SOCIAL CARE AND SOCIAL HEALTHCARE SERVICES IN SELECTED MUNICIPALITIES BEFORE AND AFTER THE ACT ON SOCIAL SERVICES TOOK EFFECT[1]

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Abstract: The article presents the opinions of the staff of selected municipalities on the provision of social care and social healthcare services. The situation was scrutinised repeatedly, first in 2006 and then in 2008, in the same group of municipalities. That made it possible to identify the situation before and after the entry into effect of Act No. 108/2006, on social services, which introduced a whole series of fundamental changes to the social services.

Keywords: Legal Regulation, Municipalities, Social Services, Medium-Term Social Services Development Plans

1. Introduction

The adoption and entry into force of Act No. 108/2006, on social services ("social services act") introduced a whole series of fundamental changes to the social services. [see 2, 3, 4, 5 for a description of the most important changes] Undoubtedly the most strongly affected by the changes were social services providers. However, some provisions of this act also had a significant impact on those commissioning social services and seeking to ensure that the right level of social services is provided in their territory (i.e. the state, regions and municipalities[2]. The changes affecting providers and commissioning entities, and the other enacted institutes as well (most notably the care allowance[3]), naturally also transformed the position of a large proportion of social services users. A considerable number of studies [cf. e.g. 6, 7, 8] have already dealt with various impacts of the adoption of the social services act, but this paper's aim is to ascertain whether and how the views of staff in selected municipalities on the provision of social services care and healthcare in their municipalities have changed since the social services act took force. Attention focused on social care services, but information about selected healthcare services was also gathered.

Municipalities' position with regard to social services has changed significantly since Act No. 108/2006, on social services ("social services act"), took force in 2007. That mainly affects **the competence of municipalities** (covered in Section 94 of the social services act) and the competence of the municipal authority of municipalities

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[1] The paper was drawn up on the basis of the findings of the P. Bareš study entitled *Regional Availability of Social Services: Report from Surveys among Staff of Regional Authorities and Staff of Municipalities with an Entrusted Municipal Authority.* Prague: RILSA 2009 [1].

[2] The state, regions and municipalities may also be social services providers or may be the founders of organisations providing social services. In the following text, however, only their role as commissioning entities will be scrutinised (as providers or founders they are governed by the same conditions as other types of social services providers – cf. Section 6 of the social services act and other provisions of the act).

[3] Viz. part two of the social services act.

with extended competence (Section 92 of the act). [9]. On the other hand, although the act changed the concept of the social services in the Czech Republic and also municipalities' position with regard to them, municipalities were of course involved in the social services before the act took effect.[4]

Before the social services act took effect there was some, albeit very general, legislation on the competence of municipalities in the social services field. Section 2 of Act No. 128/2000, on municipalities ["municipalities act"; 10] provides that a municipality "attends to the universal development of its territory and the needs of its citizens; when discharging its tasks it also safeguards the public interest". If social services (or the forms of assistance and support that correspond to this term[5]) can be a means to care for the development of the territory or citizens' needs, municipalities should therefore use them or put in place the right conditions for the provision or development of social services. This provision does not, however, impose social services obligations on municipalities and municipalities may interpret this provision in different ways.

The position of municipalities, as social services commissioning entities, is not determined solely by the legislation on their powers and responsibilities, however. Another fundamental question is what **information** municipalities have **about their territory and their citizens' needs**. Needless to say, that kind of information is crucial to municipalities' efforts to develop their territory and satisfy their citizens' needs. The said provision of the municipalities act does not specifically refer to the need to acquire, monitor and evaluate the relevant data. Even before 2007, though, a number of municipalities saw this information as an essential requirement for making qualified decisions and actively gathered this information even without the appropriate basis in law.

The social services act directly imposes a duty on municipalities to acquire information of this type (Section 94 (a) of the act): a municipality "ascertains the needs for social services provision to persons or groups of persons on its territory". [9]

Article 94 (d) of social services act provides that municipalities may also draw up *medium-term social services development plans* (SSDP).[6] Municipalities[7] may draw up

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[4] Their competence in this area was already governed by the following regulations at this time: Act No. 100/1988, on social security; Act No. 114/1988, on the competence of the authorities of the Czech Republic in social security; Act No. 582/1991, on the organisation and execution of social security; Act No. 359/1999, on the socio-legal protection of children; Act No. 128/2000, on municipalities; etc.

[5] The phrase "social services" had no basis in Czech legislation before 2007. The term was naturally used by the expert public in this period, but it could in some aspects be understood differently from the concept as codified in the social services act.

[6] This term is directly defined in the social services act (Section 3 (h). It is close to the formerly used term "community planning", but it is not identical and the definition of medium-term planning is not derived from the concept of community planning. The social services act thus does not oblige municipalities to use methods that are requisite features of community planning or to satisfy various demands that are placed on the community planning process and its output (community plan) [cf. 11, 12, 13, 14].

[7] The Act No. 128/2000, on municipalities, differentiates three types of municipalities: "municipality" (smallest municipalities, in which the administrative ward of the municipality corresponds with its district and which have basic competences), "municipality with an entrusted municipal authority" (the administrative ward covers both the respective municipality district and subordinated "municipalities") and "municipality with extended competence" (its administrative ward includes the district of respective municipality as well as both above mentioned municipality types). According to the Czech Statistical Office there were 6,249

municipal plans for the territory of the municipality or, in collaboration with other municipalities, for the territory of the administrative ward of a municipality with an entrusted municipal authority or the administrative ward of a municipality with extended competence; or municipalities in "*unions of municipalities*"[8] may draw up an SSDP for a *microregion* that does not overlap either with the administrative wards of municipalities with an entrusted municipal authority or the administrative wards of municipalities with extended competence. It is clear, therefore, that municipalities may take part in the preparation of a municipal SSDP being coordinated by another municipality.

It is clear from the above that the definition of social services themselves, municipalities' competences in the provision of social services on their territory and the legal foundation on which municipalities acquire information were very different before 2007. To some degree that also implies that the information about social services that municipalities have gathered and possess may also differ. This article will present the results of the research done in the same municipalities in 2006 and 2008. The first survey was performed before the social services act entered into force and the second survey after. However, during the first survey the legislation in question had already been passed and published in the digest of laws. The concepts and institutes enacted by this legislation were therefore not part of legislative practice or the exercise of state administration and local government at that time. On the other hand, the concepts and institutes introduced by the act had already been defined at the time of the first survey and both surveys referred to an identical typology of social services. The same social services typology could therefore be used in both surveys; nevertheless, when comparing the results of the two surveys it should be taken into account that certain types of social services may have been inaccurately understood by the respondents (it was not possible to give this question sufficient attention in the survey done before the act took effect, however).

2. Methods

Both surveys focused on the conditions for providing social care and healthcare services in municipalities lying near the boundary of three neighbouring regions. The information was gathered from the staff of social departments in eight selected municipalities with an entrusted municipal authority in the South Bohemia, Plzeň and Central Bohemia regions. The information was gathered again after an interval of two years, first in the period before the social services act took effect (2006) and subsequently after it had taken effect (2008). The questionnaire form used in the second survey was based on the form for the first survey, modified to reflect the changes that had taken place in the interim.

A specific selection criterion was used to select the sample – only municipalities lying near the boundary between the three selected regions were included in the

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municipalities as at 1.1.2009. The status of "municipality with an entrusted municipal authority" has been assigned to 393 of them, whereas 205 of them had at the same time the status of "municipality with extended competence".

[8] Cf. Sections 49 and 50 of Act No. 128/2000, on municipalities

research sample. Regions lying near the national borders and regions with similar characteristics in this regard but with other structural differences were not included in the survey.

The heads of the social departments (social affairs and healthcare) of the selected municipalities with an entrusted municipal authority were interviewed. Their answers can be viewed as informed testimonies, but they may be influenced by the range of information the interviewees possessed and by their own viewpoints.

One limiting factor of the information gathered is the fact that the information is based on the statements of a specific set of respondents, who may be influenced by a personal point of view on the matter in question. Another constraint is the number of surveys conducted and the choice of the specific selection criterion. Nevertheless, the research was never intended to have a broader generality. By its very nature the survey was more of a case study mapping the situation and its development in municipalities located in a selected territory. The main objective was to identify those aspects that may be significant from the point of view of implementing social services and healthcare at the level of regional self-government in areas not covered (or covered only to a limited degree) by the work of organisations operating in larger towns and, above all, regional cities. The findings presented below are therefore confined to the situation of municipalities where their geographical position relative to a regional centre cannot therefore facilitate the provision of social services and healthcare on the territory of a municipality and greater demands are thus placed on the municipality in both these fields.

The selected municipalities had a number of different characteristics, not merely with regard to the powers of three different regional self-governing administrations, but also with regard to their differing municipal statutes, the size of their territory and the number of inhabitants. The survey covered 4 municipalities with an entrusted municipal authority, 3 municipalities with extended competence whose territory does not contain a further municipality with an entrusted municipal authority, and 1 municipality with extended competence whose territory contains further municipalities with an entrusted municipal authority.

Seven of the eight selected municipalities took part in the first survey (3 municipalities with an entrusted municipal authority, 3 municipalities with extended competence whose territory does not contain a further municipality with an entrusted municipal authority, and 1 municipality with extended competence whose territory contains further municipalities with an entrusted municipal authority) and 6 took part in both surveys (3, 2 and 1).

The starting point for assessing the results was the situation ascertained in the second survey, i.e. the findings obtained in 2008. Comparing these findings with those from the first survey made it possible to identify the changes that had occurred in the social services field in the period between the two surveys. This "retrospective" approach was used mainly in view of the endeavour to describe the situation at the time of the second survey. This approach was better suited to creating a clear presentation of the findings gained in the later, second survey than the "chronological" approach (i.e. presenting the data from the first survey and the subsequent changes found in the second survey).

3. Findings

The survey primarily focused on the conditions for providing social care and healthcare services, broader contexts, intervening factors etc. It was also essential for the purposes of the survey to obtain data about the extent of social services and healthcare provision (given the concept and aim of the survey these were merely described in summary terms; expressing them as a percentage or giving frequencies would distort the Fig.). First the **need for and degree of implementation of 14 social care services and 5 healthcare services** were compared.

Protected housing was not found in any of the surveyed municipalities; yet all the respondents agreed that this service was required in their municipality. In the case of a further ten services, all the respondents concurred only in the question whether the service is provided (four services – see next paragraph) or, conversely, whether the service is necessary (six services – see below).

Besides protected housing, *day services centres, week care centres, hospices and adult care centres* were not found in any of the surveyed municipalities. *Day services centres and adult care centres* were, however, required according to the majority of respondents; *week care centres* and *hospices* were perceived to be unnecessary in most municipalities.

Six types of social services and healthcare were considered necessary in all municipalities: *personal assistance, domiciliary service, supported housing, day care centres, old people's homes* and *home healthcare*. Only *domiciliary service* was provided in sufficient measure, however. *Old people's homes* and *home healthcare* were provided in sufficient measure in certain municipalities, while only partially or not all in others. By contrast, the majority of municipalities lacked *personal assistance, supported housing* and *day care centres*.

Of the eight services on whose assessment all the respondents did not agree, either in terms of their necessity or adequacy of provision, six were rated as predominantly lacking. Three of these services (*emergency assistance, respite care, disabled persons' homes*) were necessary in most municipalities; and in the case of three other services (*special-regime homes, long-term illness treatment institutions, children's care centres*) the degree of provision differed from one municipality to another. Two other types of services were predominantly perceived to be unnecessary (*guiding and reading services, and social services provided in healthcare residential facilities*).

The necessity and scale of implementation of a considerable proportion of the services under scrutiny was assessed comparably **in both surveys**. That mainly applied to healthcare and social care services that were widely operated before the new legislation was enacted (old people's homes, domiciliary care). With some of the services that were only introduced by the social services act, we may find a more frequent assessment that the services are necessary, whereby the services are not yet provided in the municipalities that recognised the need for these services.

When assessing the **network of organisations**, all the respondents drew attention to certain shortcomings or problems, but overall the situation was only assessed as unsatisfactory in one case (moreover only in the field of social services; there was sufficient a sufficient network of organisations providing healthcare services).

Cooperation between the individual types of organisations (organisations founded by a town authority, non-governmental non-profit organisations) was rated good or excellent, with one exception. Close cooperation proved to be very useful when mediating between organisations and processing care allowances, as well as when transferring the provision of domiciliary care from a town to a non-profit organisation. Cooperation was more intense in certain municipalities compared to the year 2006, but it was already rated as good in the first survey.

The following social services and healthcare services enjoyed the **best coverage**: care for seniors, follow-up and rehabilitation care in medical facilities, home healthcare, domiciliary care, "meals on wheels". There was not much difference between the answers obtained from respondents in 2008 and 2006. The most fundamental obstacle in both 2008 and 2006 was funding. The situation in both years was comparable in this regard, according to the respondents.

In most of the surveyed municipalities, **the municipalities' distance from a municipality with an entrusted municipal authority** was a factor significantly limiting the availability of social care and healthcare services. Only one municipality managed to provide them in small municipalities located in its administrative ward to a comparable extent as in its own municipal territory.

A community plan had not been completed in any of the surveyed municipalities in 2006, but **community planning** (or, once the social services act had taken effect, medium-term social services development planning processes) had been begun before the first survey in three municipalities with extended competence, and one municipality with an entrusted municipal authority was participating in the preparation of a plan in cooperation with the relevant municipality with extended competence. In 2008 a community plan had been drawn up for the territory of all four municipalities that had previously been in the planning stage. Another three smaller municipalities (or two in 2008) had not been engaged in the preparation of plans.

Overall, therefore, the social services development planning process in the field in question could be regarded as very widespread. There is also an evident positive development in the time between the two surveys. The survey also drew attention to the growing coordination of social services development planning at municipal and regional levels. Work done by three surveyed municipalities was factored into the regional medium-term social services plan. Nevertheless, the regional plan did not have a particularly pronounced impact on the actual provision of social services in the territory of municipalities and in their catchment areas, according to all the respondents.

4. Conclusions

Comparison of the findings obtained in 2006 and 2008 highlighted certain changes in the social services field, but these changes are more likely to have occurred gradually. There was considerable continuity evident in the perception of the necessity and degree of implementation of the social services under scrutiny. That mainly applied to healthcare services and those social care services that were widely operated before the new legislation was enacted (old people's homes, domiciliary care). In the

case of some of the services that were only introduced by the social services act, we found in the second survey a more frequent assessment that the services are necessary, whereby the services had not yet been provided in the municipalities that recognised the need for these services.

Changes were more likely to be small-scale and affect the spectrum of provided services. There were no major changes in the structure of services following the entry into force of the social services act, but the survey suggested that processes that could affect the structure of services had already been commenced and were taking place.

The second survey revealed a growing intensity of cooperation between municipalities and regions when planning the development of social services. Nevertheless, the activities of the regions and municipalities in this area have only just started to be harmonised; it would certainly not be possible to say that they were already significantly coordinated at the time of the second survey. The second survey also indicated a greater familiarity with the terms used in the new legislation among the surveyed staff. That was indicated by changes in the perception of the necessity of services in the municipality's territory: a number of types of social services had not been perceived to be necessary in the first survey, but were declared necessary in the second survey, when the name of the type of service in question had become established (this could only be attributed to an increase in necessity if this kind of shift had only occurred in the case of a few services).

The findings obtained from municipal authority staff by the two empirical surveys revealed that the actual entry into effect of the social services act did not result in a fundamental change in municipal policy in the social services field, even though it undoubtedly constituted a landmark event for both those providing social services and those commissioning them.

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MORE THAN ECONOMIC CRISIS

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Abstract: The present article aims to provide an uneconomic view of the current economic crisis. The text deals with the substance of the crisis in its wide connections and creates a parallel between a general crisis and the economic crisis. It perceives the economic crisis like a kind of illness and indicates a possible solution in the future. The article also contains a hidden philosophical meaning.

Keywords: Economic Crisis, Crisis Like an Illness, the Causes of Crisis, the Way out of the Crisis, Balance

1. Introduction

The global economic crisis is one of the most commonly encountered phrases used at present. Its impact is perceived practically in all walks of life, and even quite fatally by a certain part of the population. The crisis affects the whole society as far as the economic, social, political as well as ethical sphere is concerned. It is clearly seen in the regional as well as global dimension. The crisis has actually had an essential impact on most economic sectors. The Economic Chamber indicates that more than one half of companies in the Czech Republic expect their economic results to end in red numbers. One third of all firms have been forced to reduce the numbers of their employees and every tenth company is planning to dismiss some of its workers in the near future. Fig.s signalling that a number of firms do not really have any contracts, do not produce anything and are therefore forced to get rid of their workers are alarming. The economic crisis is rather concrete, depressing and, simply speaking, affects the mere existence of the whole society and any individual.

2. Crisis – it had to be expected

The general public therefore asks a justified question: What was the cause of the crisis and how could the crisis be overcome with losses as low as possible?

M. Potůček can see above all two essential circumstances that contributed to the origin of the current financial and economic crisis [7]:

- articulated interests of the financial capital supporting the neo-liberal ideology, which successfully won recognition in the political decision-making arenas,

- poor competence of social sciences in understanding the character of the current stage of human civilisation development.

And he adds:

The huge and articulated economic interests of the global financial capital must be viewed as the background for the success of the neo-liberal interpretation of present

civilisation problems. These interests were focused, with considerable resources invested, on direct as well as indirect support for the academic and political circles that applied such concepts in preparation, justification and implementation of reforms of the economic (de)regulation as well as social state removal. [7]

Certain economists had warned against this danger of development already before – nevertheless they had been in a considerable minority and had not actually managed to affect the reality.

Some authors also warned of a dangerous change in relations between the public and private sectors. The state had gradually waived a number of decision-making powers which it had gained in market economies after World War Two. The process may be summed up in three areas:

- institutional deregulation, i.e. restriction of managing and decision-making powers of the public sector bodies,

- privatisation which concerns large state-controlled companies, communal housing, health care, school system, social and other services,

- completion of the full price liberalisation, e.g. deregulation of the rents in the residential sector.

Thus the policy of deregulation is often referred to as decentralisation from the public sector to the market. [3]

Keller writes in connection with deregulation that consequently the minimum possibility of democratic control disappears and the deregulated activities transfer to the spheres that are entirely non-transparent for the public. [4]

Although expert circles were most probably aware of the crisis, it occurred in fact all of a sudden and without any warning for the general public – namely both for people in America and also e.g. for a common Czech citizen, who had enjoyed the market system for nearly twenty years and had certainly compared it in media and the public as well as private life with the period before 1989. Naturally, with regard to our previous experience nobody dared to criticise the capitalist system, let alone to call it in question, without earning a suspicion of enthusing about communism. Intellectuals commonly do that, however, in the countries to the west of ours. E.g. Noam Chomsky, the most frequently quoted intellectual in the world, is of the opinion that: *what is called capitalism is a system of corporate mercantilism, in which the private tyrants who are not obliged to render accounts to anybody have a huge and vast control over the economy, political systems and social and cultural life.*[1] Chomsky openly reminds that the system in the society and in democratic countries works in principle on the following basis: 20 % of population make decisions; 80 % are wanted to carry out orders somehow. Approximately 80 % of the United States population deem that the state is controlled by a few large interest groups looking after themselves – meaning after corporations, not after people. [2]

Strictly speaking, nobody can say that the society really works in this simplified way, but the system – as it is existing now – must necessarily go through a crisis; it actually generates the crisis in fact. But it should also be mentioned, however, that N. Chomsky can see a great hope for the whole society in the current development – in

the awareness of humanity and the appeal to human rights and real meaningful democracy. Nevertheless there is a question concerning the tendency of the development – economic, political, social etc.

3. A bit different view of the crisis – the crisis of the system as the crisis of the organism

The economic crisis is not a single crisis, however. The crisis is found in different variants and in connection with other aspects of life – one speaks about a personal crisis of man, crisis of identity, crisis of middle age, existential crisis, artistic crisis, intellectual crisis, etc.

The economic crisis is an integral part of the market system and capitalism as the life crisis is part of life and man. *"We must learn for the whole life how to live,"* said Seneca more than two thousand years ago, *and what may make you wonder even more, we must learn for the whole life how to die.* [5] While thinking about the nature of the crisis and what it actually brings about, we cannot avoid two quite different points of view:

- The first one is a view of the crisis as something quite bad, something to get rid of as soon as possible, after which we should get back on the rails again.

- The other view of the crisis is a positive one – something new and above all a promise of change is sought even in the crisis.

While the first view is not possible for ever, the other one hides the growth potential in itself. And like any other growth or development, it brings about a time of changes in itself which no development can do without unless the system is so far-sighted that it continues to clean itself and to look for new ways already while the old rooted and temporarily prosperous ways still exist. And no system and no person (but for exceptions, naturally) does this. Professor Zelený expressed an interesting idea in this line: *We must learn how to carry out the crisis functions that are purgative – without any crisis and without negligence of natural regeneration and renaissance.* [8]

It is clear that while comparing the economic crisis with a life crisis of a man, I can see a certain parallel between the two. If a man wants to overcome a personal crisis, he must give up something, must let something die in his life, waive something in order to be able to move forward again, and a bit differently, in a different way, and changed a little himself in most cases, and the system will have to do the same thing similarly as the man. If the system fails to do it, it will not move ahead any further.

4. What in fact is the crisis?

The Dictionary of Foreign Words for the New Century says that the crisis is a culmination, decisive moment, turn in the development, dangerous conditions in the development or a hard precarious situation, problem, confusion. No matter whether it is a phenomenon or a condition, the crisis does not occur out of the blue, but is a result of a long-term development or rather a long-term development, a bit erroneous in certain aspects. It is apparently quite common. Capitalism is a system for which crises

are natural issues, as for any other system that is not perfect – and nobody or nothing is such.

But what about the essence of the crisis, the essence of the undesired development resulting in the crisis? President V. Klaus compared the current crisis to a mild illness – flu. On the other hand, a number of economists and politicians including e.g. M. Zeman, the former prime minister, oppose that flu can also result in death. If we keep to such comparisons – the world is ill. But it is already a long time ago it fell ill (has it ever been healthy at all?) – at least I cannot remember any period in history when it was not ill. The untreated, continuously not purged world prepared the optimum conditions for the crisis to break out. K. Tepperwein[1] considers any illness (meaning that of a man) to be demonstration of disharmony, breach of integrity and unity. [6] If this statement is considered a paradigm and is transferred to the outlined sphere of problems, we will receive an interesting view.

5. Causes of the crisis (general view):

• loss (or breach) of balance,

• eruption of long-term problems and errors onto the surface,

• deviation of development to the descent, decline, fall.

The depth, length and intensity of the decline will probably be appropriate to the depth, length and intensity of errors that have collected in the course of development since the last purification. In the event of a human body, it is usually the whole organism that suffers, although e.g. the backbone scoliosis was caused by a bad life style, sedentary way of life and lack of exercise. It is not only the backbone that is ill, but the whole organism is affected by the results of the previous imbalanced development. Our world is also an organism, unbelievably interlocked and interwoven – one cell depending on the other. Living entirely out of the system is impossible. But the system is ill … The system is in the crisis … We cannot pretend that it is a coincidence, that something can be *patched* and we can continue. It is not as simple as that as a rule. If we want to move really ahead, we must learn a lesson.

6. What does the crisis say?

• Something is wrong – the system must look for the lost balance.

• It is clear that the balance must be new – probably on a higher level of development.

• It is necessary to find and define imperfections in development that have resulted in the crisis, to eliminate them and to find out qualitatively new ways.

Is there any way out of the crisis? Certainly yes, both from the general viewpoint and in the real situation of the current economic crisis. The only issue is which way is to be selected. Shall we take a pain-killer and continue as before? Shall we select a

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[1] Kurt Tepperwein is a senior lecturer at the Academy of Spiritual Sciences, doctor and therapist, and has written more then twenty books that have been translated into many world languages.

radical method of treatment – e.g. operation? Or shall we leave the illness to its fate and let the body recover in its self-treating manner similarly as we let the bark-beetle *consume* half of the forest and wait till a new more resistant forest with natural immunity against the bark-beetle grows from its ruins?

7. Way out of the crisis

In fact we could sum up the ways out of crisis by giving the three possibilities below:

1. *patching* of problems that have occurred, and search for solutions on the current level of the system without any qualitative transformation,

2. resignation, submission to the crisis, waiting till the crisis itself makes the system clean,

3. change – deep and comprehensive.

For somebody who is not an economist, it may certainly be difficult to engage in a discussion whether or not the *pumping* of state finances into companies going bankrupt (for which there are certainly good reasons too – social shocks get reduced) is meaningful, or whether or not the crisis should be left to carry out its purifying functions which liquidate those not able to survive. This market selection may also simply do away with a number of people who would take the rap for the crisis caused, in essence, due to the greediness of the financial capital, however. If these reasons are considered, state interventions will also be important then.

The third point mentions a deep and comprehensive change. What does this mean? I am of the opinion that a mere change in economic thinking, the entering of innovating projects, new modern environmental technologies, new types of ecologically driven cars will not be enough – this condition is necessary but not sufficient. The mankind, at least in the civilised world, has already appeared in the stage when people start to understand the meaning of humanity, democracy, responsibility, value of quality life, health, peace and prosperity; they should learn, however, how these values are to be fulfilled and lived as well. The present man continuously balances on the edge between what should be done because it is correct and what is expected from him by the manipulating and controlling reality. Therefore I claim that a change in thinking as such, not only economic thinking but also the overall view of the world, is necessary. Otherwise the mankind will always be in a permanent crisis and economic recessions will only be their medially attractive output – a visible part of a disease, similarly as patient's ulcers may be seen – they only indicate the scope of the illness hidden inside, however.

If the man concerned wants to recover for ever, he must usually change many of his rooted stereotypes – e.g. stop smoking, drinking alcoholic beverages, loose weight, increase physical activities, and change his life, approach to life, thinking essentially at all[2]. The ulcers may disappear all by themselves; well, you may know that famous

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[2] Note: An interesting opinion, which in fact corresponds to what the present article aims to say, was formulated by Tomáš Baťa Sr. in 1932: *It is above all moral misery that is the cause of the crisis. Turn of the economic crisis? I do not believe in any turns caused all by themselves. What we have got used to calling the*

statement: *clean the chalices from the inside*. And that is why I feel fears that the simple market purification will not be sufficient, it is necessary but may not be enough. It cannot be sufficient for a long time because if the mankind appears to be in permanent evolution, and it certainly is, it is a matter of any individual, not only of a large car making company or the government of the most powerful country in the world whether or not they will do just a little step to the new centuries and whether or not the crisis will purge or destroy them, improve their position or do away with them, or whether or not they get out of the crisis stronger or ruined, or whether they hget out of it at all.

8. Conclusion

Actually, a crisis is a loss of balance. Therefore I think that purification is necessary, but establishing a new balance is no less important, may be even more crucial. If this does not occur, the subsequent impacts of the crisis may have even a dangerous sequel – dirt that is much larger than the dirt that was there before the crisis often settles in the cleaned space. From the economic, political and social viewpoint, I mean even higher concentration of capital, zero regulation or, on the contrary, improper radical interventions by the state (both being incorrect), huge social differences, even harder and unfair political rivalry, rising extremism, helplessness in dealing with migration or situation of minorities, overall vulgarisation of the society and resignation from decency, ethics, thoughtfulness and sentiment. And this is the society that reminds us of an unkind technocratic future of sci-fi films. Prediction of the future always has an alternative solution. But causality of processes is usually merciless. If the system that has generated the crisis is not changed from inside, the problems will return or other ones will occur in a certain period of time. Today is the result of yesterday and tomorrow will be as we prepare it today.

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economic crisis is just another name for moral misery. Moral misery is a cause, economic decline is a consequence. In this country, there are many people who are of the opinion that economic decline may be recovered with money. I fear the results arising from this error. We do not need any genius turns and combinations in the position we appear to be in. We need moral opinions about people, work and public property. We should not support bankrupts, not create debts, not throw away values for useless things, not exploit workers, do what improved our position from the post-war misery, work and save, and make work and saving more profitable, desirable and honest than idling and wasting. You are right, it is necessary to overcome the crisis of confidence, but it cannot get overcome through technical, financial or credit interventions, confidence is a personal matter and may be restored only by means of a moral viewpoint and personal example. [9]

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LIQUIDITY MARKET SUPPORT DURING THE GLOBAL CRISIS

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Abstract: Liquidity risk management ranks to key concepts applied in finance. Liquidity is defined as a capacity to obtain funding when needed, while liquidity risk means as a threat to this capacity to generate cash at fair costs. In the paper we present liquidity market support during the global crisis in the 2007-2009 period and related regulatory challenges. We see five main regulatory liquidity risk management issues requiring revision in coming years: liquidity measurement, intra-day and intra-group liquidity management, contingency planning and liquidity buffers, liquidity systems, controls and governance, and finally models testing the viability of business liquidity models.

Keywords: Liquidity,Risk Management, Regulation, Global Crisis

1. Introduction

The aim of this paper is to provide basics of liquidity risk management and its development during the 2007-2009 global crisis. This paper is organised as follows; the second part discusses the term liquidity risk while the third part describes liquidity risk during the global crisis with special focus on the Eurozone and the US. The fourth part analyzes expected liquidity risk management regulation. Finally, the fifth part concludes the paper and state final remarks.

2. Liquidity Risk

The definition of liquidity risk can be written in many ways, as it is not so easy to separate this risk from all other risks and still capture all of its drivers. First, we should always define liquidity itself. Liquidity is in its broadest sense defined by Committee of European banking Supervisors as a capacity to obtain funding when needed [2]. Liquidity risk is then defined as a threat to this capacity to generate cash at fair costs. BIS [1] defines banks´ liquidity as is the ability of the bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses. This definition is related to the funding liquidity problems of the bank, but when defining liquidity in general, we should always distinguish its two main types: market liquidity defines how difficult is to trade assets while funding liquidity defines how difficult is to obtain funding.

2. 1. Liquidity risk management

The liquidity management has two challenges, ensure availability of adequate sources of cost-effective funding and appropriate use of these sources. This

management is more and more challenged as the new complex financial products and derivatives are used. In the first years of crisis in 2007-2008 the liquidity was affected in all kinds of markets. CEBS technical advice refer to changes in interbank market, where was shortened maturity, reduced unsecured lending or cancelled committed liquidity lines extended by other institutions, in the commercial paper market, by limited or no possibility for banks to tap the market or roll over funding and in general illiquidity of markets which banks had considered as reliable sources of funding, even in times of stress.

Cornett and Saunders [1] recognize two liquidity management approaches that are used to deal with liability-side. Purchased liquidity management is trying to adjust to the net outflows of deposits (net deposit drains) by purchasing the liquidity. Purchasing liquidity can be done in two ways, either a bank borrows money on interbank market (short-term loans) or it can issue or sell securities (fixed maturity wholesale certificates, bonds, notes). However, this way of borrowing can be expensive. A bank „gets rid of" paying low interest cost on drained deposits, while it has to cover it by funds bearing higher market rates on the wholesale money market. Stored liquidity management is the second management and deals with the net deposits drains with the use of cash. This is basically assuming that instead of obtaining the needed funds after net deposit drain occurs; a bank is prepared for this situation ex ante by holding the cash. This management allows a bank to bear net deposit drains without relatively expensive borrowing, but they are still facing the loss by not earning the interest from possible long-term investments.

Banks can combine both of these policies. They are generally not obliged for any of these two management policies to use with small bias towards the store liquidity management. It can be seen from mainly low or none minimum cash reserve requirements required by central banks at present. As of date, U.K. has zero minimum reserves set by Bank of England, while reserves policies by the Federal Reserve (FED) and the European Central Bank (ECB) are stricter.

3. Liquidity risk during the global crisis

The financial crisis spread to the banking sectors in advanced and also emerging markets countries, where it „has put further pressure on banks' balance sheets as asset values continue to degrade, threatening their capital adequacy and further discouraging fresh lending" [6]. The whole financial crisis with the global uncertainty in banking sector and volatile environment came in after the stable period with sound macroeconomic conditions that on the first glance did not predict this economic fall. We can agree with a paradox pointed out by Nigel Jenkinson, executive director for financial stability of Bank of England, who actually „blamed" this peaceful situation before the crisis, that creates an opportunity to developed the market in the way that causes problems afterwards. Jenkinson [1] described that low financial market volatility allowed to develop products that could better posses the needs of investor and his risk appetite which encouraged him to go for a higher yield (in this period „greater integration of markets went hand in hand with the acceleration of financial innovation and rapid growth of market activity"). BIS [1] highlights the lack of carefulness during times of boom, while dealing with wide range of liquid markets.

The assessment of liquidity should always be examining whether the liquid market stays liquid also under the times of stress (Fig. 1).

The new market developments that affected liquidity in financial sector are more specifically defined in [4][2]. The deposit-based funding is for banks no more the main source of funding and is replaced by market funding sources, where the real numbers are showing higher volatility of wholesale funds and brokered certificates of deposits. CESB [2] analyzes also the indirect effects of U.S. sub-prime crisis on these institutions that relied on wholesale funding and had liquidity commitments. The liquidity problems could arise from limiting several factors as shortening maturity in inter-bank market, limited possibility for banks to tap the market or roll over funding, disability of accessing liquidity by securitising portfolios due to the dry-up markets (ABCP and ABS) and also failing of the most reliable sources of funding that should have been reliable even in times of stress.

IMF [6] suggests the three most important elements that would reduce the global uncertainty in banking system. The first point is requesting supervisors to take more active role in determining the viability of institutions and appropriate corrective actions. Secondly, impairment of banks´ balance sheets should be fully and transparently disclosed and consistently criticized. Thirdly, the report suggests improvement in clarity about what type of capital is required and also better specifications of time in which the new required capital ratios should be reached.

Moreover, IMF [6] incorporates funding and market liquidity index as a specific indicator that should describe perceptions of funding conditions, secondary market liquidity, and counterparty risks. This indicator consists of spread between major-market government securities yields and interbank rates and expected overnight interest rates, bid-ask spreads on major mature-market currencies and daily return-to-volume ratios of equity markets. Central banks around the world tried to ease the short-term liquidity pressures that came up during the crisis. The liquidity support measures were applied by all main central banks. Federal Reserve and also Bank of England lent government securities in exchange for securities that were illiquid, which should have assisted repo and other collateralized transactions. Many of the central banks including the ECB used currency swap arrangements between each other and also between central banks and commercial banks. This should have facilitated foreign currency provision to banking sector, in the face of segmentation of foreign exchange markets. In some emerging economies was used foreign currency provision in domestic market.

Applications of liquidity support measures or basically providing liquidity to the markets highly affected the growth of money base in economies. This huge increase of money in the economy again raises the question: how far should central banks go as a last resort or provider of liquidity. Key interest rates were sharply decreased by ECB, twice in the end of 2008 and one more time in the beginning of 2009. Evolution was similar in USA and there was an unprecedented month-to-month increase of money base both in the Eurozone and USA, where in USA, percentage increase was held three month in row over 15 % in the September-November 2008 period. This rise in money base was then partially reversed, however, another liquidity turmoil made FED and

ECB again worried and forced them to go for another lowering of interest rates that was smaller, but pushed the interest rates too close to zero.

The overall result of liquidity crisis and affects on the money base is much stronger in a case of USA than the Eurozone. Money base in USA rose in period from August 2008 till November 2009 by almost 240 %, while in the Eurozone, during the same period, money base increased by much less, 117 %. These steps taken by central banks were mostly successful in a way of preventing a complete dry-up of the markets. However, this is true mainly for developed countries, while in emerging countries the effect was not that strong. This is according to GSFR [6] due to bigger external vulnerability, shallower financial markets, and stability objectives conflicts between macroeconomic and systemic level.

3. 1. The USA

The FED used many ways to support the liquidity in financial markets, where most of them were used just for a short time-period to prevent a liquidity crush and were closed after the situation got back from the worst numbers.

In December 2007, after the increasing problems of institutions with credit needs of their clients, there was created the Term Auction Facility (TAF), that should have funded depositary institutions, while putting not too much pressure on the „quality" of the collateral there could have been used at the discount window. One of the tools was again liquidity swap arrangements with other 14 foreign central banks[1]. This instrument also belongs to the group of temporary instruments. In March 2008, was announced establishment of The Term Securities Lending Facility (TSLF). Through this facility, Federal Reserve was lending securities to primary dealers for 28 days. Just a few days later was established The Primary Dealer Credit Facility, that helped primary dealers to provide financing to participants in securitization markets.

Another way of fighting liquidity shortage was creating funding facilities – Money Market Investor Funding Facility (MMIFF), Commercial Paper Funding Facility (CPFF) and Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity (AMFL). MMIFF was created to „*provide senior secured funding to a series of special purpose vehicles to facilitate an industry-supported private-sector initiative to finance the purchase of eligible assets from eligible investors*" [5]. The Troubled Assets Relief Program, that served for these capital injections to eligible banks funded sources in amount of $198 billion. CPFF funded purchases of highly rated, U.S. - dollar denominated, three-month, unsecured and asset-backed commercial paper issued by U.S. issuers. Asset Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) was used to help banking organizations to purchase asset backed commercial paper from money market mutual funds.

The Term Asset-Backed Securities Loan Facility was introduced in November 2008, to support issuance of asset backed securities especially collateralized by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business

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[1] the Reserve Bank of Australia, the Banco Central do Brasil, the Bank of Canada, Danmarks Nationalbank, the Bank of England, the European Central Bank, the Bank of Japan, the Bank of Korea, the Banco de Mexico, the Reserve Bank of New Zealand, Norges Bank, the Monetary Authority of Singapore, Sveriges Riksbank, and the Swiss National Bank.

Administration. In November 2008, started direct purchases of assets, central bank purchased $100 billion in government-sponsored enterprise debt and $500 billion in mortgage-backed securities backed by Fannie Mae, Freddie Mac, the Federal Home Loan Banks, and Fannie Mae. In March 2009, there was another purchase of $200 billion of enterprise debt and $1.25 trillion of mortgage-backed securities. To ease funding conditions, Federal Reserve also extended wholesale funding guarantees by six months during the crisis. Besides mentioned actions that were taken as a general steps to recover liquidity, there were institutions that needed a special treat if they wanted to survive unexpected liquidity shortage. In March 2008, investment bank Bear-Stearns suffered by unexpected illiquidity of their assets. JP Morgan Chase & Co. agreed to a special financing for this company, when it assumes its financial obligations. Even a limited liability company, Maiden Lane LLC, was created to acquire certain assets of Bear Stearns and manage them to maximize repayment of the credit extended and also to minimize disruption to financial markets.

The biggest wave of liquidity problems came in the last quarter of 2008 and beginning of 2009, when another three important financial institutions of US financial market had liquidity problems. In September 2008, American International Group got $85 billion from Federal Reserve Bank of New York as direct support to meet their obligations and in October AIG got additional $37.8 billion to finance investment-grade, fixed-income securities that it held. After this in November Federal Reserve purchased $40 billion of newly issued AIG preferred shares and lowered the interest from LIBOR + 850 basis points to only LIBOR + 300 basis points. Another two limited liability companies had to be created for the purpose of restructuring of Federal Reserve lending to AIG. Maiden Lane II LLC got a $22.5 billion loan from the Federal Reserve and a $1 billion subordinated loan from AIG. This company then purchased residential mortgage-backed securities from AIG. Maiden Lane III LLC got a $30 billion loan from the Federal Reserve and a $5 billion subordinated loan from AIG. The money was used to purchase multisector collateralized debt obligations on which AIG has written credit default swap contracts. Central bank here acts again „as a last resort", but this already can be seen as too artificial act that crosses the line. On the other hand, when we look at the position of this insurance company in the US financial market, the collapse of AIG could have more directly touched the ordinary people as the bankruptcy of an investment bank and the bigger psychological burden could have caused an unsolvable domino effect.

Citigroup undergone similar problems that again led the Treasury and Federal Deposit Insurance Corporation (FDIC) to intervene in November 2008, when provided capital protection against outsized losses on a pool of about $306 billion in residential and commercial real estate and other assets, Citigroup has issued preferred shares to the Treasury, which has purchased an additional $20 billion in Citigroup preferred stock using TARP funds. Bank of America that merged with Merril Lynch on January 2nd 2009, has problems that was solved as in the case of Citibank. It was provided by protection against the possibility of unusually large losses on a pool of approximately $118 billion of financial instruments. On the other hand Bank of America had to issue preferred shares to the Treasury and FDIC as the providers of the protection.

3. 2. The Eurozone

The ECB as other central banks tried to prevent against financial crisis by using all possible tools to prevent further deterioration of the financial market and after all return to the positive numbers, However, there are differences between the Eurozone and the US in the structure of financial markets. In Eurozone sector, the financial market is much more biased towards the banking sector than in the US. On the other hand, the ratio of direct debt securities account to GDP in euro area is two times smaller than in the US.

According to the facts of stronger role of banking sector in euro area, the ECB was the first that took action already in August 2007 after the first signs of stress. There was lent €95 billion in overnight lending. These provisions kept on going until September 2008, when the difficulties rose to the level that required stronger actions for in providing liquidity (Table 1). Trichét [12] in his speech described three main building blocks of the new procedure of providing liquidity. The first block should help banks to provide credit to households on the same level as before. ECB used refinancing operations at very low lending rates with expansion of maturity up to six months, which made the liquidity unlimitedly available, because ECB was also prepared to provide any shortage of liquidity, even for this interest rates, so it acted *„as a surrogate for the market in terms both liquidity allocation and price setting.“* [12]. The second block was used to make it easier for banks to lend money. ECB used similar tool as in USA, where they enlarged the list of assets used as collateral. In Euro area government securities accounted only for 44 % of the nominal value of all assets used in collateral. The third block includes operational changes in October 2009 that was used to increase the number of counterparties that are able to participate in refinancing operations. Before crisis there were 1,700 credit institutions participating in refinancing operations, after the changes, the number increased to 2,200.

The ECB also used central banks swap lines and direct capital injections to companies were used in Euro area also relatively widely. In most of the countries, where the capital injections were used, it was done through acquisitions of preferred shares, only some countries decided to make it through the ordinary shares. When comparing the size of interventions (calculated as a percentage of GDP from year 2007 of a particular country), interventions in the countries from the Eurozone were mostly much smaller and did not reach the level of interventions in the UK or the US. However, interventions in UK are the highest, where the commitments of banks to U.K. government (and also through Bank of England) were £850 billion, which is around 60 % of UK´s GDP in 2007. The only state from the Eurozone that is comparable to the UK and the US, where interventions almost reaches 50 % of respected GDP, is the Netherlands with the amount over a half of their GDP from 2007. The biggest liquidity trouble in this country were caused by Belgian-Dutch group Fortis, what also affected the size of interventions in Belgium that was together with The Netherlands, Austria and Finland the only country from the Eurozone where interventions reached more than 30% GDP.

4. The Challenges of Liquidity Risk Management

During the global crisis, inter-bank lending stalled and capital markets froze, resulting in a liquidity crisis that subsequently highlighted inadequate liquidity buffers and poor liquidity risk management within banks [12]. As a consequence, liquidity risk management regulation needs to be revised. The already-mentioned liquidity coverage ratio proposed by BCBS is one of the first new regulatory liquidity standards for financial institutions expected in the future (Table 2). However, global coordination of liquidity standards is needed otherwise there could be an overall cost to a country or region's attractiveness from more aggressive regulation underpinning competitiveness of financial institutions affected by this regulation. For more details on risk management during the global crisis we refer to [8], [9], [9], [11] or [12].

As the global crisis has shown, a revision of Basel II is needed to reflect the current trends in the world financial markets. In this part we discuss new proposals from 2009 by the BCBS for international bank regulation (sometimes called Basel III) which includes requirements for higher quality, constituency and transparency of banks´ capital and risk management, regulation of OTC markets and an introduction of new liquidity standards for internationally active banks. Liquidity risk materialized during market crises, when some financial institutions were not able to fund their assets (e.g. Bear Stearns or Lehman Brothers). According to Basel III proposals, a new global minimum liquidity standard for internationally active banks will be introduced. This ratio will include a 30-day liquidity coverage ratio requirement underpinned by a longer-term structural liquidity ratio.

5. Conclusion

In the paper we presented basics of emergency liquidity risk management and its development during the 2007-2009 global crisis. Liquidity is defined as a capacity to obtain funding when needed. Liquidity risk -defined as a threat to this capacity to generate cash at fair costs- materialized during the global crisis. As a result, central banks around the world tried to ease the short-term liquidity pressures that came up during the crisis. The liquidity support measures were applied by all main central banks. We see five main regulatory issues requiring revision in coming years: liquidity measurement, intra-day and intra-group liquidity management, contingency planning and liquidity buffers, liquidity systems, controls and governance, and finally models testing the viability of business liquidity models.

Figuire 1: Funding and Market Liquidity Index (–, left scale, 1/1/1996=100) and Asset Price Volatility Index (–, right scale, deviations from period average)

Source: Bloomberg and IMF staff estimates

Table 1: Liquidity -providing factors in Eurozone (EUR billion)

Maintenance period ending on:	Liquidity-providing factors				
	Eurosystem´s net assets in gold and foreign currency	Main refinancing operations	Long-term refinancing operations	Marginal Lending Facility	Other liquidity-providing operations
2007 (31 Dec)	327.5	173.0	278.6	0.3	0.0
2008 (7 Oct)	417.3	174.1	334.3	7.5	5.9
2008 (11 Nov)	549.0	301.6	452.5	12.7	4.2
2008 (31 Dec)	580.5	337.3	457.2	2.7	0.0
2009 (9 June)	487.9	238.8	400.6	0.7	0.0
2009 (10 Nov)	413.0	52.3	626.1	0.3	20.1

Source: Authors based on ECB

Table 2: Perspectives of liquidity management regulation

Regulatory topic	Possible future action	Implications	Examples
Liquidity measurement	Prescriptive measurement methodology and stressed parameters per product	Significant upgrade of data gathering, liquidity measurement and MIS* system capabilities	**Europe:** CEBS** guidance to compute stressed liquidity position by projecting cash/collateral flows
Intra-day, intragroup liquidity management	- Demonstrate self-sufficiency across all group entities - Buffers/commitments to withstand severe intra-day stress	- Need to quantify liquidity risk contribution by each group entity and account for trapped liquidity - Management of intraday exposure across settlement/payment systems	**UK:** FSA*** guidance on measurement and management of intra-day and inter-group liquidity management as part of a bank's systems/controls requirements
Contingency planning and liquidity buffers	Formulaic specification of contingency/buffer requirements	- Construction of liquidity buffer from diversified set of highly liquid assets, capability to execute contingency plans under stress - Regional parameter calibration	**Switzerland**: SNB**** outline on increased liquidity buffers across wholesale and retail funding to be finalized by Q2 2010
Liquidity systems, controls and governance	Inclusion of regulatory oversight on an operational basis	Establish and demonstrate robust capabilities to measure and monitor evolving liquidity situation with senior management oversight	**USA**: Inter-agency guidance on liquidity management including corporate governance, strategies, policies, procedures and risk limits
Liquidity viable business models	- Forced separation of business areas to isolate and contain liquidity risks - Limitations on asset options available	- Implied shift in the source and maturity of funding and assets held by institutions - Quantification and inclusion of liquidity premium in pricing	**Global:** BCBS*****consultation paper outline on differential buffer requirements (e.g. wholesale vs. retail funding)

Notes: *MIS = Management Information System, **CEBS = Committee of European Banking Supervisors, FSA***= Financial Services Authority, ****SNB = Swiss National Bank, ***** BCBS = Basel Committee on Banking Supervision

Source: Authors based on Oliver Wyman (2010)

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SPSS AS A SUPPORT TOOL FOR MANAGERIAL DECISION-MAKING: AN APPLICATION OF THE STATISTICAL PROCESS CONTROL

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Abstract: Contemporary world can be characterized as a rapidly changing environment and it also brings not only opportunities, but difficulties too. It seems to be harder and harder to make right decisions in this complicated world. Intuitive way of decision making does not apply to be enough and it should be appropriately completed by exact quantitative methods for decision support. Managers could rely on methods and techniques such as marketing research, analyzing and using the data from marketing research, costs, revenues, profits, input, output modeling, simulation, quality control Fig.s, etc. This variety of methods and techniques is usually supported by software usage, with user-friendly graphical design. One of the appropriate software for decision-making support is SPSS. This paper deals with the SPSS usage for the case of statistical process control which can be a very useful tool for sustaining competitive advantage reached by quality delivered to the end customers.

Keywords: Decision-Making Support, SPSS Software, Process Quality, Statistical Process Control

1. Introduction

This paper focuses on process, quality of outputs, how to analyze processes in order to find out if the process is or is not in the statistical control. These days can also be denoted as the time of information and communication technology (ICT), when computers plays a very significant role in any situations when business decision are necessary to be made quick and as exact as possible. Statistical process control is not the exception from using computer applications. In this paper, there will be described several approaches of how to use statistical process control techniques to analyze univariate (with one measured characteristic only) normally distributed processes. The brief background of the theory will be supplemented with the practical use of SPSS, the statistical software useful to be taken as a managerial decision-making support.

About the area of the statistical process control there has been written a lot of works. It contains various books dealing with quality management, so that is a direction from management to statistical tools. Other books are written about statistics, in general, but they also include the part of the process control applications. Besides books, there are many conference proceedings papers, or science magazines articles, where authors focus on particular problems, specialized situations, for example, non-normally distributed process outputs, non-manufacturing processes, processes about service distributions, etc. From the books there can be mentioned, f. e. Statistical Process control by Oackland, published in 1993, as a first edition and the last 6th

edition in 2006. Other works are Statistical Process Control, the Deming Paradigm and Beyond by Thomson and Koronacki, published in 2002, Manufacturing Engineer's Reference Book by Koshal Dal, et al., published in 1993, Statistické metody pro zlepšování jakosti by Tošenovský and Noskievičová, published in 2000. From statistically oriented books Statistics for Business and Economics by Nebold, Carlson and Thorne, published in 2007, Statistics: Methods and Applications, by Hill and Lewicki, published in 2006, and other books. The scope of this field is very wide, so the article is aimed shortly on several classical Shewhart's control Fig.s of normally distributed outputs easily provided by SPSS, as the computer software utilization. This was the brief insight into the literature of the problems, being handled in this paper. There were many articles published about the area of statistical process control and various control Fig.s in Quality and Reliability Engineering International, where the whole volume 26 issue 2 was applied to this field of study.

2. Statistical Process Control

2.1 Process and its Attributes

2.1.1 What do Process, Quality and Other Core Definitions mean?

Process can be described in many ways. International Organisation for Standardization (ISO) defines process as 'set of interrelated or interacting activities which transforms inputs into outputs' [1]. Oakland [5] defines process as 'the transformation of a set of inputs, which can include materials, actions, methods and operations, into desired outputs, in the form of products, information, services or – generally – results. Oakland also mentions that 'each process may be analyzed by an examination of the inputs and outputs in order to determine the actions necessary to improve quality'. Other definition [8] says that: 'Processes are designed to add value to inputs by changing them in some positive way' into outputs.

All processes can be monitored and brought 'under control' by gathering and using data. This refers to measurements of the performance of the process and the feedback required for corrective action, where necessary.

Quality is according to ISO 9000 [1] 'degree to which a set of inherent characteristics fulfils requirements.' ISO also brings the definition of the words 'inherent', and 'requirements'.

'Inherent means existing in something, especially a permanent characteristic' [1], and requirement is a 'need or expectation that is stated, generally implied or obligatory.' [1]

These terms are also defined and described by quality gurus, Deming, Juran, Feigenbaum, Taguchi, Ishikawa, Crosby and others.

2.2 A Brief History of the Statistical Process Control

It was at the turn of the century of the 19th and the 20th, when from the first time there was mentioned a statistical process control. Vilfredo Pareto pointed, that many failures in a system are the results of a small number of causes [9]. Despite other thoughts about the process variation and process control, it was Dr. W. Edward Deming, who is considered as a father of the statistical process control (abbr. SPC). Most significant contributions to this area have been delivered by Shewhart (in 1924) and Hotelling.

Shewhart and Deming, main persons in SPC area, in their book, Statistical Methods from the Viewpoint of Quality Control, wrote the first time in 1939: 'The long-range contribution of statistics depends not so much upon getting a lot of highly trained statisticians into industry as it does on creating a statistically minded generation of physicists, chemists, engineers and others who will in any way have a hand in developing and directing production processes of tomorrow.' [7]

In the 1993, before his death, Deming claimed: 'Management still does not understand process variation' [5].

2.3 Statistical Process Control and Classical Shewhart Control Fig.s

This chapter deals with the theoretical background of statistical process control, as such and the deFig. of the Classical Shewhart Control Fig.s being used for various univariate processes with the output normal distribution, Fig.d with classical Gauss-Laplace 'Bell Curve'. It can surely appear that there are also non-normally distributed outputs of processes, which follow distributions, for example, Weibull, Gamma, Beta distributions etc. As mentioned before, this paper deals with normally distributed, 'Bell-curve shaped', process outputs where is analyzed the only one measured parameter. The relationship between two parameters of the normal distribution - the mean and standard deviation - and the probability of the occurrence of outputs is depicted in Fig. 1 below.
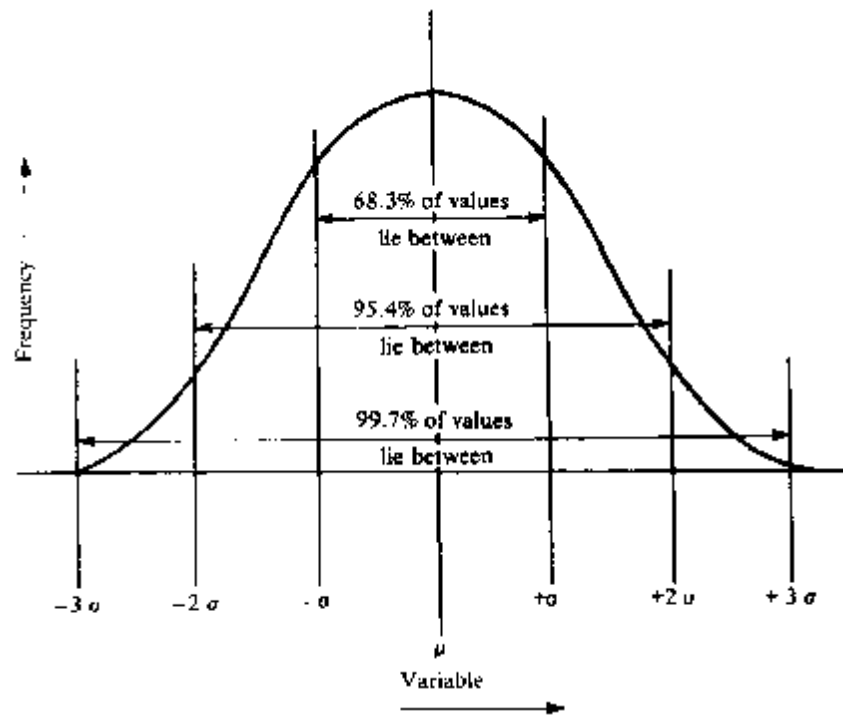
Fig. 1: Normal distribution and Gauss-Laplace Curve

Source: Oackland, 2003, p. [5]

2.3.1 Statistical Process Control

SPC can be defined as 'the application of appropriate statistical tool to processes for continuous improvement in quality of products and services, and productivity in the workforce'. [5] Tošenovský a Noskievičová [10] define SPC as 'a precautionary tool for quality management based on well-timed detection of the significant deviations from the predefined level inside a process, because it is possible to implement interventions into the process to reach the goal of keeping it on acceptable and stable level, eventually enable an improvement of the process'.

SPC is comparatively a wide area, where the statistical methods, tools and techniques meet with the management of the process. The main and common concept of most SPC techniques is demonstrated for example in [5] where the process in statistical control brings a predictable variability and no assignable causes exist. On the other hand for statistically uncontrolled process outputs it is not possible to predict variable and the quality of products is not likely to keep sustainable.

In SPC there can be used various Fig. techniques, such as control Fig.s, tally Fig.s, histograms, Pareto Fig.s, Ishikawa Fig.s. This paper considers control Fig.s to be the most significant in SPC.

2.3.2 Shewhart Control Fig.s in general

Reynolds and Stoumbos write in their article [6] that basically 'control Fig.s are used to monitor process to detect special causes that can produce changes in the distribution of the process variable of interest. The traditional approach to monitoring

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μ and σ is to use two control Fig.s, one designed to monitor μ and the other designed to monitor σ. Traditional control Fig.s are based on the normality assumption.' Their definition [6] of control Fig.s can be pointed as: 'Let X denote the process variable being measured, and suppose that X has a continuous distribution with mean μ and standard deviation, σ. Let μ0 be the in-control or target value for μ, and let σ0 be in-control value for σ. In practice, σ0 (and sometimes μ0) would need to be estimated from process data during a preliminary Phase I in which process data are collected for this purpose. The objective of monitoring the process is to detect any special cause μ from μ0 and/or changes σ from σ0.'

Classical Shewhart control Fig.s were developed in 1924 and it was the groundwork of the complex SPC system [10]. The basic assumption of the use of classical Shewhart control Fig.s is the adequate number of process output samples (practically at least 20 samples). The usage of Shewhart's control Fig.s is dependent on three basic criteria. The first criterion is if the process produces measurable or immeasurable outputs. The other one looks on the sample size or what to summarize and the standard criterion is the in satisfaction of the normality assumption, as mentioned before. This division can be found clearly in Tošenovský and Noskievičová [10].

The principle of SPC [10] lies in setting the hypothesis H0 which claims that the process is under the statistical control and the alternative hypothesis H1 means that the process is out of the statistical control. In statistically controlled process the acceptance region of the null hypothesis lies between the upper (UCL) and lower control lines (LCL) and the regions out of this area present the field of rejection of the null hypothesis and turning to the acceptance of the alternative one. The values UCL and LCL are called the critical values and their values depend on the significance level α, i. e. the probability of the I. type error. In SPC this level is called the risks of the false alarm and it Fig.s the probability of useless searching for the assignable cause although the process remains in statistically controlled state. The probability of β, the II. type error, so-called neglected alarm, shows the probability that the control Fig. will not detect the assignable causes (all points lies inside the UCL and LCL area but they do not shape any random cluster).

2.4 Construction of the Classical Shewhart Control Fig.s

Let us say that we have measurable quality characteristics, at first. We can use three control Fig.s as they were mentioned above, however, the one case samples are not usual so the main focus will be given on $\overline{x}, R$ Fig.s and $\overline{x}, s$ Fig.s. There will be also given a smaller scope to other types, i. e. control Fig.s for immeasurable process outputs, where is about to summarize the number of non-conformities.

2.4.1 $\overline{x}, R$ Control Fig. for smaller samples

Classical $\overline{x}, R$ Fig.s are used for smaller samples, practically in the range from 2 to 10 units in a sample. The whole process of the testing process outputs starts with the setting the test criteria to be the sample means $\overline{x}_j$, where the sample size of all samples

stays constant to n. The process of the control Fig. $\bar{x}, R$ construction is described in more details in [10] and id also uses the help of standard ISO 8258 for specified constants describing in formulas. From the basic formula computing the sample mean [10]

$$\bar{x}_j = \frac{1}{n} \sum_{i=1}^{n} x_{ij} \; ; \tag{2.1}$$

where x_{ij} is the i-th measured value of the analyzing variable in the j-th sample, and not know the target values μ_0 and σ_0 and the false alarm risk at the level $\alpha = 0,0027$, we can set the control central line (CL), as follows [10]:

$$CL = \hat{m}_0 = \bar{\bar{x}} = \frac{1}{k} \sum_{j=1}^{k} \bar{x}_j \; ; \tag{2.2}$$

where k represents the umber of samples used for CL computation, at least 20. Then we can set the upper and lower control limits (UCL and LCL) and according to [10] we arrive with the final formulas for UCL and LCL, as follows [10]:

$$UCL = D_4 \cdot \bar{R}, \tag{2.3}$$

$$LCL = D_3 \cdot \bar{R}. \tag{2.4}$$

Values of D_4 and D_3 are also contained in the standard ISO 8258 for the sample sizes from 2 to 25 units. They depend on the sample size [10].

2.4.2 $\bar{x}, s$ Control Fig. for samples greater than 10 cases

The key-stone of the assumptions is similar to $\bar{x}, R$ Fig.s, so that the samples come from normally distributed process outputs and the false alarm risk level is set to be α equal to 0,0027. CL is derived in the same way as in the $\bar{x}, R$ Fig.s, according to the formula (2. 2). For control limits we do need to have a estimate of the standard deviation of the process, $\hat{s}_0$. It can be found from the sample standard deviation, s, then:

$$\hat{s}_0 = \frac{\bar{s}}{C_4}, \tag{2.5}$$

where $\bar{s}$ means the mean of standard deviations of all samples and C_4 is a constant dependent on the sample size and the assumption of the normal distribution of the controlled variable, and it is included in the standard ISO 8258 [10]. The mean of all standard deviations is computed according to:

$$\bar{s} = \frac{\sum_{j=1}^{k} s_j}{k}, \tag{2.6}$$

where k presents the number of samples (at least 20), s_j is the sample standard deviation in j-th sample and is computed according to the formula:

$$s_j = \sqrt{\frac{\sum_{i=1}^{n}(x_{ij} - \bar{x}_j)^2}{n-1}} \, , \qquad\qquad (2.7)$$

After several steps of deriving, described in for example in [10], we can reach the final formulas for UCL and LCL:

$$UCL = B_4 \cdot \bar{s} \, , \qquad\qquad (2.8)$$

$$LCL = B_3 \cdot \bar{s} \, . \qquad\qquad (2.9)$$

where B_3 and B_4 are contained in ISO 8258 [10].

There are many other control Fig.s. For immeasurable characteristics there are control Fig.s for counting the number non-conformity outputs of the process or control Fig.s for number of nonconformities per unit used in situations where n is constant for all samples, but there is only one type of product to be analyzed, or non the same n for all samples. Several outputs are distributed according to Poisson distribution, but there can be found an approximation to the normal distribution. As mentioned before, the aims of this paper focus primarily on $\bar{x}, R$ and $\bar{x}, s$ Fig.s, and the usage of SPSS for SPC.

Classical Shewhart Control Fig.s have all several basic evaluation rules. For the simple description of possible causes if the particular rule, which is violated, see the literature, for example already mentioned [10].

SPSS Statistics 17 (also version 18) uses following control rules:

- any point above or below 3 sigmas,

- 2 consecutive out of last 3 points lie above or below 2 sigmas,

- 4 consecutive out of last 5 points lie above or below 1 sigma,

- 8 consecutive points above or below the central line,

- 6 points in a row are trending up or trending down

- 14 points in a row are alternating.

3. Case Study

3.1 SPSS and Control Fig.s

SPSS Statistics (originally meant Statistical Package for the Social Sciences) represents the software with the use in many practical applications, for example we can use SPSS for questionnaire data analysis, correlation, regression analysis, hypothesis testing, model creating and estimating, time series, cross-sectional, panel data analysis, Pareto or control Fig.s and other tools. SPSS Statistics is coming through the development. This fact is proved by the existence of the latest version 18. This statistical analytical software brings one of the biggest advantages for IT non-specialist because the user interface is user-friendly. In the following part of this paper, there will be demonstrated the usage of the specific data set of the ring diameters. Samples

reached from the process simulation must be tested for the satisfaction of the normality assumption. For testing it was used the exploration Kolmogorov – Smirnov normality test of samples in SPSS (see in the menu analyze, descriptive statistics and explore and nonparametric tests, more precisely 1-sample K-S test).

3.1.1 Process Output Data Set

At first, we must define the data sets for quality control, before we use SPSS for the practical survey of the process control. Let us assume that we have two data sets. First data set is a process output of the ring diameters with the normal distribution parameters, for mean with the value 15,00 mm and for standard deviation with the value 0,10. First data set contains 30 samples with 8 units in each sample. The second data set is based on bigger ring diameters, with the parameters, for mean with the value 17,00 and for standard deviation with the value 0,10. The second data set contains 30 samples with 12 units in each sample. It implies that the first data set is developed for $\bar{x}, R$ control Fig. and the second data set for $\bar{x}, s$ type of control Fig.. Data sets are displayed in tables in Appendix part. Both data sets were tested for the normality by Smirnov-Kolmogorov test of normality. All samples embody the values of test criterion to accept the hypothesis claiming their normality.

3.1.2 Control Charts Analysis

Before the analysis, let us mention that the process outputs specification limits were set to be equal to the central line and control limits (UCL and LCL). At first, let us analyze the control Fig. for the mean of the diameters of the smaller rings, i. e. with 15,00 mm specified mean. In the mean Fig. we can see no subgroup mean out of the control lines, but there was found one pattern violating the control rules. Eight consecutive points follow below the central line, to be exact points from the sample 6 to the sample 14. It could show the problem of existence of some non-random causes. One of more possible causes could be in personal changes of people working on the machine. The exact cause depends on the particular company and could be found out by using team based creative thinking techniques, for example Ishikawa Fig.. Attention should be paid to the means of subgroups 22 and 24. Although they do not violate control limits, they appear to be close to them. Control Fig. for the range does not display any significant problems of strongly changing variability. The range does not also reflect the significant trend in variation. Ranges of samples fluctuate in the neighbourhood of the total average range 0,305. However, there are four points of the mean range of samples 6, 14, 21, and 26, where the difference from all 30 samples range mean is clearly more significant than others. More clearly it can be seen in the Fig. 2
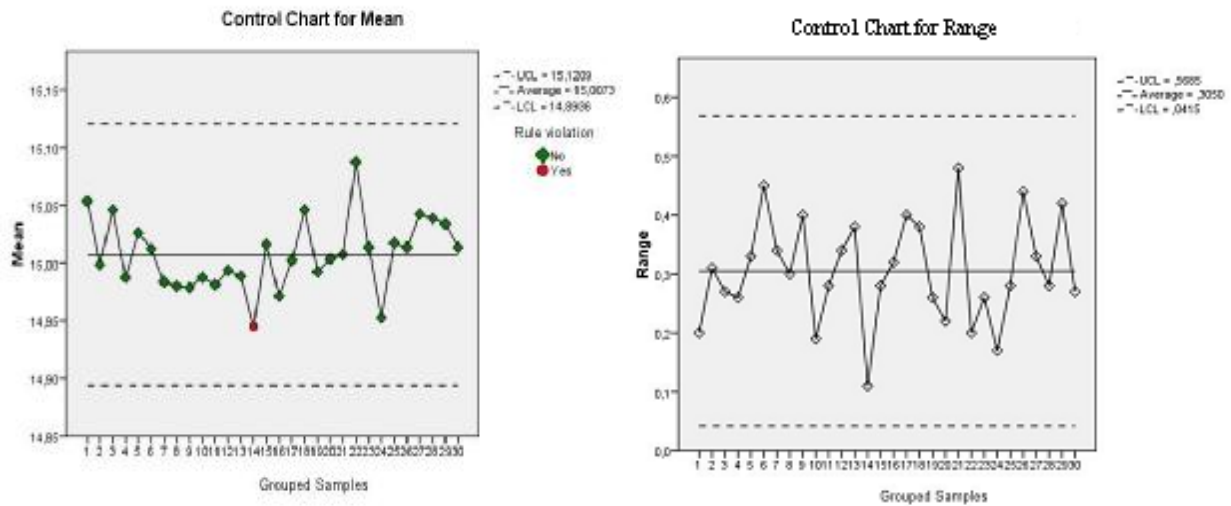
Fig. 2: Ring diameters 15,00mm analysis of the mean and range; Source: SPSS output of the case study experiment

Now let us analyze the process outputs of ring diameter with prescript mean 17,00mm. It was used $\bar{x}, s$ control Fig. except for $\bar{x}, R$ with regard to having more than 10 units of sample size. Again, SPSS Statistics showed that there is one violation of the control Fig.s rules. We cannot see any violating the control lines, but there can be seen several possible patterns of potential non-randomness in the Fig.. Although the rule is violated in the raw of outputs of samples 7 to 11, we can see the small trend from the sample 7 to the sample 22 and then the run of point is without any problem. Let us express the possible cause of strong decreasing from the sample 6 to the sample 7 and then trending up to the sample 22. From the 7 sample, the machine was operated by a new employee. The run of points in control Fig. for a mean is shown in Fig. 3.
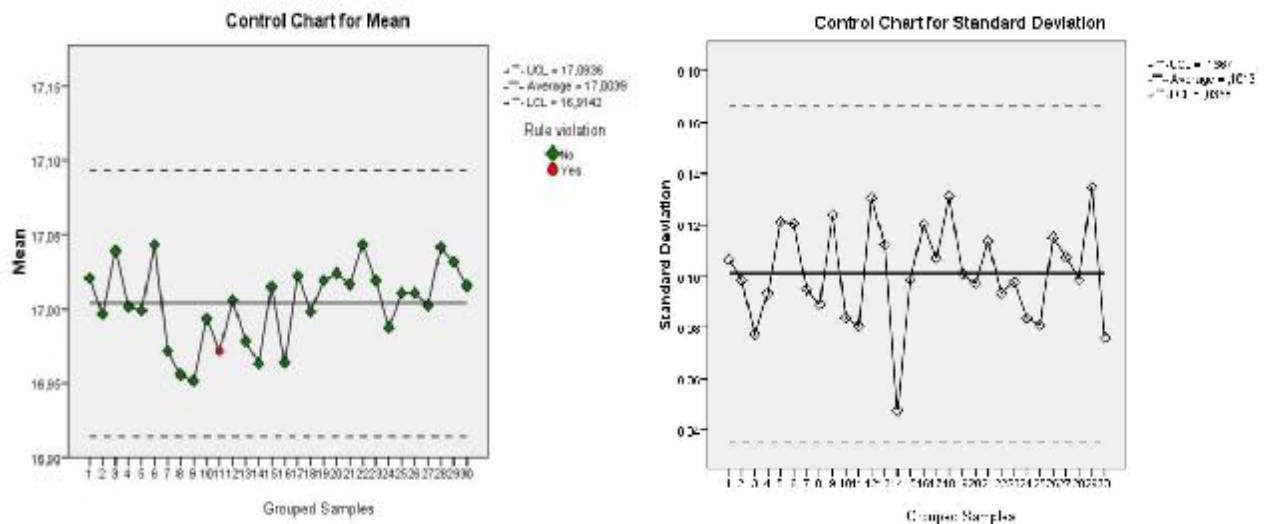
Fig. 3: Ring diameters 17,00mm analysis of the mean and standard deviation; Source: SPSS output of the case study experiment

The variation, displayed in the control Fig. for the standard deviation (see Fig. 3), seems to be scattered around the prescript value 0,10mm and does not show any significant non-randomness during data collecting. Awareness could be required in the value of the sample 14, which has the standard deviation near the lower control limit line. The attention needs to be paid to the next continuing of the process, because the variability could point to the little rising trend.

The both data sets for different ring diameters have a lot in common. During process assessment period there was no significant violating the outputs parameters according to control limit lines but the problem areas appeared anyway. There can be assignable causes that changes process outputs in a way that they do not reflect in products deflects but some patterns can show statistically uncontrolled process which can lead to needless costs in a future.

4. Conclusions

Process managing is the wide, but important area for reaching the continual sustainable growing of the value of the company. Shewhart control Fig.s are the helpful tool for process control analysis and they still have their importance in decision making. In our post-modern turbulent age we should take adequate care of any kind of competitiveness, especially the capability of customer satisfaction with sustaining or improving the expected quality of products. These days when there are a lot of activities to be managed in every minute, computers play a huge role. There are many software tools which provide the quicker analytical outputs for decision making. This paper brought an insight into the possibility of the use of SPSS Statistics (version 17) as a helping tool for analyzing statistical control of the process. This software was also used for testing the assumptions. Control Fig.s presents the useful tool for the both operating management of manufacturing business units, and for the top managers to control how the performance of the company is changing during a time period and it can set the standards for benchmarking.

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Appendix 1

Tab. 2: Process output of ring diameters , 30 samples with 8 units, generated by the generator of pseudorandom numbers with MS-Excel

Sample	Unit Cases							
	1	2	3	4	5	6	7	8
1	14,97	15,17	15,07	15,04	15,10	15,04	15,03	15,01
2	14,87	14,84	15,03	15,06	15,01	14,94	15,15	15,09
3	15,02	15,05	14,91	15,02	15,11	15,07	15,01	15,18
4	15,13	15,09	14,98	14,90	14,99	15,05	14,89	14,87
5	15,12	15,19	15,01	15,12	14,92	15,11	14,86	14,88
6	15,17	14,99	15,06	14,97	15,11	14,72	15,02	15,06
7	14,78	14,95	15,01	14,92	14,94	15,05	15,10	15,12
8	14,98	15,07	14,91	14,92	15,05	15,15	14,85	14,91
9	15,11	14,96	15,19	14,96	15,05	14,83	14,94	14,79
10	14,89	15,08	15,05	14,95	14,97	15,00	15,05	14,91
11	14,93	14,86	15,01	14,95	14,96	15,14	14,98	15,02
12	14,83	14,92	15,08	15,08	14,86	15,17	14,97	15,04
13	14,82	14,85	15,09	15,05	15,20	15,02	14,98	14,90
14	14,90	14,96	14,94	14,94	14,94	15,01	14,96	14,91
15	14,92	15,00	14,91	15,13	15,01	15,19	14,92	15,05
16	14,79	15,00	15,11	14,82	14,98	15,00	15,06	15,01
17	14,94	14,97	14,88	15,06	15,28	14,93	15,01	14,95
18	14,96	15,22	14,84	14,99	15,13	15,09	15,13	15,01
19	15,01	14,83	15,07	15,00	15,09	15,00	15,03	14,91
20	14,96	14,93	15,06	14,93	15,13	15,10	15,01	14,91
21	14,97	14,74	15,22	14,95	15,02	15,04	15,02	15,10
22	14,96	15,14	15,14	15,08	15,05	15,15	15,02	15,16
23	15,13	14,87	15,13	15,08	14,98	14,99	15,00	14,93
24	14,99	14,93	15,01	15,05	14,88	14,90	14,88	14,98
25	14,98	15,08	15,00	15,07	15,13	14,85	15,02	15,01
26	14,95	15,05	15,05	15,16	14,97	14,74	15,01	15,18
27	15,20	15,09	15,00	15,03	14,87	15,01	15,08	15,06
28	15,09	15,06	14,89	15,06	15,08	15,03	14,93	15,17
29	15,24	14,86	14,82	15,19	15,08	15,00	15,06	15,02
30	14,93	14,89	15,08	14,97	15,04	15,02	15,02	15,16

Appendix 2

Tab. 3: Process output of ring diameters, 30 samples with 12 units, generated by the generator of pseudorandom numbers with MS-Excel

Sample	Unit cases											
	1	2	3	4	5	6	7	8	9	10	11	12
1	16,97	17,17	17,07	17,04	17,10	17,04	17,03	17,01	16,94	16,78	16,94	17,16
2	16,87	16,84	17,03	17,06	17,01	16,94	17,15	17,09	16,90	17,05	17,09	16,93
3	17,02	17,05	16,91	17,02	17,11	17,07	17,01	17,18	17,12	17,05	16,92	17,01
4	17,13	17,09	16,98	16,90	16,99	17,05	16,89	16,87	17,09	17,12	16,99	16,92
5	17,12	17,19	17,01	17,12	16,92	17,11	16,86	16,88	16,83	16,90	16,98	17,07
6	17,17	16,99	17,06	16,97	17,11	16,72	17,02	17,06	17,13	17,12	17,15	17,02
7	16,78	16,95	17,01	16,92	16,94	17,05	17,10	17,12	16,98	16,94	16,87	17,00
8	16,98	17,07	16,91	16,92	17,05	17,15	16,85	16,91	16,89	16,93	16,91	16,90
9	17,11	16,96	17,19	16,96	17,05	16,83	16,94	16,79	16,81	16,83	16,98	16,97
10	16,89	17,08	17,05	16,95	16,97	17,00	17,05	16,91	16,92	17,14	16,89	17,07
11	16,93	16,86	17,01	16,95	16,96	17,14	16,98	17,02	17,05	16,90	16,86	17,00
12	16,83	16,92	17,08	17,08	16,86	17,17	16,97	17,04	17,09	17,15	16,78	17,10
13	16,82	16,85	17,09	17,05	17,20	17,02	16,98	16,90	16,99	16,88	17,06	16,90
14	16,90	16,96	16,94	16,94	16,94	17,01	16,96	16,91	16,99	16,96	16,97	17,08
15	16,92	17,00	16,91	17,13	17,01	17,19	16,92	17,05	17,02	16,87	17,04	17,12
16	16,79	17,00	17,11	16,82	16,98	17,00	17,06	17,01	16,96	17,16	16,80	16,88
17	16,94	16,97	16,88	17,06	17,28	16,93	17,01	16,95	17,09	17,00	17,12	17,04
18	16,96	17,22	16,84	16,99	17,13	17,09	17,13	17,01	16,95	17,03	16,81	16,82
19	17,01	16,83	17,07	17,00	17,09	17,00	17,03	16,91	17,23	17,10	16,95	17,01
20	16,96	16,93	17,06	16,93	17,13	17,10	17,01	16,91	17,07	17,19	16,90	17,10
21	16,97	16,74	17,22	16,95	17,02	17,04	17,02	17,10	17,06	16,99	16,99	17,10
22	16,96	17,14	17,14	17,08	17,05	17,15	17,02	17,16	16,90	16,90	17,01	17,01
23	17,13	16,87	17,13	17,08	16,98	16,99	17,00	16,93	17,09	16,94	17,17	16,92
24	16,99	16,93	17,01	17,05	16,88	16,90	16,88	16,98	17,14	17,08	16,95	17,06
25	16,98	17,08	17,00	17,07	17,13	16,85	17,02	17,01	16,93	17,09	16,92	17,05
26	16,95	17,05	17,05	17,16	16,97	16,74	17,01	17,18	16,97	17,05	16,93	17,07
27	17,20	17,09	17,00	17,03	16,87	17,01	17,08	17,06	16,87	16,85	17,06	16,91
28	17,09	17,06	16,89	17,06	17,08	17,03	16,93	17,17	17,14	16,86	17,13	17,06
29	17,24	16,86	16,82	17,19	17,08	17,00	17,06	17,02	17,10	16,99	16,86	17,16
30	16,93	16,89	17,08	16,97	17,04	17,02	17,02	17,16	17,02	16,94	17,10	17,02

UTILIZATION OF QUANTITATIVE METHODS IN THE DECISION MAKING PROCESS OF A MANAGER

Pavel Duspiva, Josef Novotný

Abstract: For economic phenomena and their quantification there is a range of models that produce varying results depending on their formulation. In relation to investment decision making various models for calculation of the intrinsic value per share and their differing results are demonstrated. In order to use individual models, market value forming factors, which are the basis of these models, are defined as well as assumptions for their validity.

Keywords: *Quantitative Methods, Manager, Intrinsic Value Per Share, Models, Decision Making*

1. Introduction

A fundamental activity of the manager in the process of management is decision making. The manager makes decisions intuitively according to their knowledge, experience and practice, frequently according to their concepts or moods. In respect of significant decision-making tasks it is advisable to utilize exact decision making based of formalized economic models using mathematical tools, statistics, optimizing methods etc.

As far as exact decision making is concerned quantitative methods are available which can be used to a sufficient degree for individual types of tasks. Quantitative methods are based on models whose objective is to formalize and reflect a given practical problem as faithfully as possible. This approach to decision making is considered scientific and is valid for almost all economic phenomena. Nonetheless, every economic model is based on a certain level of abstraction that is generally accepted by experts. Thus scientific theory as model-based explication of economic processes has become an inseparable part of given reality.[5]

Models and their application produce very precise outputs, calculated parameters and values. Use of these outputs in decision making need not always necessarily lead to good results. This is because every model – qualitative method and formula for calculation of economic quantities is based on certain assumptions. Reliable results are achieved when such assumptions are fulfilled in economic reality. The correspondence between assumptions and reality is very rare in practice. The reason for this is the fact that economic systems and phenomena are not entirely predictable since the development of socio-economic systems and phenomena is not linear. Economic models are, as a rule, accepted due to their higher or lower plausibility in regard to their suitability which is again underlain with the belief that they correspond to certain notions about economic reality. Economic models gradually replace one system with another according to the understanding of decisive factors of the development of economic reality.[5]

The main aspect influencing selection or acceptance of a concrete model is the choice of the manager or economist. Therefore selection of an economic model is

based on professional competence, knowledge and preferences of every individual. The manager picks such model that corresponds best to their idea of correctness of assumptions of a given model and expected results. This is true especially when there are more mathematical models available for calculation of a single economic quantity or phenomenon.

In the following text results of various models used for investment decision making are compared. The objective is to assign factors to individual models on which the models are based and determine assumptions for their validity. The definition of factors and assumptions of validity for examined models makes it possible to evaluate all possible solutions in the final decision making of the manager.

2. Decision making concerning investments into securities

Utilization of exact methods of decision making based on mathematical models can be demonstrated on the sphere of financial resources allocation. As an example decision making in the course of investing into securities, or into shares, to be more specific, can be looked into. Managers in the role of investors can face this problem when aiming to increase the value of free financial resources of their company on the capital market or when considering a purchase of a controlling amount of shares in order to take over management over a concrete joint-stock company, which may often be their competition. A key question for correct investment decisions is correct evaluation of the share value, that is, establishing the intrinsic value per share.

The intrinsic value per share reflects the real value of a given joint-stock company resulting from the economic situation, financial health and prospects of further growth. The intrinsic value per share deviates from the market price, which is a result of anonymous supply and demand on a regulated market, that is, on the securities stock exchange. An investment decision concerning purchase of shares is then based on comparison of the intrinsic value to the spot market value.[6]

When evaluating shares according to their intrinsic value there is a whole range of models used to calculate the intrinsic value. Nonetheless, these models are based on various market value forming factors that influence the market value and its shifting.

Economic theory at the moment gives 15 models for calculation of intrinsic value per share, and each of them is based on different factors and their validity is based on fulfilment of concrete assumptions. The most important models are:[3]

⇒ Dividend Discount Model – based on discounting predicted dividends back to present value,

⇒ Profit Model – based on the standard value of P/E ratio (spot market value to net profit per share) and predicted profit,

⇒ Combined Profit and Dividend Model – based on the combination of the both preceding models,

⇒ Free Cash Flow Model – based on discounting cash flows and the effect of tax shield,

⇒ Balance Sheet Model – five versions (nominal, book, substance, reproduction, liquidation) based on various evaluations of the property of a joint-stock company,

⇒ Substitution Model – based on substituting the evaluated joint-stock company with similar companies,

⇒ Historical Models – four basic versions (incomes, book value, dividends and cash flow) based on historical development of the market value per share and the given economic quantity.

In Table 1 market value forming factors are assigned to the models and assumptions of their validity are determined.

Tab. 1: Models for calculation of intrinsic value per share

Model	Factors	Assumptions
Dividend Discount Model	Payment of dividends	Continual growth of dividends
Profit Model	Net profit	Accomplishment of profit, determining the correct P/E ratio value (ratio of market value to net profit per share)
Combined Model	Dividends, Profit	Growth of dividends, Accomplishment of profit, Correct P/E ratio value
Free Cash Flow Model	Cash flows	Increase in cash flows and utilization of tax shield
Balance Sheet Model	Value of the property	Correct evaluation of items in assets and liabilities
Substitution Model	Net profit, market value	Identity of economic parameters of substituted joint-stock companies
Historical Model	Incomes, Book value of property, Dividends, Cash-flow	Identification of mean historical values

Source: prepared by authors themselves

When evaluating a share it is the preferences of the manager that make him/her to pick a certain model to calculate the intrinsic value. It is a fact that every model produces different concrete results and thus leads to different investment decisions, i.e. whether to buy the share for a given market value or not. A wrong decision of the manager based on an unsuitably selected model has significant financial impacts, which tend to be negative.

An illustration of this can be evaluation of the shares of Pražská energetika a. s. company that were marketed at the Prague Stock Exchange. Table 2 shows the sums of the intrinsic value per share calculated current to a single date using various models.

The chosen example manifests that the used models determining precisely the intrinsic value per share on the basis of mathematical formulas produce extremely different results. The lowest value of 194.41 CZK has been calculated using the historic model of cash flows and the highest value of 2 829.21 CZK has been obtained through the profit model. The arithmetic mean of the shown thirteen evaluations is 1 491.08 CZK. The deviation of the highest value from the mean is 189.7%. The spot (current) market value of the share of Pražské energetiky a. s. at the Prague Stock Exchange for the date of calculation was 1 895 CZK. Thus ten models showed that the share was undervalued on the market with the conclusion that it can be bought as cheap while three models showed that the share was overvalued with the conclusion that it should not be bought since it was expensive.

Tab. 2 –Intrinsic Value per Share for the shares of Pražská energetika company in CZK

Model	Intrinsic Value
Historical model of CF (cash flow)	194.41
Balance sheet model – nominal value	1 000.00
Free cash-flow model	1 002.79
Substitution model	1 199.75
Balance sheet model – liquidation value	1 229.77
Dividend discount model	1 277.75
Balance sheet model – reproduction value	1 292.27
Historical model of BV – book value	1 673.36
Historical model of D (dividends)	1 725.64
Balance sheet model – BV (book value)	1 795.83
Combined dividend and profit model	2 020.63
Historical model of S (receipts or sales)	2 142.59
Profit model	2 829.21

Source: [4]

Great differences between the calculations of intrinsic value have also been confirmed in the evaluation of shares of Philip Morris company. Calculated values according to various models are shown in Table 3.

Tab. 3: Intrinsic Value per Share for the shares of Philips Morris ČR in CZK

Model	Intrinsic Value
Historical model of BV – book value	4 053.07
Historical model of D (dividends)	10 378.77
Historical model of S (receipts or sales)	10 586.38
Profit model (normal P/E ratio)	11 135.25
Dividend discount model	16 644.00

Source: [2]

The dispersion of the values from the lowest to the highest value is quadruple. Current to the date of evaluation the spot market value of the share at the Prague Stock Exchange was 17 240 CZK, thus all models indicated overvaluation. If the spot market value of the share dropped, which is quite common on capital markets due to significant volatility of current market values of shares (the market value of the share of Philip Morris ČR has varied between 3 745 CZK up to 19 540 CZK during the recent five years), the models would generate opposing investment recommendations.

Another pitfall for the use of the models for calculation of the intrinsic value per share lies in the setting of correct parameters that every model is based on. Thus, based on used parameters, we can arrive at different values even when using a single model for the calculation. For example in the profit model, in which the intrinsic value is the product of multiplication of the normal P/E ratio value by the predicted profit per share next year, the result depends on the correct determination of the normal (standard) value of the P/E ratio. Table 4 shows methods to determine the P/E ratio, identified values of the P/E ratio and the intrinsic value per share calculated while using the same predicted net profit per share. The data relate to Telefónica O2, a.s joint-stock company.

Tab. 4: Determining of the normal value of P/E ratio and the values of the intrinsic value per share for shares of Telefónica O2.

Method of determining the P/E ratio	Value of the P/E ratio	Values of the intrinsic value /CZK/
Industry value of the sector of tobacco companies incorporated in S&P 500 stock exchange index	7.23	236.64
Calculation according to the Gordon model	5.96	194.6
Calculation using a regression formula	11.15	364.80

Source: [1]

Again, the calculated sums for the intrinsic value show a significant dispersion in relation to the used P/E ratio value.

The model for calculation of the intrinsic value per share, although we consider it to be correct from the viewpoint of acceptance of the market value forming factor, is based on certain assumptions which, nonetheless, need not be fulfilled in reality. For example discount dividend models are based on the assumption that dividends will grow continuously, which may not be achieved in future. Joint-stock companies which have paid increasing dividends for years can lower the dividends in future or stop the payment whatsoever, as has Česká spořitelna joint-stock company done, which paid a dividend of 120 CZK per share in 2009, but only 30 CZK in 2010, which represents a drop of 75%. Almost each and every joint-stock company in the Czech Republic, as well as in the world, has recently decreased the dividends due to the current effect of the economic crisis.

6. Conclusion

Quantitative methods used in economics are an important tool for decision making of managers. For some economic phenomena there are more models, which define these phenomena and quantify them. This is attributable to the complexity and ambiguity of economic relations resulting from attitudes, motives and actions of economic subjects. By using individual models a whole range of differing results can be obtained for an analysed phenomenon. This has been manifested by the example of calculation of the intrinsic value per share as a basis for investment decisions.

When a manager or investor makes a decision concerning purchase of shares it is entirely up to this person which model for calculation they choose since they are convinced that the given model is the right one. What matters then is the preference for a market value forming factor on the basis of which a given evaluation model is formulated. The risk of selecting a wrong model in the course of investment decision making can be reduced by using a mean value of the calculated results for the intrinsic value per share. The mean value reflects the effects of other market value forming factors incorporated into individual models. A more accurate result is achieved through

a weighted mean, in which weights assigned to given models are defined by the manager according to his or her preferences for individual factors. The same approach can be used in the case of different values produced by a single model as a consequence of using different parameters, e.g. P/E ratio.

Despite differences and, at times, opposing results obtained through quantitative methods the use of these methods in the decision making process of managers is justified. They make it possible to assess a given economic phenomenon from various points of view and through various attitudes (influencing factors) and analyse the phenomenon in its complexity in this way. The range of obtained results delimits an interval within which the estimated economic phenomenon or quantity may vary. Thus managers gain good exact foundations for their decision making. The example of calculation of the intrinsic value per share shows the scope of models producing different results and a possible way of their utilization, e.g. by applying a weighted mean of obtained values. Therefore the use of quantitative methods in the managerial decision making is justified.

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IMPORTANCE OF STRATEGIC REGIONAL MANAGEMENT IN ENSURING AREA SAFETY

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Abstract: The article deals with the problems of strategic regional management in the Czech Republic. The aim of strategic management development activities in a regional background is to be successful in achieving objectives in the form of meeting citizen interests and needs in the managed localities and to support ensuring area safety. On that ground, cooperation of all included municipal subjects is necessary. Their cooperation is based on the equal participation principle. The main benefit has to be in the field of utility for all participants (regional and micro-regional clusters) in the process of regional development.

Keywords: Regions and Micro-Regions, Strategy, Strategic Regional Management, Safety Management, Area Safety

1. Introduction

The paper deals with the problems of strategic regional management in the Czech Republic (selected East Bohemian regions and micro-regions – Holicko, Vysokomýtsko, Chrudimsko).

The basic conceptual document in the field of the Czech regional policy is "Regional Development Strategy of the Czech Republic for the Years 2007-2013". Under Act on Support for Regional Development [3], it builds a basic framework for the Czech regional policy – complementarily with the European regional policy and on the other hand as a reference framework for development policies in regions and micro-regions. At this level, the principle of subsidiarity should be taken into account. The paper is focused on the relation between micro-regional and regional development policies.

Impetus to the formulation of development strategies at district, regional and micro-regional level happened the award done by the Ministry for Regional Development on the principles of the Czech regional policy. The objective of this award was to get a national overview of the regional development needs. Regional development strategy is therefore a very important document which affects the development and will further influence the form of development assistance from the European Union side (similar documents have all regions of the EU Member States and are an integral condition for the allocation of funds to specific projects).

In the context of the emergence at new Czech districts creation, a need for the creation of their own development documents appeared.

Identifying key development areas and evaluating of the relevance of the various critical factors for these areas is all important preparatory work within the establishment of regional and micro-regional development strategies.

2. Aim and Methodology

The main objective of the paper is:

a) to map out key development areas in the adjacent Czech micro-regions and their critical factors – rural areas and agriculture, personal quality of officials, environment, tourism, transport and safety.

b) to suggest a draft for common solutions in the context of an integrated view on the regions.

Mapping of key areas should provide new knowledge that can be used for better performance of public administration in order to promote micro-regional development.

Follow-up objective is represented by developing joint measures to tackle key areas from the integrated point of view.

The results are based on mapping done by SWOT analysis, research, public opinion and brainstorming within included municipalities. Further information on the situation in examined areas the comparative method provides.

3. Formulation of the Problem

3.1 Strategic Management in Regions and Micro-regions

Strategic management is based on strategic planning, which is the starting point for each management activity. The procedure for setting integrated comprehensive plans is usually composed of the following steps [2]:

1) Setting strategic region's goals.
2) Strategic analysis of region's surroundings (opportunities, threats).
3) Strategic analysis of region (strengths, weaknesses).
4) Determining competitive advantages of the region.
5) Proposals for the basic variants of complex strategies.
6) Processing region's strategy.
7) Development and harmonization of sub-variants of regional development strategies (in the area of marketing, innovation, finance, organization, human resources, etc.).
8) Selection of an optimal alternative of a comprehensive strategic region's plan.
9) Foundation of a comprehensive strategic region's plan.
10) Establishment of the budget.
11) Elaboration of a comprehensive strategic region's plan and its transfer into the tactical and operational levels.

According to the valid rules, they are the following tactical plans for 1 year stated: marketing, investment, research and development, personnel development, financial.

Operational plans are an adequate tool for the immediate objectives implementation. Tactical and operational plans and projects must include quantitative and qualitative parameters of objectives used for projects and sub-plans solutions, personal responsibility, costs estimate and possible external cooperation.

A comprehensive strategic plan is approved by top management.

3.2 Regional Management and Its Basic Elements

Content of regional management can be expressed [1] as a solution for the management development process using the principles and instruments at the (micro)regional level. The aim of the regional management is interregional disparities reduction, regional development problems solution and increasing the competitiveness of the regions.

The target group for regional management is represented by the region's visitors, institutions affecting the live in the region (both internal and external). Planning function and tool mix belongs to the main used principles in this field. In the field of marketing, marketing analyses, researches, forecasts and communication mix are used. Therefore, it can be noted that the outcomes of regional marketing activities are used as a support of regional manager's decision-making processes and development of the regional management in cooperation with all institutions, organizations and citizens involved, affecting the live in the region.

In opposite to managers-generalists regional specialist should still be well oriented in all aspects of regional problems affecting the function of the examined region, particularly relations between all elements in the territory. These relations reflect the effects of the legislative background, specific personal interests and, ultimately, political effects, of course.

The most significant difference in the field of regional managements problems solution (from otherwise specialized management sub-disciplines) is the fact that the activities within regional management are not done in the "laboratory environment", but require continuous contact and even cooperation with aforementioned institutions and organizations affecting the live in the region (and therefore the effort to develop).

In order to determine what should be the output of development problems solution, it is appropriate to recognize the position of regional management in the system of relations in dealing with regional development problems.
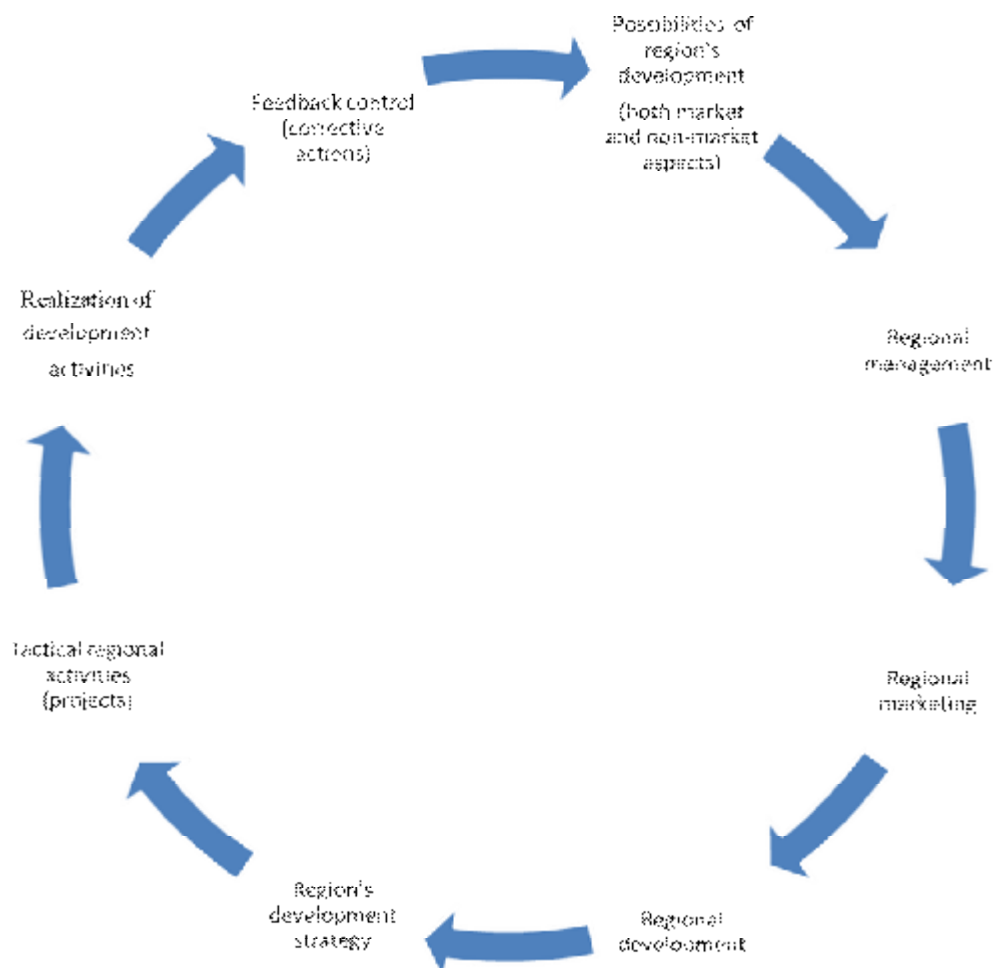
Fig. 1: The status of regional management in the region's development process

Source: Adjusted according to [4].

4. Solving the Problem

4.1 Suggestion of East Bohemian Regions' and Micro-regions' Strategy

The suggested strategy will be entirely compatible with the conclusions of the current situation analysis, general intentions and directions and attitudes preferred by the Czech regional policy, and will include in general [5]:

a) measures to improve the current situation;

b) measures to ensure the sustainable development of the territory.

We can state, economic growth (development) of researched micro-regions can be achieved in targeting key development areas.

The specific strategic vision for examined micro-regions can be formulated as follows:

Micro-region is a territory, which its (economic) development ensures by means of:
- *operating local government for the benefit of residents and the overall development of the region,*

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- *efficient transport infrastructure,*
- *protection and improvement of the environment,*
- *tourism development and good condition for recreation, while respecting nature and cultural heritage,*
- *functioning small business in particular in the field of agricultural production,*
- *provision of security for residents and tourists in order to attract as many new visitors as possible.*

4.2 Suggestion of Safety Management Implementation into East Bohemian Regions' and Micro-regions' Strategy

- *The exact definition of safety management focus (inspiration in the field of Quality Management).*
- *Mapping of key development areas and their critical factors.*
- *The proposed strategy for ensuring area safety must necessarily correspond to the aims and directions of the Czech and regional development documents.*
- *Continuous improvement spiral is the connecting link for all the topics in this field.*
- *The high attention should be paid to the new methods (local and regional development relationship, strategic planning, principles of creating documents in the field of safety management).*

5. Conclusion

Solving regional development (understand right solution) gives a great social responsibility to the investigator. Such a solution must be based on the imperative to ensure "sustainable development".

In any case, the solution of regional development problems represents a highly creative activity. Differences in socio-economic environment of each region in the Czech Republic does not allow implementation of the "cribbing solution procedure" principle among the regions.

The purpose of regions grouping is broader support of towns and villages to ensure the best possible services for citizens. The effectiveness of management is in particular dependent from the ability of its leaders to provide short- and long-term goals – and to develop the projects and programs, which as closely as possible reflect local conditions and respond to specific needs and requirements of citizens with a focus on rapid response, reaction efficiency, as well as new challenges and changing conditions in the regions.

In order to carry out long-term goals, it is necessary for regions to use the effective management principles. The aim of regional management is through cooperation among all incorporated towns and municipalities to seek about improvement in the field of citizens' satisfaction in those locations.

It is clear that in ensuring area safety must be involved all the bodies from the whole territory. It should be borne in mind that at the beginning of the 21st century

there are many serious threats, whether natural or human origin, which may seriously affect life in regions and micro-regions.

Within the objectives (including ensuring area safety), the focus is on continuous listening to the wishes and demands of citizens (needs analyzing), which represents one of the major bases for the determination of any long-term objectives, systematic needs analysis in regions, providing financial and material resources for its needs and providing the best services. Management at (micro)regional level requires not only good management skills, but also a deep knowledge of the specifics of local authorities and adequate management attitudes.

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QUALITY OF LIFE MODELLING FOR PERSONS WITH HEALTH DISABILITY IN THE CONTEXT OF REGIONAL STRATEGIC DOCUMENTS

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Abstract: This contribution describes the possibilities of utilizing modelling for social policy focused on people with health disability planning and development. This is a case study which is based on the results of questionnaire survey done in the territory of Pardubice region that included people with hearing disability. Data mining methods were used for this modelling. The achieved results can be analyzed in the quality of life definitions context and thus extend the possibilities of their interpretation.

Keywords: Quality of Life, Modelling, Public Administration, Health Disability

1. Introduction

Regional administrations have the obligation to plan social services. By doing this, they generally form and shape regional social policy. This obligation is given to regional administrations by Act no.108/2006 Collection, on Social Services, in the wording of later by-laws [26]. It is often discussed if such an obligation is obligatory also for other types of regional self-administration units and the opinions on this vary. However, municipalities of „tertiary type" perform such activities in an active way.

Community planning, despite various criticisms, can be considered to be a method that has already found its use and is now widely respected. The base background material for this type of planning is various clients need analyses, social services providers situation, demographic analyses and similar materials. The modelling brings in another possible view on the interpretation of the collected data. It allows to create and analyze models, to derive so called „decision rules" which may, jointly with other materials, serve as a guide for further process in fulfilling and implementing the goals and measures defined in such plans.

This contribution demonstrates on a concrete example the practical use of data mining methods in the interpretation of social reality. The example is demonstrated on a questionnaire survey done on people with hearing disability outputs analysis that was executed in the framework of midterm planning of social services in Pardubice region.

2. Quality of Life and Values as Key Factors Determining Social Policy Direction

Under the framework of midterm and community plans elaboration on the level of regions and municipalities there is created a lot of analyses and data material that becomes the background material for the drafting of concrete social policy strategic

development documents [25,11,19]. Next to these documents there exist other development plans (e.g. strategic, zoning plans, and similar).

Purposeful and effective social policy is such policy that reacts to the needs and opinions of those on whom such policy is generally targeted. Thus the research into needs, quality of life and to life habits represents the basic activities of empiric research in the given area. The findings of such research may be then considered to be certain indicators of the quality of the public policy decision making processes. The Quality of Life (QL) represents a value that is a subject to various measurements by researches from various research fields. This submitted text represents one of the many ways, however this way attempts to synthesize various approaches. The QL is composed of many elements that are in mutual connections.

For wider understanding of the QL notion is available the following definition. QL is a subjective and an objective evaluation of the existing life situation of a human individual, evaluation how such an individual perceives its position in live and how he/she seems himself/herself [18,24]. QL depends on age, sex, ethnical origin, health disability (physical health), mental health, spiritual situation, and environment and last but not least also on social relations (see Fig. 1). More in [2,7,8,9,10,13,17,20].
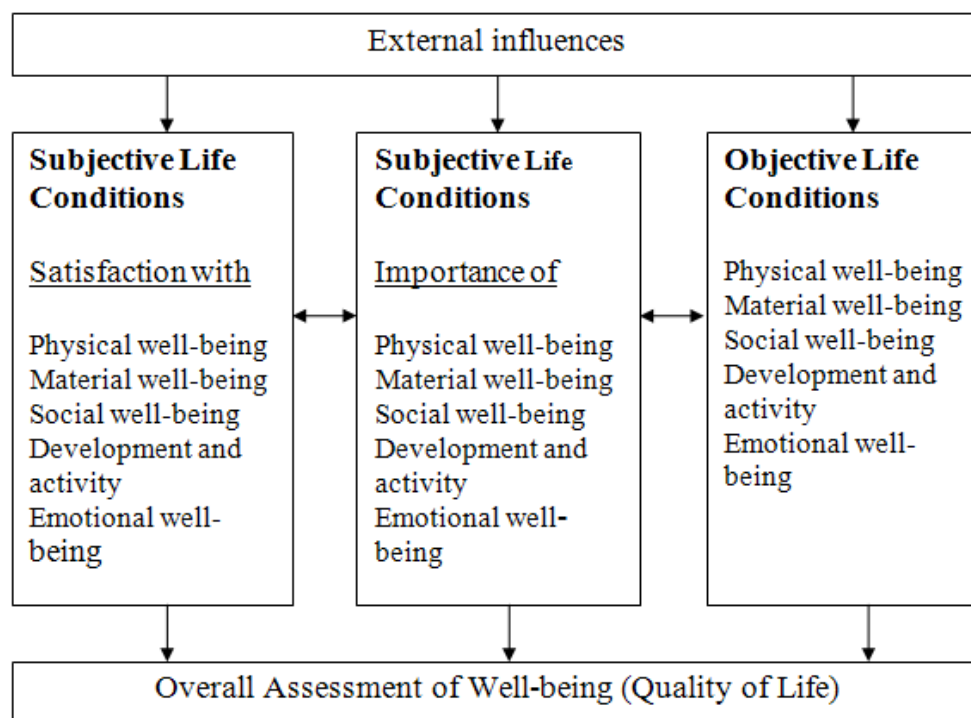
Fig. 1 Quality of Life [20]

QL (in a narrow view) is defined with respect to the subjective feeling of satisfaction of a concrete person with achieving his/her life goals and his/her orientation in life [12]. The direction is influenced by an individual person's value orientation. Values form an individual and unique personality system that is specific for each individual. Individual values in this system are then hierarchically ranked and the system, unless influenced by any situation with a major influence, is then highly stable in time [23]. Values can be considered to be the corner

stone of attitudes. Values show a tendency to their fulfilment. They can be considered to be standards, ideals that determine or route behaviour toward the implementation of the values [21]. According to [4] values represent not only the sought after, but also the conscious tendencies that constitute the bio- psycho - socio – spiritual essence of each individual existence.

From what is described above, it is clear, that the regional management, for the purpose to describe in a correct and exact way the social reality, cannot overlook the utilization of such an objective source of information as is an individual feeling of any single citizen of the relevant region. In the framework of community planning it is quite usual that the subjective feeling of the target group is mapped in the context of their individual needs. The issue of needs is, from a psychological point of view, very closely interlinked with values and this parallel cannot be ignored when drafting any realistic and functional plans.

3. Quality of Life Modelling for a Selected Group of Individuals

In this section, our work was focused on the collection and processing of data on the various aspects of hearing disability individuals in the Pardubice region and their QL. The essential data was collected by means of a questionnaire survey. The questionnaires were composed in such way that they met the needs of disabled persons and avoided any problems disabled persons could have had to fill in such questionnaires. The respondents were informed about the fact that this questionnaire should be used to map the needs and the QL of persons with hearing disability at the beginning of questionnaire. They were also informed about the fact that the outputs shall be used as a background material for the „Midterm Pardubice region social service development plan".

The process how this model was created is demonstrated in Fig. 2. The first step was to put together the questionnaires, then followed the pilot survey and the modification of the questionnaires that was followed by the survey itself. The collected data were translated into an electronic form and edited (formatting, cleaning). Then the modelling itself started, the results interpretation was done and relevant recommendations were drafted.

3.1 Collection of Data and Pre-processing of Data

The data collection was done by means of a questionnaire survey in the territory of the entire Pardubice region. It covered Pardubice area, Svitavy area, Hlinsko area, Ústí nad Orlicí area and Chrudim area. These areas were covered because in these areas there were self-help groups operating. These groups to a certain extent organize persons with hearing disability and they have good information about those people. Any activities of such groups are voluntary and dependent on time availability. A complex system that would keep „any evidence" of people with this disability is still missing.

We have managed to get returned 118 filled in questionnaires (unfortunately not all were suitable for further processing). The base analysis of this data, by the way of absolute and relevant frequencies and attitude scale, was published in [14].

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┌─────────────────────────────────────────┐
│      Questionnaire - pilot survey         │
│                                           │
│      Questionnaire - complete survey      │
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│         Data pre-processing               │
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│      • Data selection                     │
│      • Data cleaning                      │
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│         Model creation                    │
│                                           │
│      • Statistical analysis               │
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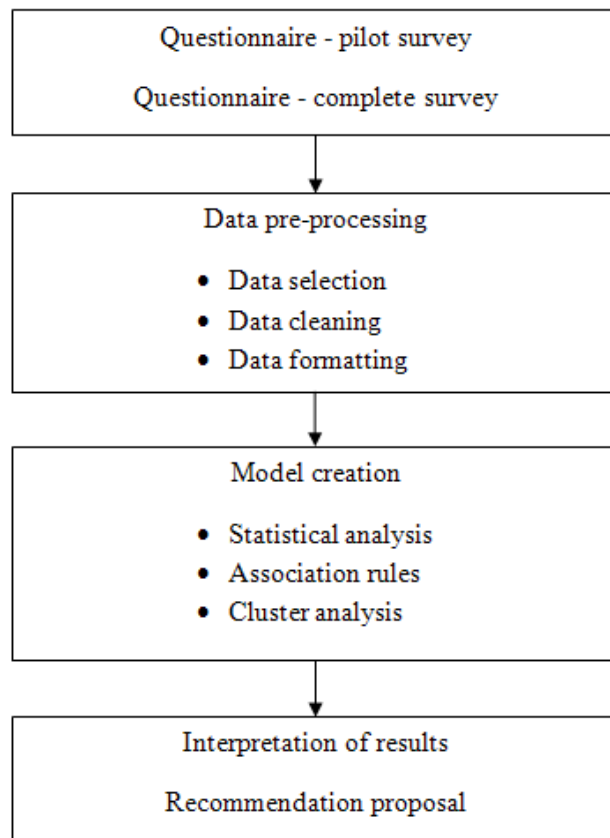
Fig. 2 Problem solution

In year 2006 there were about 5000 people with hearing disability in the territory of Pardubice region, out of that 739 persons were deaf [3]. Later data mention two other estimates of the number of such persons [14]:

[1] There are from 200 to 600 persons with hearing disability. 60 persons use the services of translators in the territory of Svitavy and Česká Třebová area. At the same time the estimate warns that there are persons who communicate by means of oral methods or use hearing aids and such persons are not included in the registry kept for the two above mentioned areas.

[2] There are 50 000 to 60 000 persons with hearing disability. This estimate is based on statistics and on demographic facts such as aging of the population (with older age hearing gets worse). This estimate does not differentiate persons according to the type of hearing disability and it covers majority of persons who have partial hearing and are in senior years. Persons suffering from the generative change in hearing have generally less problems than persons with other hearing handicaps.

To illustrate this demonstrated problem we have to add that the Pardubice region has 4519 km² (it is the fifth smallest region in the Czech Republic). Pardubice region comprising of 4 districts – Chrudim, Pardubice, Svitavy and Ústí nad Orlicí – included,

as of December 12, 2007, in total 451 municipalities (which is the sixth highest number of municipalities in a region among the 14 Czech Republic regions) As of the same date there lived 511 400 inhabitants in the region which represents 4,9 % of the total number of inhabitants in the CR. The district Pardubice is the district with the highest population density in the region. Then comes the districts Ústí nad Orlicí, then Svitavy and Chrudim. From the point of view of the age structure of inhabitants we could see in year 2007, compared to the previous year, continuing decline in the number of inhabitants younger that 15 years – compared to year 2006 by 0,9%, on the opposite we saw increase in the age group 65+ (by 1,6%). Old Age Index (the ration of 65+ persons to 15 and younger persons) had in year 2007 the value 100,6 (98,1 in year 2006). While in year 2007 for women the Old Age Index was 125, for men it was mere 77,8. This difference is caused mainly by lower average age at death with men, but also by a higher rate of newly born men [6].

3.2 Data Analysis and Model Design Proposal

The next phase of the questionnaire processing that is described in this article used statistics tools and data mining methods that helped to mine further information included in the questionnaires. The questionnaires were ready in printed form for the pre-processing. The first step was to review the printed questionnaires, their contents, completeness and possible errors. In this phase we saw, unfortunately, that despite the fact that a pilot survey had been executed, number of questionnaires were filled in incorrectly and could not be used for the automatic processing. The respondents made mistakes mainly in the number of answers they were to mark. Also in many cases, the respondents wrote down their opinions instead of marking answers. Respondents' opinions are valuable source of information for the processing personnel, however, for the translation of the questionnaire into the data matrix for the machine processing this is an error. Nonetheless, it proved the finding that such a target group needs a different form of survey - instead of using questionnaire it would be better to carry structured interviews with this target group persons next time. During a structured interview it is possible to explain more the basic meaning of the asked question and thus to eliminate unclear responses. The error-free questionnaire rate of return shall thus be increased. For all the above-mentioned reasons 66 questionnaires were finally used. The questionnaires were translated in an electronic form in a proper shape. Data matrix $\mathbf{M}(66 \times 35)$ was created in this way. The number of attributes 35 does not correspond to the number of questions since some questions (and the answers to these questions) were split to more than one attribute.

The base statistics data analysis was the first step. It appeared that the data in the data matrix are, from the point of view of the important attributes, distributed in the following way. Regarding the hearing disability type there were 53% hard of hearing, 35% deaf and 12% with lost hearing. Regarding the sex category there were 50% women and 45% men (5% did not state the sex). Regarding the age there were 3% under 20, 23% were between 21 to 35, 24% between 36 -50, 23% between 51 -65 and 27% were older that 65 years of age. 26% respondents lived in a village, 67% lived in a city (7% did not respond to this question)

Pearson's pair coefficient was used to illustrate the tightness of the stochastic bonding between individual attributes. For those attributes where strong correlation was found we executed further calculations and we interpreted the results. However we must keep in mind that when interpreting these results we must be very cautious since even a strong pair correlation is not yet any prove of a causal connection, it can be a random phenomenon [16]. In total we found a strong correlation in 37 cases. Interesting pair correlations are stated in the following Table 1.

Table 1 Selected Correlation Coefficients

Parameter *1*	Parameter *2*	Pearson correlation – coefficient values
Type_disability	ZP_Communication	-0.377
Type_disability	Achieved education	-0.342
Achieved education	Internet Utilisation	-0.355
Age_resp	Internet Utilisation	+0.470
Type_disability	Age_resp	-0.271

For the selected parameters (parameter 1 and 2) the following coding was used: Type of disability - 1 is hard of hearing, 2 is deaf , 3 lost hearing; Manner of communication - 1 is Sign Czech language , 2 is Sign language, 3 is /mouth observing, 4 is other; Achieved education - 1 is primary education, 2 is secondary education without school leaving exam, 3 is secondary education with school leaving exam, 4 is higher professional, 5 is college/university ; Age - 1 stands for age under 20 let, 2 is age from 21 to 35, 3 is from 36 to 50, 4 from 51 to 65, 5 older than 66; Internet utilization (the rate of utilization of this technology) - 1 is frequent use,…. 5 means does not use, is not interested to use.

Table 1 can be interpreted in the following way: persons with light hearing disability – hard-of-hearing use for communication more mouth observing and other means; on the other hand deaf people use more the sign language, Czech sign language. Persons with more serious disability have lower achieved education than people with less serious disability. Further on person with hearing disability with higher education use Internet services as a new technology to a higher degree than those with lower education. And last but not least younger persons with hearing disability use Internet much more often than the older persons. The last line in the Table means that older persons have hearing disability „hard-of-hearing" – that reflects hearing deteriorating with age.

In the next modelling phase association rules were used. There exist many methods for their derivation [15]. In this model the method „Generalized Rule Induction" [22] was used. This method generates association rules with the highest information content in the form *if antecedent(s) then consequent(s)*. In table 2 there are the outputs for selected attributes, while in columns 3 and 4 are stated also values support and confidence for the individual rules.

Association rules proved the correctness of the correlations between the type of disability and the age and the manner of communication calculated in Table 1.

Table 2 Acquired Association Rules

Antecedent	Consequent	Support	Confidence
Type_disability = 1.0	Age_resp = 5.0	27.27	83.33
Type_disability = 2.0	Age_resp = 3.0	24.24	56.25
Type_disability = 2.0	ZP_ communication = 2.0	28.79	73.68
Type_disability = 1.0	ZP_ communication = 4.0	10.61	100.0
Type_disability = 2.0	ZP_ communication = 1.0	9.09	83.33
Type_disability = 1.0	ZP_ communication = 3.0	50.0	69.7

Another used method was the cluster analysis (CA). In simple words it can be stated that the CA looks for objects or group of objects (clusters) that are mutually similar and at the same time differ from objects in other groups (clusters). The analysis itself has usually 5 steps – data acquisition, standardization, creation of input matrix, application of cluster method, calculation and comparison with correlation coefficient. CA methods can be divided into hierarchical and non-hierarchical (however there are also other divisions, e.g. in [1]. In this case the method called „Two Step Clustering" was used. The outputs are for better understanding illustrated in a graphic way in Fig. 3 and 4 (the parameters are marked similarly as in Table 1). From the Fig.s it issues that clusters are markedly visible both in the case of parameters „type of disability – education" and parameters „type of disability – manner of communication". Those correspond to the findings acquired by correlation analysis as well as by association rules. Thus the type of disability influences achieved education of persons with hearing disability (more serious disability means usually lower achieved education) and the type of disability influences manners of communication (deaf and lost hearing persons usually use the sign language, hard-of-hearing persons usually do mouth observing or use other means). The model was designed and analyzed in programme Clementine 10.1.
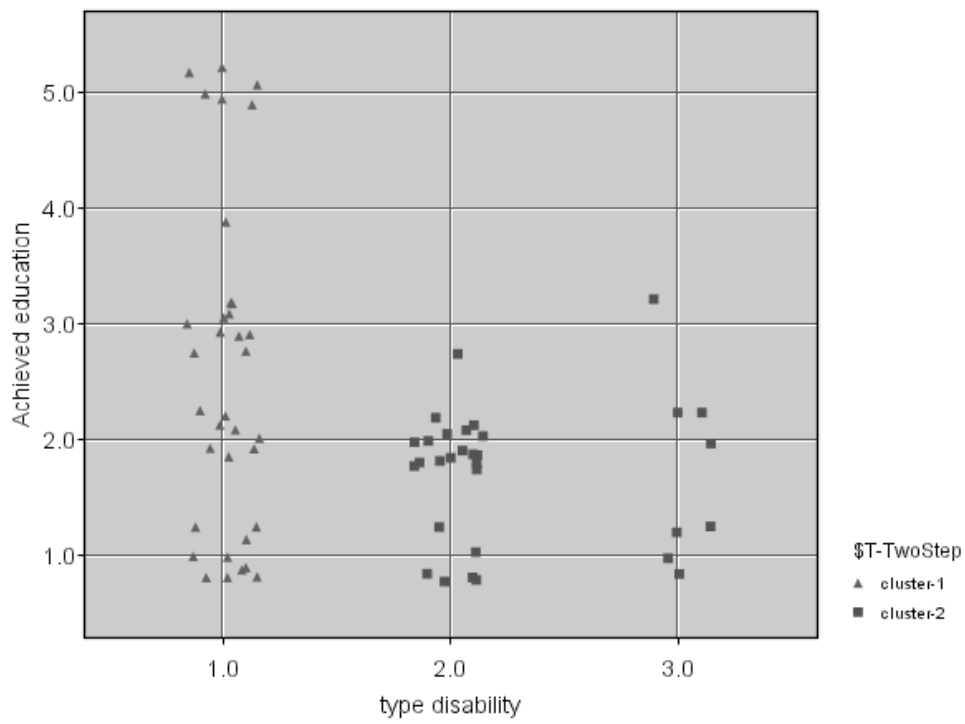
Fig. 1 CA Outputs – dependence of the achieved education on the disability type
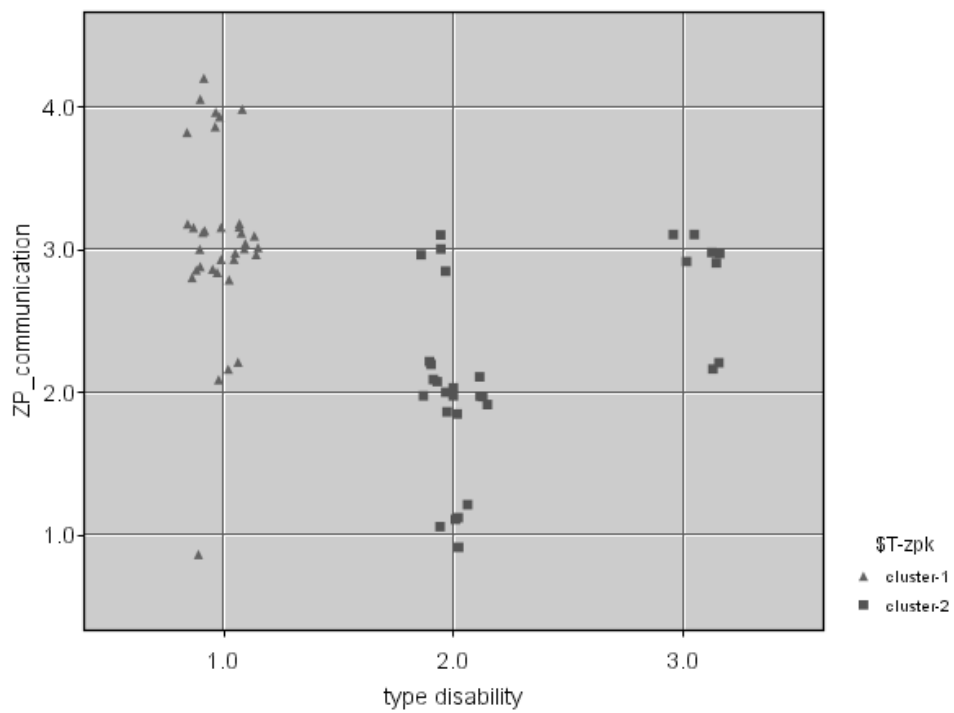
Fig. 2 CA Outputs – dependence of the manner of communication on the disability type

4. Conclusion

QL represents an important indicator [5] that supports the execution of decision making processes. Despite its subjective side it is a very precious source of data. It serves to complete the existing analysis and it helps more detailed interpretation of such analysis. In case the qualitative analysis is used (e.g. structured interview) we may consider the achieved statements to be the representative Fig. of the regional situation. However, by its nature it is a very expansive research method that requires trained inquirers. On the other hand it gives the guarantee that the acquired data have high validity and the utilization of such data is broader than the community planning framework.

In the submitted text subjective sides of the persons with hearing disabilities QL is researched into. The method how the data on their quality of life was collected was described as well as the data processing and the data interpretation by means of up to date data mining methods. Data collected directly from the executed survey respondents are a highly valuable source of information on the respondents problems and needs and can be well used as a background material for the development of social services. Some information issuing from the questionnaires is obvious and easily derived, other was derived by means of suitable statistics and data mining methods. Correlation analysis was selected, association rules, CA. The most distinctive relationship was found between the attributes type of disability and manner of communication – it was confirmed by all three methods. There is also a relation between the type of disability and the achieved education, between the age and the type of disability, the age and the rate of Internet usage and last but not least the achieved education and Internet usage rate.

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SEMI-STRONG INFORMATION EFFICIENCY OF THE POLISH STOCK EXCHANGE MARKET IN VARIOUS MARKET SITUATIONS

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Abstract: The aim of this paper is determining the level of information efficiency at the semi-strong stage of the largest Polish companies on the stock market (covered by WIG20 index) in different market conditions.

To achieve this aim the author decided to create a graphic representation of semi-strong information efficiency. In the paper the author analyses the Polish stock market indicators in the years 2005-2008.

The study examine a linear relationship between P/E, P/BV ratio and the rate of return. As the indicator in analysis is used direction of slope of the regression line. In this research is analyzed the character and size of regression coefficient.

Keywords: Market Efficiency, Capital Market, Capital Investment

1. Introduction

The foundations of the capital market theory were created by Luis Bahelier at the beginning of the 20-th century [1]. He claims that pricing is random on the market so the probability of achieving higher than average return on investment on the capital market cannot be increased. Business literature of the 1960s deals with the problem of information in investment decision making processes. This approach is strongly stressed in the works of P. Cootner [2].

The contemporary theory of market efficiency was also presented in the works of P. Sammelson who demonstrated in 1965 that price changes are unpredictable if they are correctly anticipated [3].

The present day knowledge of market efficiency is based on the definitions of E. Fama who demonstrated that the efficient market is one in which prices always reflect available information. The analysis of the pricing process on the capital market is an issue which has not been sufficiently explained in business literature. The reality of the capital market differs considerably from the reality of the 1970s. The development of modern investments tools changed the approach to the capital investment process and risk management.

The classic economic theory says that investors behave in a rational way. The progress in behavioral finance changed the classic view on investment decision making. The Nobel Prize in economics awarded to Daniel Kahnemann proves that there is a need for research in investment decisions [5]. Analysing the level of efficiency may be particulary important in the period of economic crises on the financial markets.

During a crisis a higher price changeability is noticeable on the financial market. Capital investment on the stock market is a problem concerning more and more people in this context. An attempt to determine effective decision making methods is an issue for both physical and legal persons including instructions managing investment portfolios.

The aim of this paper is determining the level of information efficiency at the semi-strong stage of the largest Polish companies on the stock market (covered by WIG20 index) in different market conditions.

To achieve this aim the author decided to create a graphic representation of semi-strong information efficiency. In the next section of the paper the author analyses the Polish stock market from the point of view efficiency in the years 2005-2008.

The hypotheses tested by the author:

1) The efficiency of the Polish stock market is dependent on the condition of the financial market.

2) The Polish stock market is efficient in the time of crises, which means that information about companies is reflected in their share prices.

2. The hypothesis of capital market efficiency (weak, semi-strong, strong)

It is becoming more problematic to explain price changes on the stock market analyzing rational behavior of investors. Investment decisions are often disconnected from the financial analysis of a company.

Financial market efficiency is an element of considerations concerning capital investments. Satisfactory ROI (return on investment) is correlated with market efficiency. It is therefore important to conduct research on stock market efficiency and compare results. It is the basis for taking effective investment decisions on different markets.

Theoretical market efficiency foundations are based on the following assumptions [8]:

- investors take rational decisions and correctly price financial assets,

- irrational investors behave chaotically and their actions have no impact on the market because they are uncoordinated,

- irrational investors who incorrectly price the shares are eliminated from the market by arbitrageurs.

Business literature lists 3 stages of capital market efficiency. They are as follows: allocation efficiency, transactional efficiency and information efficiency. Allocation efficiency is about capital provision to the sectors or companies in which capital will be used most effectively. Transactional efficiency takes place in the situation when middlemen (intermediaries) working on the market compete with one another reducing transactional costs and speeding up transactions. Information efficiency is based on quick current information transfer to all players on the market with the result of an immediate effect on share prices [7].

E. Fama is the author of the information efficiency [4]. According to him the effective capital market is the one in which the prices of financial instruments always fully reflect all available information. It is necessary to systemize information coming to the market because of its amount and categories. The categories are as follows:

- information about past financial assets prices,

- public information which may have an impact on financial assets pricing,

- confidential information.

In connection with this division of information entering the market Fama proposed distinguishing three types of information efficiency: weak, semi- strong, strong.

In the weak type of information efficiency share prices reflect all the information included in the prices of a particular share in the past. In case of positive tests results of this efficiency type, the prices are characterized by random selection. In this situation it is impossible to achieve higher then average return on investment by analyzing past prices. Technical analysis tools are used to test weak information efficiency of the capital market. This analysis uses past trends and tendencies for determining future prices.

In semi- strong type of capital market efficiency the prices of equities reflect all published information related to them. Fundamental analysis ratios are used to test this form of market efficiency. They indicate the impact of generally available information on share prices. All data concerning a company should be immediately included in share prices. There is no possibility of achieving higher then average return on investment applying the fundamental analysis in investment decision making.

Strong efficiency is the third type of capital market information efficiency. In this case it is assumed that public and confidential information is immediately becoming an element of share prices and may exert influence on a company's market value.

The division into three types of capital market information efficiency has proved to be insufficient. Therefore, in 1983 Simon Keane proposed a further sub-division of each efficiency form into three sub-types: perfect efficiency, imperfect efficiency and inefficiency (non-existent) [6]. In each type of information efficiency we can point out one of three subtypes.

3. Semi-strong efficiency tests on the Polish stock market companies (based on WIG20*)

A market research has been conducted with the purpose of testing semi- strong efficiency on the Polish stock market. Twenty biggest companies functioning on the Polish market have been chosen for tests (WIG20 companies). The testing concerned two fundamental analysis ratios – P/E (Price/Equity) and P/BV (Price/Book Value) referring to annual return on investment on the company stock. The data describe the period from 2005 till 2008.

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* Warsaw Stock Exchange index of 20 biggest corporations

The proposed solution is a novel form of analysing and testing semi- strong efficiency of companies. It has been assumed that if in the to period P/E and P/BV ratios are on a high level we may conclude that the shares of a tested company are overrated in the next period of time return of investment in the group of tested companies should be below average.

If we agree that our assumption is valid and transfer test results onto the point Fig. where the horizontal axis is annual ROI and the vertical axis is P/E and P/BV at the beginning of the tested period, the angle of the average trend line based on the market points will determine the degree of semi- strong efficiency in the tested companies. The subsequent Fig.s show test results for particular years between 2005 and 2008.

The study will examine a linear relationship between P/E, P/BV ratio and the rate of return. As the indicator in analysis will be used direction of slope of the regression line. In this research will be analyzed the character and size of regression coefficient.

Fig. 1: Rate of return and P/E ratio of WIG20 companies scatter plot with regression line in 2005

Source: individual research based on Warsaw Stock Exchange data [9]

Fig. 2: Rate of return and P/BV ratio of WIG20 companies scatter plot with regression line in 2005

Source: individual research based on Warsaw Stock Exchange data [9]

The first Fig. shows ROI in relation to P/E ratio demonstrating market inefficiency in this period. Companies with a low P/E ratio had higher ROI than companies with a higher P/E ratio.

Inefficiency in the same period is not confirmed by P/BV ratio for the same companies (Fig. 2). The lines in the graphs demonstrate opposite tendencies. In this case, the author proposes the tested efficiency is neutral.
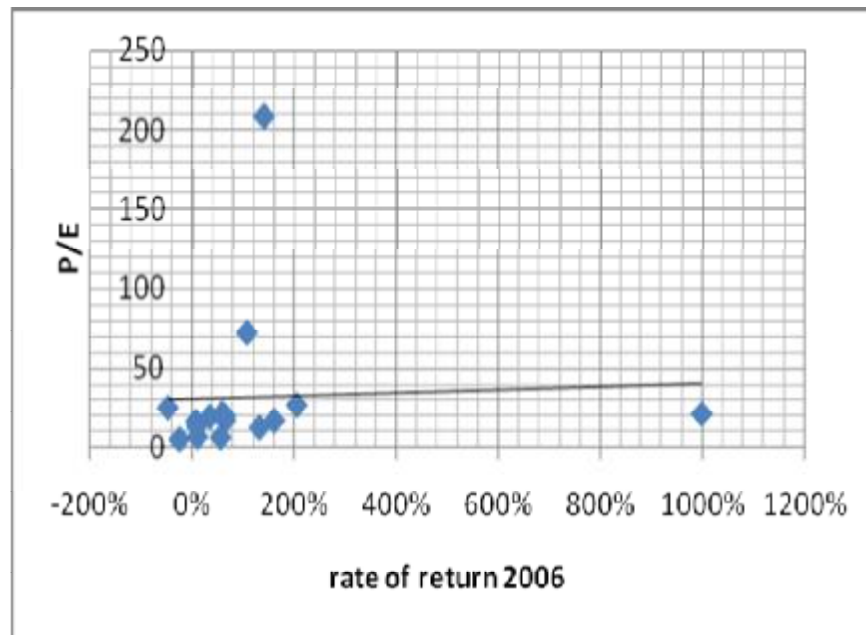
Fig. 3: Rate of return and P/E ratio of WIG20 companies scatter plot with regression line in 2006

Source: individual research based on Warsaw Stock Exchange data [9]
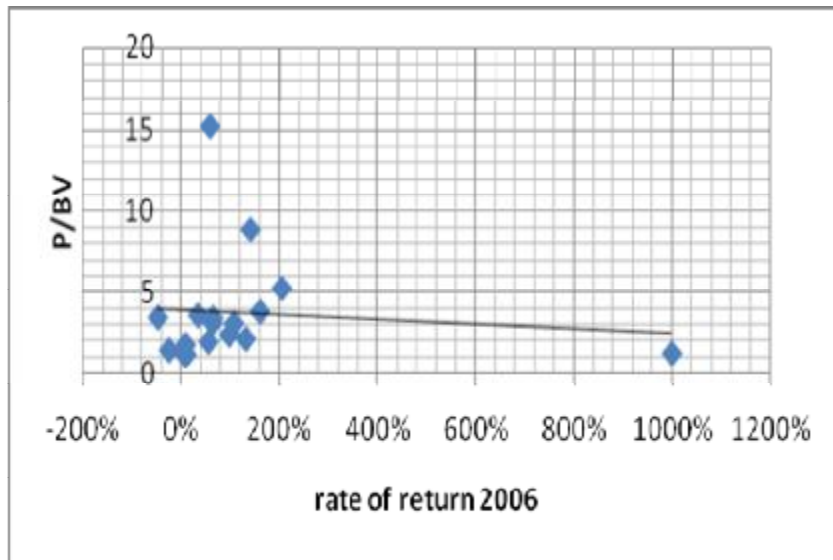
Fig. 4: Rate of return and P/BV ratio of WIG20 companies scatter plot with regression line in 2006

Source: individual research based on Warsaw Stock Exchange data [9]

The years 2005 and 2006 were quite similar. The trend lines of P/E and P/BV ratio in relation to the annual rate of return of WIG20 companies show opposite tendencies. Therefore, we can speak about neutrality of semi-strong efficiency in 2006. There is the outlier (the point which varies considerable from others) on Fig. 3 and 4. This data can affect on slope of regression line in year 2006 but it will stay in this research.
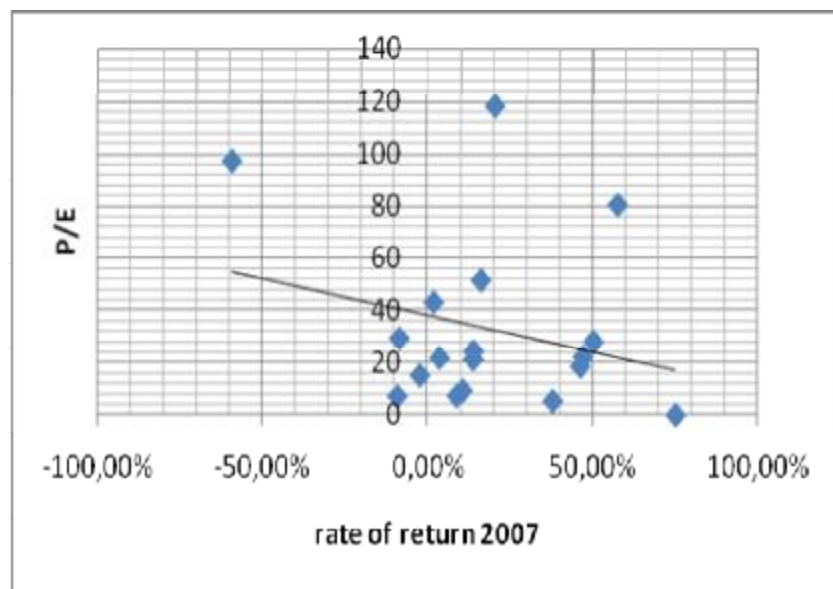
Fig. 5: Rate of return and P/E ratio of WIG20 companies scatter plot with regression line in 2007

Source: individual research based on Warsaw Stock Exchange data [9]

Fig. 6: Rate of return and P/BV ratio of WIG20 companies scatter plot with regression line in 2007

The year 2007 marks the end of the continuing upword trend on the Polish stock market and is the beginning of a considerable downturn (Fig. 7). This situation is strongly related to global tendencies on financial markets. In this situation P/E and P/BV ratios referring to the annual rate of return were comparable. The growth in the level of ratios on the tested sample was linked with the average annual rate of return. The fundamental analysis for predicting the rate of return of WIG20 companies could be applied for the tested period. This strategy would ensure above average rate of return on this market. This case illustrates information inefficiency of the tested market in 2007.
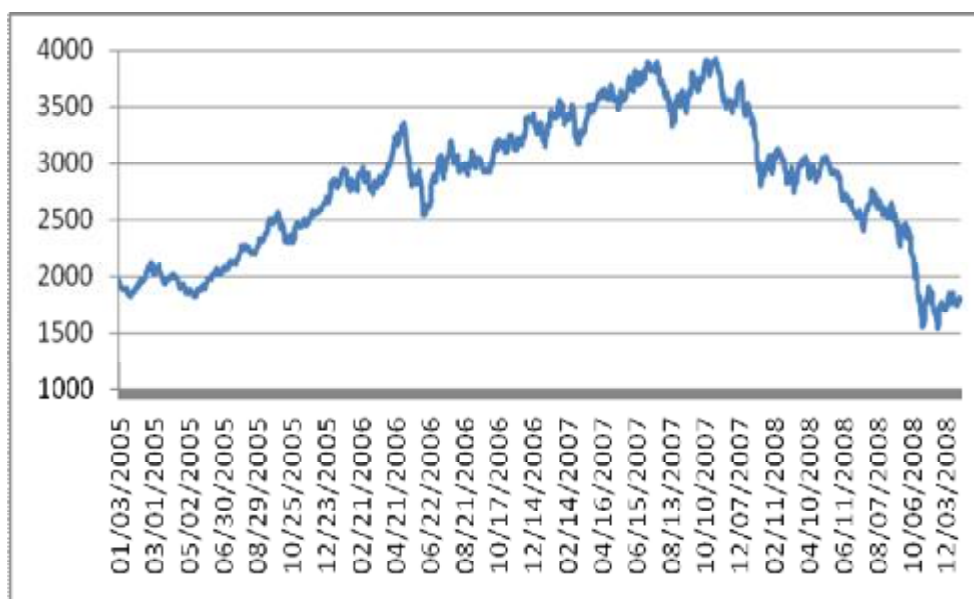
Fig. 7: WIG20 index between 2005 and 2008
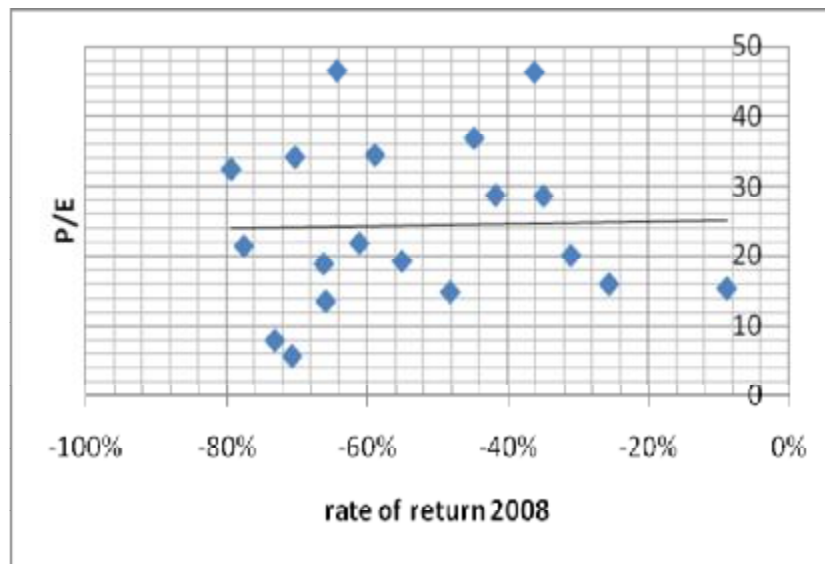
Fig. 8: Rate of return and P/E ratio of WIG20 companies scatter plot with regression line in 2008

Source: individual research based on Warsaw Stock Exchange data [9]
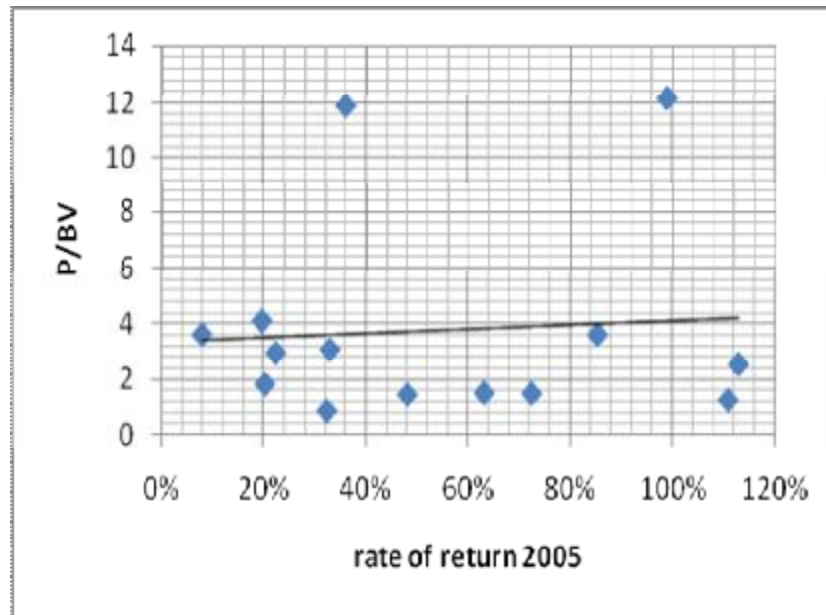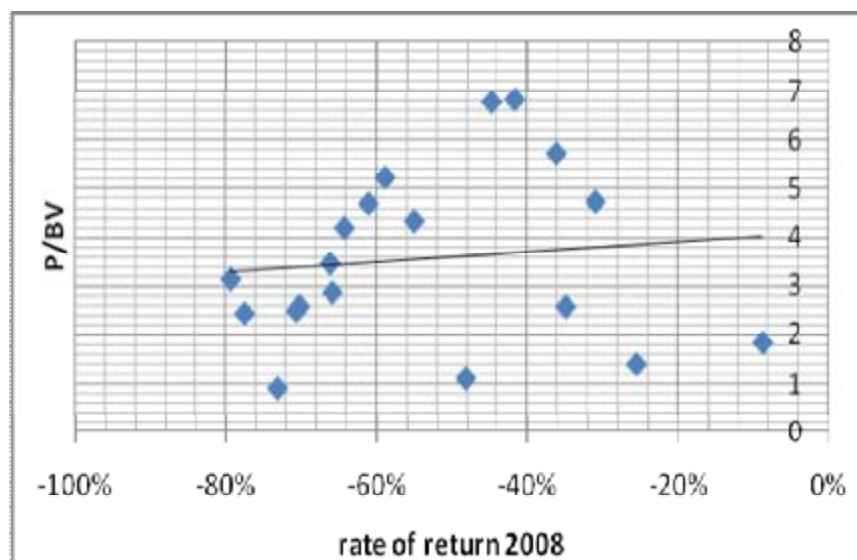

Fig. 9: Rate of return and P/BV ratio of WIG20 companies scatter plot with regression line in 2008

Source: individual research based on Warsaw Stock Exchange data [9]

The global financial crises of 2008 had a negative impact on the Polish stock market. Negative tendencies cost a fall in WIG20 index by 48%. Taking into account the tested ratios of the fundamental analysis it is visible that the market was efficient. A growth in P/E and P/BV ratio levels in the tested sample resulted in a higher rate of return. On the basis of the tested sample it was impossible to make investment decisions leading to above average profits generated by tested companies.

4. Conclusions

The conducted research demonstrates that there is a correlation between capital market prosperity and information efficiency on this market. The outcome of the research referring the level of fundamental analysis ratios P/E and P/BV to the rate of return in the following period prove that the situation on the capital market influences semi-strong information efficiency. The table below shows the complex results of the research.

Tab. 1: The results of the research on the correlation between rate of return and P/E, P/BV ratios of WIG20 companies quoted on Warsaw Stock Exchange between 2005 and 2008

Year	WIG20 (change in %)	Correlation (P/E)/ROI	Correlation (P/BV)/ROI	Information Efficiency
2005	+ 35,42%	-	+	0
2006	+ 23,75%	+	-	0
2007	+ 5,19%	-	-	-
2008	- 48,21 %	+	+	+

Source: individual research based on Warsaw Stock Exchange data [9]

After analyzing the largest Polish companies we may conclude that semi-strong information efficiency exists on the market with visible negative tendencies. In the periods of growth the fundamental analysis ratios are not sufficient to clearly determine the effectiveness of the tested market. The market is characterized by information inefficiency when market trends change (2007).

On the basis of the described test of semi-strong type of information efficiency of the Polish stock market we may conclude that its efficiency is dependent on the prosperity on financial market. This confirms the first research hypothesis of this paper. The analysis of the conducted research indicates that in times of crises the Polish stock market is efficient. The second hypothesis of the paper is confirmed by this.

The proposed method of information efficiency research on the capital market seems adequate and reliable. It is likely that the method of information efficiency research on the semi-strong type presented in the article is reliable and may be used on all capital markets. The clear and transparent presentation of test results may encourage investors all over the world to apply it.

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THE RESULTS OF CASE STUDY OF THE IMPLEMENTATION OF MARKETING COMMUNICATION TOOLS IN THE ENVIRONMENTAL PROTECTION

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Abstract: Marketing is an important tool for informing the general public. Its mission is to provide education in the questions of environment protection necessity and sustainable development. The objective of this contribution is to present the results of the case study of practical marketing application in the environment protection field. There is used a quantitative analysis of the regional press for finding out the data.

Keywords: Ecology, Communication, Marketing, Environment

1. Introduction

The objective of this contribution is to prove the impact of marketing as a communication tool for environment protection. The contribution contents practical examples of the negative and positive impact of marketing in the environmental field. A case study of the tool application of marketing communication of the hazardous waste incinerator plant, which is intended to be built by the Upper Austrian Company AVES CZ in Rybitví near Pardubice, is the part of the contribution.

Environment protection issues are now topic number one. On one hand, environment influences the life of people; on the other hand, however, it is the people who mainly influence the quality of environment around them. In a broader context we can say that environment protection does not only mean for the citizens to behave in accordance with the principles of environment protection in the place of their domicile and its vicinity. This is a comprehensive personal inner acceptance of responsibility and understanding of environment protection as a natural system of human behaviour toward nature. It is a total change in thinking, behaviour and the development of human society.

Environment protection does not only lie in sorting the waste produced by the consumption of society. It is a complex environment protection that may, for example, include the protection of water, air, nature, landscape, climate and waste management. The protection against industrial pollution, which is caused by chemical substances and preparations, eventually by genetically modified organisms, belongs here too. [BAŤA, OBRŠÁLOVÁ, COSTA JORDAO 2009]

At present, our society is cautioned by nature about its insensitive treatment. The problem of today`s life is the consuming way of life that brings satisfaction in some respects. However, let us take into account that this satisfaction is only relative and temporary. A number of human diseases, such as respiratory problems, allergies, eating disorders, obesity, hypertension, cancer, reproductive disorders etc., rise from excessive consumption and therefore the production of waste and pollution. Human

health is a gift; the sooner we realize this, the less pain and suffering we will experience. Let us consider the warnings of doctors and medical institutions that constantly appeal to the preventive behaviour of people. Likewise, it should be with the protection of the environment we live in.

It is necessary to realize the fact that natural disasters are not unreasonable. The cause of that is our everyday reckless behaviour to nature. The sooner we understand this, the less damage will be inflicted on the amount of loss of human lives and property. As well as we respect each other in our individualities, we have to understand the importance and uniqueness of the environment. Creating and maintaining harmony with other people, as well as with nature, should be an urgent challenge for human beings. It is therefore a meaningful sharing; it is impossible to get estranged individually, to separate from both society and environment; we are their inseparable part.

Environment protection has long been a hot topic not only in the context of behaviour of individuals. There are strong appeals from the side of government and environmentally oriented pressure groups on the behaviour of firms and companies corresponding to the principles of environment protection; not only primarily those which fall within the branches of chemical industry. Thus we are encouraged to communicate at all the levels that today society and the life on Earth offer. This also applies to the communication in the field of environment.

2. The Impact of Marketing on Environmental Aspects

Nowadays, marketing is a widespread scientific discipline that is developed in many professional publications; it influences the behaviour of people and companies as well. With the general development of technologies and knowledge, the demands of people are growing too. However, people are not only focused on the mere satisfaction of their needs, they also look for such products and services that can solve their concrete problems directly. Today, people make choices on the base of irrational thoughts, feelings and hardly explainable stimuli.

2.1 Negative Impacts of Marketing on Environment

From the professional point of view, however, marketing does not bring only positive assessment. Marketing supports and urges customers to consumption of such products that pollute environment, such as washing powders containing harmful phosphates, products packaged in plastic containers, etc. Also the consumption of today already scarce natural resources, such as oil or gas, is supported by marketing, too. Consuming these products, we should be aware of these facts.

2.2 Positive Impact of Marketing on Environment

The role of marketing in the field of environment protection is difficult; it is harder on the fact that the target group can be a small group, but at the same time the environment protection relates to the whole society. Customers must be gently persuaded of the sense and necessity of environment protection, mainly from their

point of view. However, at the same time, the campaign must be thought out in the context of the whole society benefits.

People must be motivated to a particular behaviour; to the purchase and use of certain products that are, unlike the other products, as friendly to nature as possible. If marketing activities are well thought out and well-timed, high sums of money need not be inserted into marketing activities. Marketers use many tools of marketing communication to support ecological consumption of the population.

2.3 Marketing Communication and Environmental Reporting

At present, environment protection should not be a legal obligation, but a moral obligation for companies. The respect to the environment, which we live in, should be supported by natural and responsible approach and reasonably promoted by marketing in media. Environment protection should be the cornerstone, the philosophy of the company.

At first sight, the legislation in the field of environment protection can seem to exist only in the form of increased business costs. It can be true if the company behaves passively and only fulfils legislative regulations, e.g. it does not exceed the limits of air pollution. On the contrary, the companies, which behave actively and thus they try to harmonize environment protection and sustainable development with the objectives and policy of the company, can profit on this approach significantly.

By a positive approach to environment protection issues in production, a company can avoid, in the future, several inconveniences, such as hunger of the public for green products, eventually the fall of selling the production, which could permanently damage the company financially. On the contrary, a company can improve the image of the firm and gain a competitive advantage in comparison with the companies that do not find new ways and approaches. Not only from the practical, but also from the preventive point of view, the active approach is definitely more meaningful.

The essence of marketing is principally the same for different-sized and different-branched enterprises. Marketing communication tools, surveys and analyses are also used to achieve the same results, thus information that is the input data for future decision of the company management. The main task of marketing communication in the field of environment protection is to use marketing communication tools, thanks to them the general public, consuming products, understand the urgency of everyday responsibility for the state of environment, our health and the health of our children.

Information communication about the company behaviour towards environment (today environmental reporting), addressed to a company environment and, in a lesser extent, to its own staff, has been for years to calm down environmentalists, concerned citizens around the plant and its own staff. Environmental reporting is a reasonable basis for two-way communication between the firm and its surroundings. The surroundings gets qualified information, it can express their fears and doubts, and the firm responds to them – among others by pointing to proven gradual improvements. [VANĚČEK 2003]

An important and common element of marketing communication and environmental reporting is information. Nowadays, it is impossible to operate without information. Information must have a logical structure so that it can be possible to obtain data for key management decisions. The flow of information and its results must be responsibly, accurately and clearly recorded in the firm database. Then, these databases can provide such information that will partly serve for the management decision in the field of economics, but also marketing-oriented action on the public.

Internal	Target group	External
Board of Management		Authorities
Management		Suppliers
Experts for environment		Customers
Experts for security		
Issues		Creditors
Staff		Public

Internal source → amount → costs → organization → process data → objectives	→	PROGRAMS AND DATABASES	→	Results
			→	Information oriented on a particular group
External source → laws → regulations, standards → technical guidelines → concepts → limits	→		→	New service

Fig. 3: Information system of the company

Source: Fedorová 2004

So that the management of the company can decide on a possible future development of the company, it is necessary to have a systematically created information system that includes key internal data. They are quantitative and qualitative data creating the basis for statistical analyses. The information system of the company should be well worked out, otherwise it can happen that the management will decide on the basis of irrelevant data.

3. Marketing Communication Tools Used in the Environmental Field

The main tools of marketing communication are: an advertisement, sales promotion, personal selling, public relations and direct marketing. Individual tools are,

as shown by the following text, applicable to products that not only satisfy the needs of end customers, but also by their environmental focus help to their self-promotion.

3.1 Advertising

Advertising is such a form of communication by means of that company does not communicate with its customers directly, but through various media. It is an intentional activity of the company. By this way, the company informs its potential customers on existing products and additional information (quality, advantages). In the field of advertising, environmentally oriented companies use traditional elements of advertising, such as informative advertisements in press, radio, television and on the Internet. Furthermore, information provided by the form of posters, leaflets, company brochures and catalogues belong here, too.

An outward appearance of the product package that no longer serves only as product protection is an important element of advertising. It is so called *marking*, in expert literature mentioned as *eco-labelling*. This is a voluntary deed of enterprises in labelling of their product that are, unlike competitive products, environmentally friendly.

Another element of advertising is so called eco-design. These are the products that can easily be recycled again, but they have, at the same time, a pleasant appearance, modern, practical form, etc.

3.2 Sales Promotion

Sales promotions are time limited actions aimed at potential customers. Their objective is to prepare an attractive programme that will bring awareness of green products.

Trade fairs and exhibitions where the task of the company is not only to provide information, but also to tune potential customers positively to the consumption of green products, can be included into this category too. Samples of e.g. creams and shampoos, which potential customers can try in calm at home and only on the basis of satisfaction they can buy all product packaging, can be used at promotion as well.

The customers, who buy a so called green product, can subsequently be motivated to loyalty not only by the quality of the product, but also subsequent discounts, discount coupons for next purchase of the product, eventually by participation in lotteries and competitions.

3.3 Personal Selling

Personal selling is, by some authors in expert literature, also marked as direct selling. Personal selling gives the company immediate feedback on whether its efforts are effective.

For example, a direct presentation of environmentally friendly products, when we not only show the products but we also provide information about them, can be included in personal selling. The aim is to convince potential customers not only of the

necessity of buying a particular product, but also to raise in them the feeling that if they buy the product, they will contribute to saving environment. The personality of a seller itself is very important at personal selling.

3.4 Direct marketing

Direct marketing is such a form of communication when the company tries to address potential customers directly. For example, leaflets or samples delivered directly into post boxes, e-mails addressed to particular persons or telephone marketing belong to it. It is necessary to choose the right tactics according to a target group; new or regular customers.

3.5 Public relations

Public relations (PR for short) = relations with public are one of the most important forms of company promotion. All of the above-mentioned tools of marketing communication have selling products as their priority. The essence of PR is good relation with the public, business partners, eventually with authorities of public administration. Positive influence – a good image, the action of the company in the public – is a very important.

If a company wants to be successful in the market, it must communicate with internal and external environment. Not only environmentally-oriented enterprises have to cooperate with media, i. e. to sell interviews, expressions, opinions. For the public, it is necessary to hold open days, excursions, seminars and lectures with topics on environment protection. Firm bulletins, eventually the separate newspaper release of events in the company are suitable too.

Nowadays, charity, sponsorship or lobbying is a common PR activity; however, it must be applied in a fully transparent, honest manner. In the opposite case, it is the damage to good relations, which are difficult to set right. Annual reports published on the website of the company are absolute obviosity. Enterprises also use the faces of "celebrities"from show business. In the case of using this possibility, it is necessary to keep in mind that making good relations with the public is a demanding long-time activity.

However, it is necessary so that the issue of environment protection can be concerned with enterprises themselves and at the same time this "education" can be communicated to the general public with the maximum support of the state. The Ministry of Environment itself is an example – it has on its websites both the section for journalists and the separate one for the public.

3.6 Ecological Marketing Communication Tools

Some of the elements listed in this item are certain to be classed with, e. g. the PR. The reason for their separate introduction is their ecological specificity:

- *Ecological institutions, non-governmental organizations, movements and associations*

Institutions: the Ministry of Environment (next only ME), the Environment and Landscape Protection Agency and the State Environmental Fund. Non-governmental institutions: e.g., the Greenpeace, the Brontosaurus Movement, the Green Circle, the Children of the Earth, the EkoCentrum Brno, the Rainbow Movement, LEA –the League of Ecological Alternatives, the Association of Ecological Farmers of the Czech Republic, the Friends of Nature, and many others.

- *Programmes and Projects of the Ministry of Environment*

They are e. g., the programme Green Savings (a grant programme for insulation and ecological heating of houses from 2009 to 2012), the Operational Programme of Environment (a programme for improving the quality of the environment as a basic principle of sustainable development from 2007 to 2013), the Landscape Creation Programmes of ME, the Programmes of Land Associations and for supporting biodiversity, etc.

- *Environmental Management Systems*

Companies introduce these systems from the reasons of the increased interest of the public and business partners in environment protection issues. The environmental management systems (next only EMS) represent for the company an active approach to reducing negative impacts on the environment. In addition to reducing costs for energy and raw materials, EMS brings the opportunity of more opened communication and, last but not least, gaining a competitive advantage. EMS can be implemented according 1/ to the international standards of ISO 14000 or 2/ according to the system EMAS applied in the area of the European Union.

To be able to judge the behaviour of enterprises, with regard to the environment, the research, whose object was to find out the experience of enterprises in introduction and functioning of EMS in the Czech Republic, was carried out by the University of Pardubice in cooperation with the Agency EMAS. The results of the research: a statistical sample of 222 enterprises of different branches, 91% of which were holders of the certificate ISO 14001, 6% owns the certificate according to ISO 14001 and, at the same time, is registered in the programme EMAS, 3% of the respondents have introduced the system, but its certification has not been made yet. The importance of management system introduction can be demonstrated by the fact that 97% of the respondents have implemented the quality management system according to ISO 9001. [HYRŠLOVÁ, MÍSAŘOVÁ 2003]

Further research bringing more current data was carried out in 2005. [OBRŠÁLOVÁ et al. 2005]

- *Green purchasing*

This is the choice of customers to buy and consume green products, such as briquettes from wood waste, aqueous paints, paper instead of plastic bags, etc.

- *The Other Marketing Tools of Ecological Character*

This category includes tools and activities having an ecological alternative: eco-labelling and eco-design (see 3.1), eco-audit, eco-controlling, eco-risks and eco-qualification.

4. The Case Study of Hazardous Waste Incineration Plant in Rybitví near Pardubice

This chapter contains the results of quantitative analysis of the application of marketing communication tools that were used to awaken the interest of the citizens of Pardubice and its surrounding in the topic of environment protection. The method of the analysis was active monitoring the regional newspaper MF Dnes and subsequent recording the results in the period of 1.11.2009 – 31.1.2010.

The public has known about the intention of the Upper Austrian Company AVE CZ to build a hazardous waste incineration plant in Rybitví near Pardubice since 2007. However, only now, in the period when the start of its functioning is being decided on, the issue has been released by media to the light of the world. Originally, the public debate on the incineration plant was planned on 10th November 2009. However, due to the capacity limitation of the ABC Club Na Olšinkách, the discussion was not realized. The public debate took place in the Pardubice ČEZ Arena on 9th December 2009, where about 7,000 citizens came to express their opinions.

4.1 The Quantitative Analysis of the Regional Newspaper MF Dnes

In the period from 1st November 2009 to 31st January 2010, a number of current news relating to the incineration plant issues, and concerning both the development of the situation and the opinions of the public, were published by the MF Dnes. The views of opponents and proponents of this controversial construction were printed. The published articles informing on the public events were often accompanied by photos from the editors. The data shown in the following graph got out from the carried out analysis.
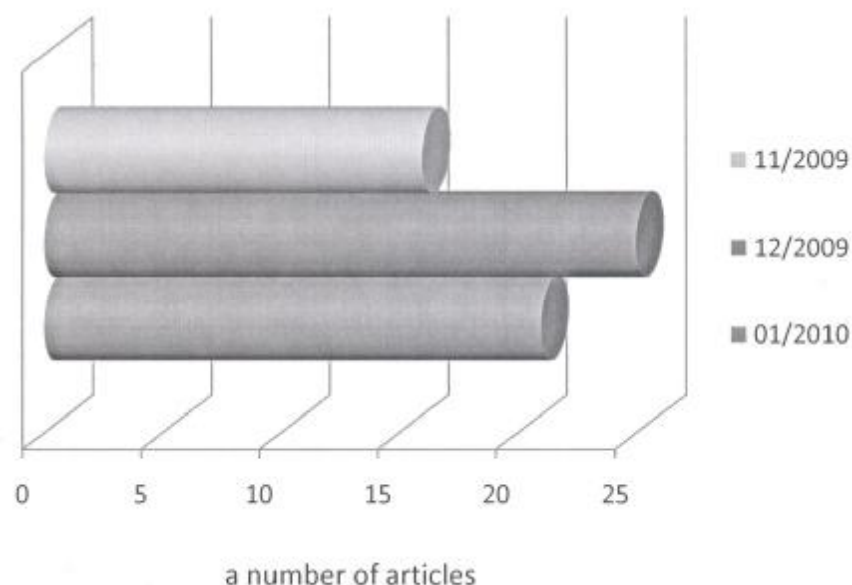
Fig 4: The results of the quantitative analysis of the regional newspaper MF Dnes

Source: own solution

As shown by the results of the analysis, the most reports on this issue were released in December, the fewest ones in November 2009. A little decrease in the reports at the beginning of 2010 is not dramatic.

Currently, it is clear that reports on the incinerator plant will be published in the following period, too. Just on 31st January 2010, the Ministry of Environment issued a dissenting opinion of assessing the impacts on environment to the project "The Modernization of the industrial waste incinerator, the establishment of Pardubice".

4.2 The Analysis of the Other Marketing Communication Tools

The information on holding the public debate was spread by *a car where the text was read into a megaphone.* At the public discussion, posters with a *text, Fig.s, slogan banners* and models were presented. About 2,000 written and *e-mail comments* by citizens were handed over. Other communication tools are posters containing *photos* stuck on hoardings and advertising columns. Informative leaflets in the size A6 were directly delivered to post boxes.

The editors of the *MF Dnes* also called upon readers to express their opinions of the incinerator by the action "Write to Us". The weekly newspaper Perštejn published several articles.

Promotion on the media took place on the TV channel ČT 24 and on the radio station *Czech Radio.*

The opponents of the incinerator founded websites *www.proti-spalovne.cz* where articles, opinions, photo gallery, a list of other incinerators, discussion forums, etc. can be found. On 4th January 2010, the websites *www.ekolist.cz* notified of the public debate about the incinerator, too.

More than 47,000 of citizens expressed their opinions of the incinerator in the petition against the construction.

The possibility to influence the public opinion was used by the independent ecologist Jiří Kučera, EngD, who sent a *mass e-mail* (9. 11. 2009 – "So for this you are fighting???"). Another one who joined the communication by means of e-mail is the Studio Press Ltd. Pardubice.

The Company AVE CZ released *an informative* leaflet about the incinerator. The company uses the service of the press agent Jan Nálevka to the presentation.

5. Conclusion

The results of the carried out analysis are presented in the case study containing the list of specific marketing communication tools that were applied by both the part of the supporters and opponents of the construction of the hazardous waste incineration plant in Rybitvi near Pardubice. On the basis of the results of the carried out analysis it is possible to state that the issue of environment protection is presented in a marketing way and citizens are actively involved in environment protection issue.

Marketing is an essential tool that is crucial in the field of providing information to the general public. Due to the development of the market, information technologies,

management creativity and successful application of marketing communication tools, approaches to informing the general public are sure to be developed henceforth. Marketing incites us to think about the approach to nature, whose resources are exhaustible, and to think about human indifference, which brings destruction.

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THE SIERPIŃSKI TRIANGLE AND ITS COORDINATE FUNCTIONS

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Abstract: The famous fractal set called the Sierpiński triangle was introduced as a plane curve every point of which is the point of ramification. Since it satisfies the Jordan definition of a curve, it can be represented by two continuous coordinate functions of a parameter. The coordinate functions are constructed by iterations of a system of linear transformations in the complex plane.

1. Introduction

Many examples of sets with strange and counter-intuitive properties appeared during the development of point set theory in the first decades of the 20th century. The general definition of a curve had been missing until 1920's. There were two widely accepted definitions of a curve: the Jordan definition which describes a curve parametrically and Zoretti's definition of so called Cantorian line, i.e. a continuum which is nowhere dense in the plane. However, both definitions allowed sets that are far from intuitive understanding of the concept of a curve. The classes of Jordan curves and Cantorian lines are not identical; there are Cantorian lines that do not satisfy Jordan's definition and vice versa. Even the sets that can be called lines according to both definitions may have very peculiar properties.

In the note [2] presented to the Academy of Sciences in Paris in 1915, Polish mathematician Wacław Sierpiński described a plane set which satisfies both definitions whose every point is the point of ramification. Thus begins the history of the celebrated set which is now known as the Sierpiński triangle or the Sierpinski gasket. Its complex structure contrasts with apparent simplicity of its construction. It is constructed from an equilateral triangle T by a sequence of deletion operations. The initial triangle is divided into four smaller equilateral triangles and the inner points of the middle triangle U are removed (Fig. 1). The set F1 thus consists of three triangles T0, T1, T2. The same operation is repeated with each of them. The set F2 is the union of nine equilateral triangles T00,..., T22. The process continues ad infinitum. The Sierpiński triangle is the set F which consists of all points that all sets Fk, k $\in$ N have in common.
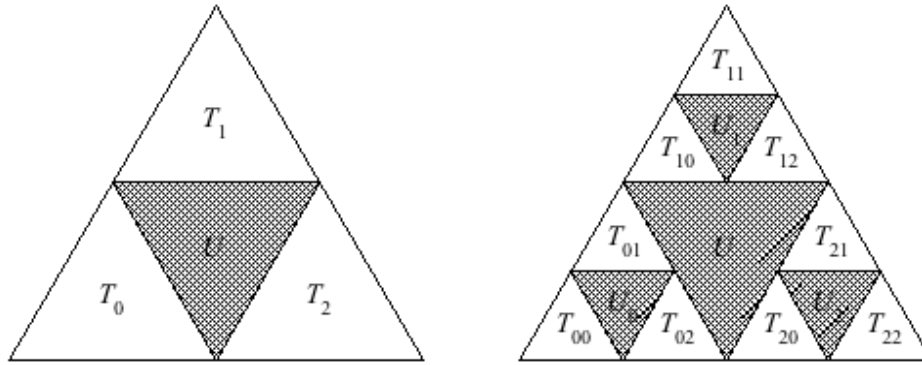
Fig. 1. Construction of the Sierpiński triangle.

2. Approximating polygons

The set F is nowhere dense in the plane and hence it is a Cantorian line. It can be shown that F is also the Jordan curve. In the extended Polish version [3] of the above mentioned note Sierpiński shows how to represent F in terms of approximating polygons. If we place the initial triangle T into the complex plane so that its left corner coincides with the origin and the real axis points in the direction of its base of unit length, then the polygonal lines are constructed as follows. Let L1 be a polygonal line passing through the points $z_1^{(0)} = 0$, $z_1^{(1)} = \dfrac{1}{4} + \dfrac{\sqrt{3}}{4}i$, $z_1^{(2)} = \dfrac{3}{4} + \dfrac{\sqrt{3}}{4}i$, $z_1^{(3)} = 1$ (Fig. 2). It is an initial line which Sagan [1, p. 23] calls leitmotiv. The line L2 is obtained from L1 by replacing its sides with three copies of itself placed in the triangles T01, T02 and T03 (Fig. 1) so that the resulting line is connected. Sierpiński does not use complex representations of points in the plane, but his construction is essentially the same.
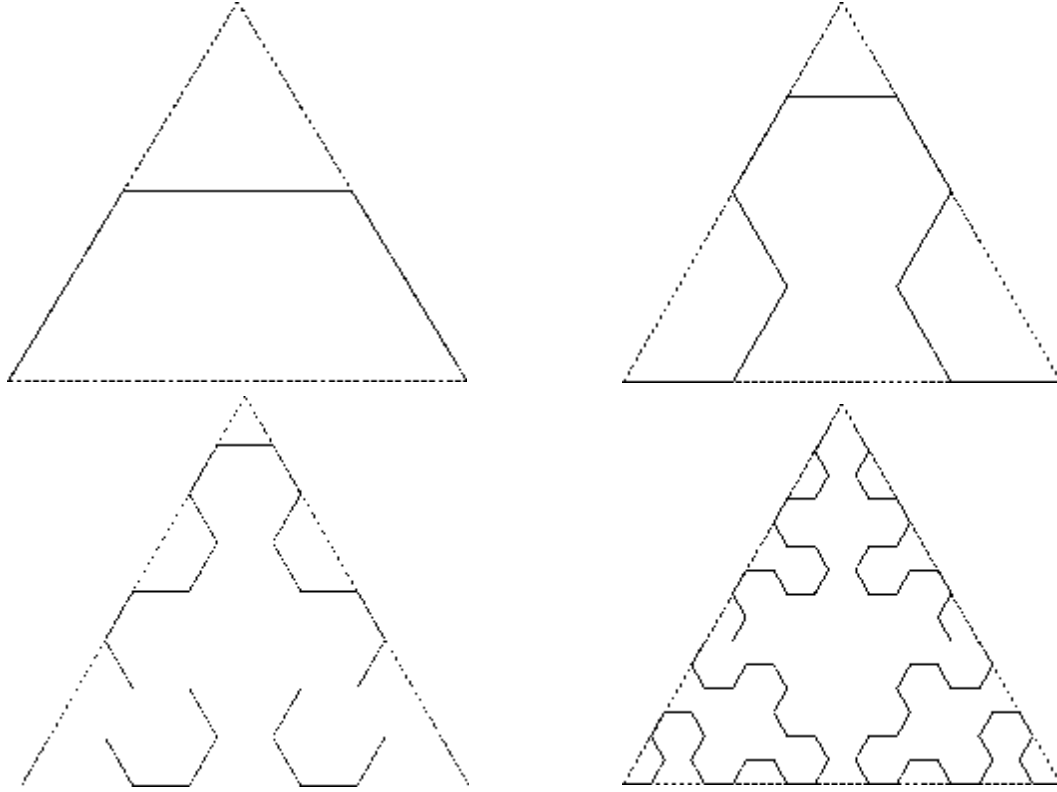
Fig. 2. Approximating polygons for the Sierpiński triangle.

The polygonal line Ln is obtained recursively from the leitmotiv and passes through $3^n + 1$ points $z_n^{(0)}$, $z_n^{(1)}$,..., $z_n^{(3^n)}$. It can be expressed by equations

$$\left. \begin{array}{l} x = j_n(t) \\ y = y_n(t) \end{array} \right\} \quad t \in [0,1] \tag{1}$$

so that the values

$$t_n = 0, \frac{1}{3^n}, \frac{2}{3^n}, \mathbf{K}, \frac{3^n - 1}{3^n}, 1 \tag{2}$$

correspond with $z_n^{(0)}$, $z_n^{(1)}$,..., $z_n^{(3^n)}$ and the functions $x = j_n(t)$, $y = y_n(t)$ are linear in every interval $\left(\dfrac{k}{3^n}, \dfrac{k+1}{3^n} \right)$, $k = 0, \mathbf{K}, 3^n - 1$. Sierpiński demonstrates that the sequence of polygons converges uniformly and the limiting set is the set F, which is therefore a continuous image of the unit interval, i.e. the Jordan curve.

3. The Coordinate Functions

The set F consists of three small copies of itself and thus it can be taken as an invariant set of an iterated function system (IFS) composed of three contraction maps

$$S_0(z) = \frac{1}{2}w\overline{z}, \quad S_1(z) = \frac{1}{2}(z+w), \qquad S_2(z) = \frac{1}{2}(\overline{w}\,\overline{z}+w+1)$$

(3)

where $w = e^{i\frac{p}{3}}$. The above construction can be expressed by means of transformations S0, S1, S2. If we start again with the initial line L1, then $L_2 = S_0(L_1) \cup S_1(L_1) \cup S_2(L_1)$ and generally for every positive integer n we have

$$L_{n+1} = S_0(L_n) \cup S_1(L_n) \cup S_2(L_n)$$

(4)

To obtain the coordinate functions (1) for the polygonal line Ln we express the values (2) of the parameter t as

$$t_n = \frac{j_1}{3} + \frac{j_2}{3^2} + \mathbf{K} + \frac{j_n}{3^n},$$

where the numerators take the values 0,1 or 2, or, which is the same, as the number $(0, j_1 j_2 \mathbf{K} j_n)_3$ in the triadic system. Every value of $t_n^{(k)}$, $k = 0, \mathbf{K}, 3^n - 1$ corresponds with a unique sequence of transformations (3) which maps the point 0 to $z_n^{(k)}$. For example, the point $t_2^{(5)} = (0,12)_3 = \frac{5}{9}$ is mapped to $z_2^{(5)} = S_1 \mathbf{o} S_2(0)$, etc. Generally,

$$z_n^{(k)} = S_{j_1} \mathbf{o} S_{j_2} \mathbf{o} \mathbf{K} \mathbf{o} S_{j_n}(0)$$

(5)
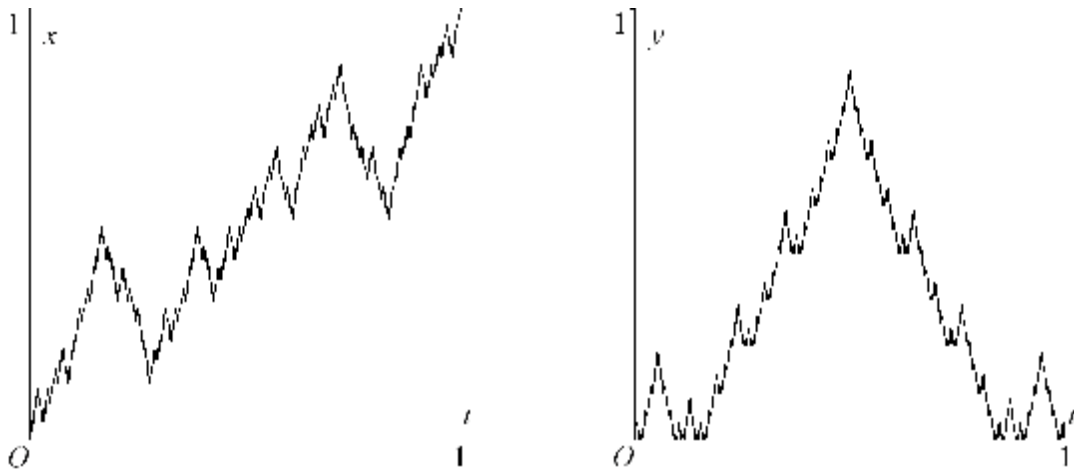
Fig. 3. Approximations of graphs of coordinate functions.

The polygon Ln thus can be taken as the image of the unit interval

$$z = f_n(t), \quad t \in [0,1],$$

(6)

where the vertices $z_n^{(k)}$ are given by (5) and f(t) is linear in every interval $\left(\dfrac{k}{3^n}, \dfrac{k+1}{3^n} \right)$, $k = 0, \mathbf{K}, 3^n - 1$. The real and imaginary parts of (6) are the functions $x = j_n(t)$, $y = y_n(t)$, respectively. Their graphs for $n = 5$ are depicted on Fig. 3. Both graphs give a good visualisation of the shape of coordinate functions of the Sierpiński triangle $x = j(t) = \lim\limits_{n \to \infty} j_n(t)$ and $y = y(t) = \lim\limits_{n \to \infty} y_n(t)$ for $t \in [0,1]$. The graphs show some form of self-similarity of φ(t) and ψ(t) (although not strict) and fine structure and can be therefore taken as examples of fractal curves.

4. Conclusion

Coordinate functions of Peano, Osgood and other special types of curves were studied long before the emergence of the fractal theory (see for example [1, p. 51 ff.]). However, their significance grew considerably as they served as examples of self-affine and other fractal curves. Functions whose graphs are fractal curves are useful to study various phenomena, including, for example, behaviour of stock markets. It has been observed that the graphs of price variations may contain patterns that are scale-independent and can be thus regarded as statistically self-similar fractal curves. Models based on the fractal theory have been used to describe the behaviour of financial markets and to explain the existence of extreme fluctuations of prices. The Sierpiński triangle is one of the best known fractals and found its way even into areas outside mathematics.

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BALANCED SCORECARD - SURPASSED METHOD? (A STUDY FOCUSED ON DYNAMIC BALANCED SCORECARD)

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Abstract: Balanced Scorecard method is with no doubt a modern tool for evaluating and measuring of competitiveness of a company. Aim of this study is to answer a question, whether has BSC method been surpassed? As a source of relevant data were used scientific studies similar to this one which were elaborated in Japan, China and the USA. These studies refer to simple fact - original concept of BSC needs to undertake a dynamization process to keep up with turbulent environment of our world. Other goals of this study are analysis and evaluation of disadvantages of BSC method, possible effect of above mentioned dynamization for individual companies or comparison of implementation processes of BSC and DBSC.

Keywords: Balanced Scorecard, Dynamic Balanced Scorecard, Competitiveness, Competitive Advantage Measurement

1. Introduction

Measurement of competitiveness and competitive advantage has become very important activity for almost every company. Data acquired on output of this process can even affect their strategy. Balanced Scorecard (hereinafter as "BSC") belongs to this group of methods. BSC [5] was created by Robert S. Kaplan and David P. Norton in in 1990´s. Novelty of this method was utilization of three new non-financial factors (and one financial factor). Overall there are used four nowadays well known perspectives:

- Financial perspective
- Customers
- Internal Processes
- Learning & Growth

Source: [5]

These perspectives can be further divided into partial goals which are set by individual companies according to their business situation, strategy and needs. Fulfillment of these goals leads to incidence of causal relationships ("action - reaction") between four basic perspectives and gradual activation of the main goal (usually financial character). Long-term goals in BSC are usually set for a time period of 3 - 5 years, short-term goals are mostly set for a time period of one year. This method has been generally acknowledged as an effective tool for management and strategic planning and it has been successfully implemented in many companies around the world. Its greatest benefits can be summed up into several points:

1. effective tool for communication and promotion of vision and strategy of a company,
2. creates clear model with defined key factors of success and relationships among them,
3. gives complex view on partial and main goals fulfillment,
4. simplifies communication and orientation within strategy of a company,
5. helps with data collection.

Source: [5] and self-elaboration

2. Dynamization of BSC

Before the dynamization process can be discussed, certain disadvantages of traditional BSC should be mentioned.

2.1 Weak points of BSC

Every new method dates during time and though BSC is very effective and has many benefits, there were found some disadvantages, which create space for further improvement. From these disadvantages there are three major:

1. causal relationships "action - reaction",
2. effect uncertainty and time delay,
3. quantification of relationships.

Source: [1,2,9]

2.1.1 Causal relationships "action - reaction"

Positive effects achieved by fulfillment of partial goals are conditioned by causal relationships. But determination of real impact of these relationships is almost impossible [9]. According to the principle of bounded rationality by Herbert A. Simon, human intuition is insufficient of confident mental simulation of situation, when there exist more dependent causal events (see BSC strategic map). Further to this aspect, there exist many side effects, which influence causal relationships both ex ante and ex post. Fulfillment of certain goal may lead to whole chain of effects and skillful manager must count with all of them to achieve success.

| Employee training | ▶ | Customers + | ▶ | Decrease in quality and speed of services | ▶ | Customers - | ▶ | ... |

Ilustration 1: Goal: Increase in sales volume (self-elaboration).

2.1.2 Effect uncertainty and time delay

When spoken about effect uncertainty, in question is above all its size. Thanks to modern probability methods, it is relatively possible to assess the effect of individual processes, but it is not possible to identify any crucial information about impact on main goal. Time delay represents other kind of problem, which can create uncertainty. With some processes it is not possible to identify, when exactly will some effect come. It can often happen that expected effect is delayed. This situation can become a serious problem and managers agreed that it should be eliminated. See following Fig.:
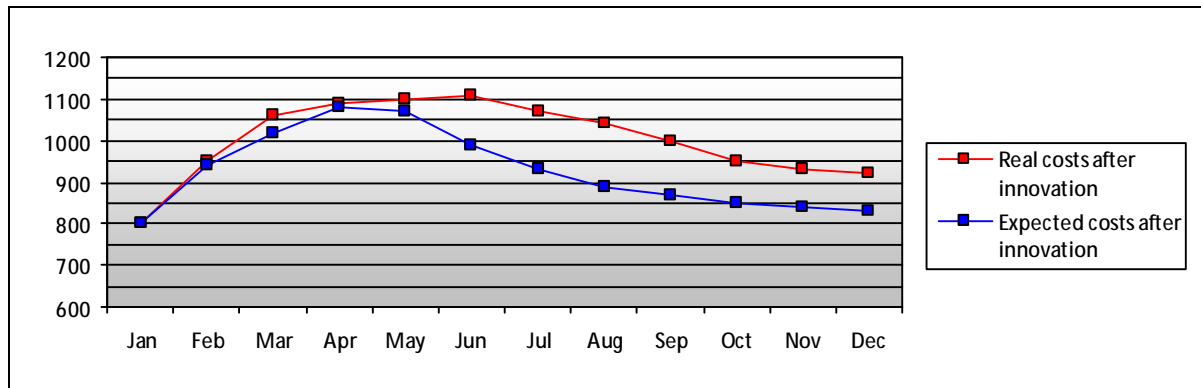
Fig. 1: Difference between managers´ expectations and real development (self-elaboration).

In this Fig. we can see that managers of some imaginary company expect significant decrease in overall costs in May, but real development is different. Costs continue to grow till June and this fact can have negative impact on company´s competitiveness. It is necessary to say that this disadvantage can be connected with individual experience of managers and configuration of real indicators.

2.1.3 Absence of relationships quantification

Focusing on relationships among individual goals or perspectives can lead to conclusion that they inform only about development trend. Some authors [6] consider this fact deficient and propose that individual relationships should be displayed with as much relevant information as possible. In this manner could be achieved significant minimalization of overall risk within first two disadvantages of BSC.

2.2 Dynamic Balanced Scorecard

According to many authors could disadvantages of BSC concept be exceeded by dynamization process. This process can also help in achieving results which are more precise. Dynamic Balanced Scorecard (hereinafter as "DBSC") should be adapted to every individual company and its parameters. It should be able to answer questions "What if...?", appropriately react according to changing environment and conditions, minimize time delay, offer complex view on strategic map, remain transparent and

easy-handle management tool [10]. Though development of DBSC is still at the very beginning, scientific studies describe first cases and models:

- Ghangi General hospital (Singapore)
- BSC and System Dynamics
- BSC and Fuzzy Cognitive Maps

2.2.1 Ghangi General hospital

This hospital in Singapore made its own step towards dynamization of BSC in terms of connection with company´s vision and strategy, i.e. to offer better, faster and cheaper services to all patients. From four basic perspectives remained only the first one - financial, other three are replaced by parts of company´s business vision:

- Financial perspective
- "Better" perspective
- "Faster" perspective
- "Cheaper" perspective

Source: [9]

Further steps of this organization lead to detailed mapping of flows within the hospital and altering them to match with DBSC method if necessary. This organization used bubble diagrams with gradually elaborative relationships to display whole method graphically. These relationships were marked + or - (according to their influence on main goal). This helped to get more precise results and higher competitiveness of the hospital.
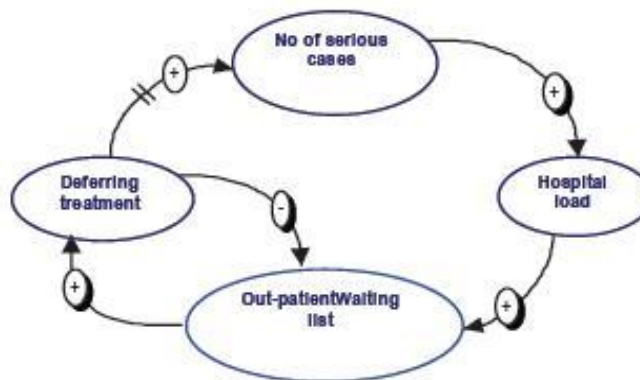
Fig. 1: Bubble diagram used in Ghanghi hospital

Source: [9]

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2.2.2 BSC and System Dynamics

Another option of dynamization is according to some authors [10],[7] combination of BSC and System Dynamics method. This method is focused on displaying of individual activities and flows (information and knowledge, resources, finance, etc.) within an organization. Original strategic map is again advanced - it contents side effects and markers + and - which specify, if the effect is positive and negative (see image 3). System Dynamics model then applies effects described in strategic map on flows within organization and offers more precise and complex information (see image 2).
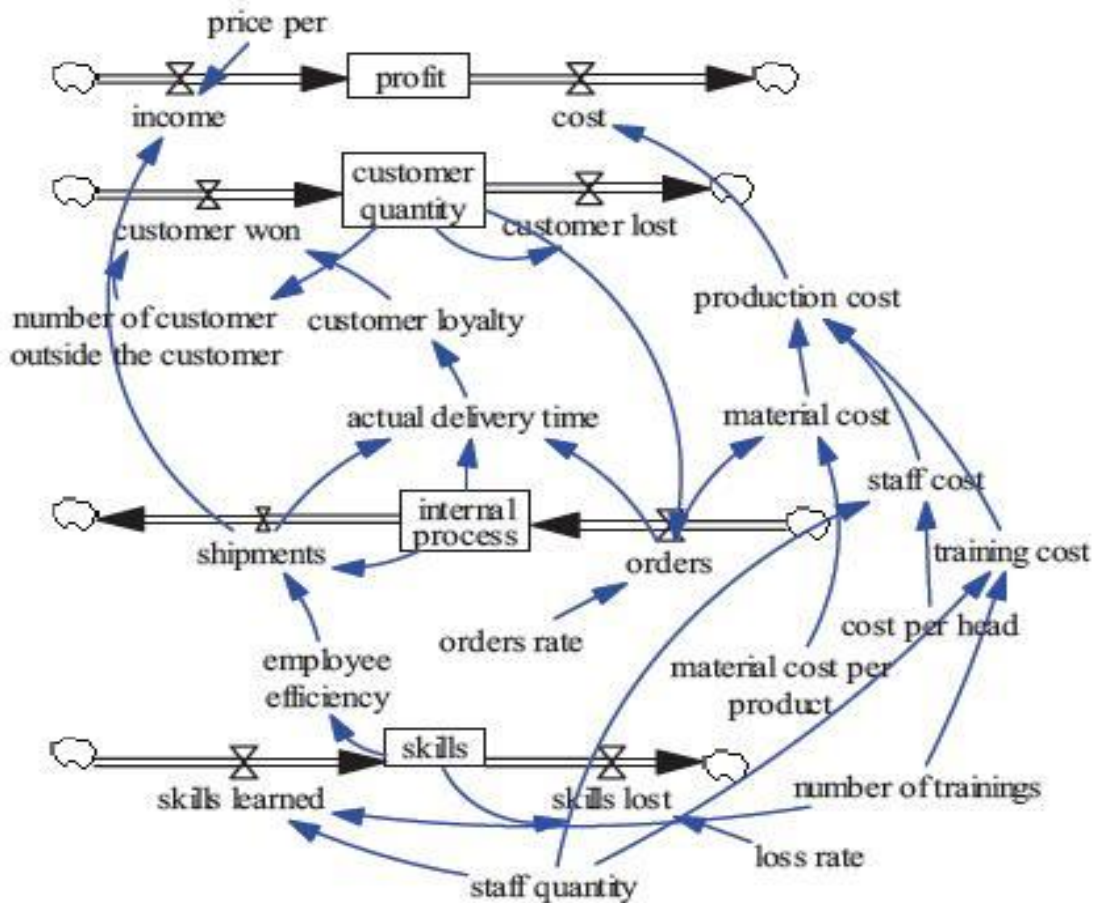
Fig. 2: System Dynamics model
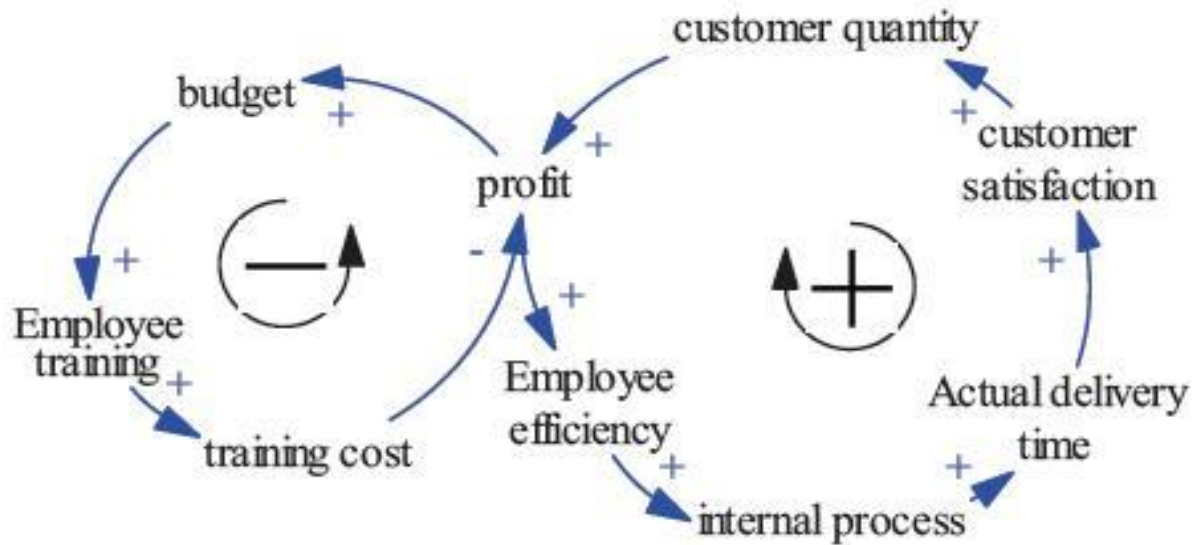
Fig. 3: Influence of individual factors on target goal – profit

Table 1: Entire implementation process of System Dynamics can be divided into 2 stages or 7 steps:

Stage	Content and tasks
1.qualitative	- creation of qualitative conceptual model (management) - creation of strategic map - detailed analysis of indicators, possible relationships and effects
2.quantitative	- application of causal relationships "action - reaction" into the strategic map - creation of simulation model - continual simulation - model development

Step	Content and tasks
1	Detailed understanding of organization and its processes (vision, structure, relationships, flows of resources, creation of value etc.).
2	Transmission of company´s strategic goals into operational goals => indicators setup => transmission to BSC => creation of strategic map.
3	Implementation of causal relationships "action - reaction" into the strategic map.
4	Creation of quantitative model for four basic perspectives of BSC - factors and relationships description.
5	Control of functionality.
6	First simulation and following analysis. Continual development. *Does this model match reality? Where are deviations? Is it possible to remove them?*
7	Model re-design - for better and more precise results.

2.2.3 BSC and Fuzzy Cognitive Maps

Dynamization of BSC can be also achieved by usage of mathematical methods [6]. This system of mutually connected key indicators provides information about effects on main goal. It counts with weighted evaluation (W) of individual relationships. Weighted evaluation should be set by some qualified expert after precise analysis and long-term observation - weights can take three possible states: **W > 0, W < 0 a W = 0 and values (-1;1).**
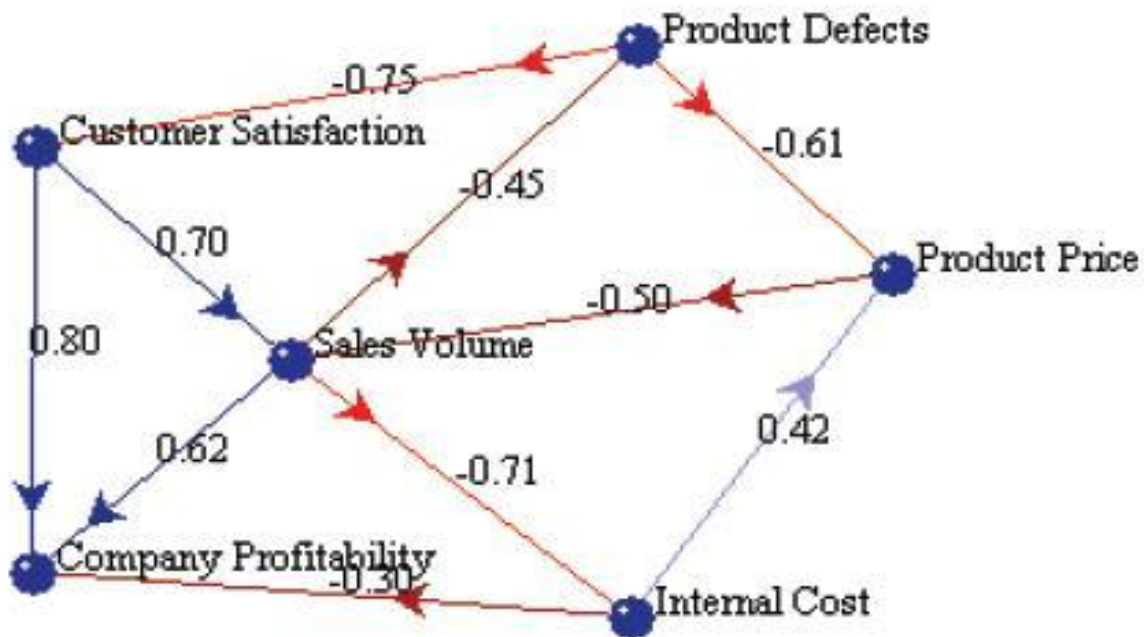
Fig. 4: Application of weighted evaluation of relationships between indicators

Entire process can be divided into several stages:

1. Determination of signs among individual indicators.
2. Determination of weights value (estimation).
3. Model simulation.
4. Model re-design.

It can be said that main differences between DBSC and original BSC are detailed work with indicators, evaluation of relationships (can be weighted or just marked + / -) and flexibility of entire model.

2.3 Comparison

With knowledge of above mentioned facts it is necessary to continue with a question, if effective measurement of company´s competitiveness is not outweighed by

high implementation and operation requirements of DBSC method. Crucial positive and negative aspects of both methods are shown in following table:

Table 2: BSC and DBSC comparison of pros and cons (self-elaboration).

Balanced Scorecard	Dynamic Balanced Scorecard
Positive aspects	
- easier implementation - faster application - positive experience - well-known method	- complex conception of indicators and relationships - weighted evaluation - more precise results - flexible to company´s vision and strategy
Negative aspects	
- causal relationships "action - reaction" - effect uncertainty - time delay - no relationships´ quantification - possible mistakes in results	- new method (not tested) - high implementation requirements (knowledge,etc.) - more abstract - correct selection of goals and indicators - correct evaluation of relationships

3. Conclusion

Dynamic Balanced Scorecard is by innovative approaches trying to solve deficiencies of original concept. As basic problems are considered causal relation ships "action - reaction", uncertainty of individual effects time delay of individual effects and absence of relationships quantification. It is necessary to say that significant advantages and positives, DBSC still belongs to group of methods which are quite new and need to be tested in use. High implementation requirements, company´s resources and time advise DBSC above all for large companies, where benefits achieved by its usage outweigh high costs and initiatory problems. For small and medium companies, BSC is still the very best choice.

Acknowledgment

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MEASURING SOCIAL RETURN ON BUSINESS SUPPORT FOR PEOPLE AT RISK OF SOCIAL EXCLUSION BY SROI ANALYSIS

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Abstract: The paper contains introduction into the problems of the social return on investment analysis measured by the SROI method and the basic resources of, in the Czech Republic brand new, problems of measuring benefits of business support provided to people at risk of social exclusion. Use of the SROI analysis for measuring social benefits of business support is exemplified in the German project of "enterability".

Keywords: Socially Responsible Investment, Social Return on Investment, SROI, Business Guidance

1. Introduction

The paper aims to show the social benefits of business support for the people at risk of social exclusion. The issue of business support for the people at risk of social exclusion (e.g. immigrants, long-term unemployed, handicapped people and other groups) is a new topic in the Czech Republic, unlike the older EU member states. So is the SROI analysis, which has not been explored in the Czech Republic as a tool for measuring the social impacts of the projects, programmes and actions. The paper is one of the outcomes of the project of "Up-Skilling Business Advisors from Communities at Risk of Exclusion in the Labour Market" supported from the programme of Leonardo da Vinci, Transfer of Innovations, which is being implemented by the British Association of Community Based Business Advice (ACBBA) together with the partners from the Czech Republic, Germany, Spain and Portugal. The objective of the project is exchange of experience and transfer of know-how among business advisers working with people at risk of social exclusion.

2. Formulation of the problems

2.1 Business support for people at risk of social exclusion

Business support can be characterized as a set of services that are provided by a business adviser to achieve changes in the processes of a certain entrepreneurial entity. Services provided by a business adviser are mostly in the form of personal consultations, where the methods like coaching or mentoring or training activities are applied. Business advice is usually carried out as a process consisting of the following phases:

1. analysis – definition of the problems;
2. drawing up a plan of changes;

3. implementation of changes;

4. evaluation of changes.

Advice for people at risk of social exclusion is a specific type of business support. Business advice for this target group is an effective tool of prevention of social exclusion – establishment of a functional business stabilizes the person from the point of view of finances, which also enables them to stabilize their position in the society.

Great Britain, with their so-called "community based business support (CBBS) model" [PARDO, 2008], is the most developed European country in this area. This tool was developed primarily as a tool of solving social problems in the relatively closed communities of immigrants in big cities within the project of REFLEX, funded from the EU programme of EQUAL.

CBBS model brings innovative practices in provision of business support and guidance for communities at risk of social exclusion, who are, for example, members of ethnic groups, women, disable peopled, or people living in excluded communities.

The model takes into account the share of non-governmental non-profit organizations (NGO) in the activities aiming to satisfy the needs of excluded communities. The community NGO's dispose of high expertise of the cultural and language specifics, and they enjoy significant confidence, which enables them to provide the services in the way corresponding with the clients' needs to a far greater extent than in the case of the providers focussed on the general public. CBBS draws on the experience of the NGO's and applies it in the areas of business guidance and business support.

CBBS model objectives are as follows:

- provide quality advisory services taking into account the needs of the clients, who are people running their own businesses, intending to establish one, or planning to become self-employed;

- stimulate growth and efforts of the enterprises with low efficiency;

- provide the people at risk of social exclusion with new job opportunities, arrange for them business advice and assistance services in the area of getting common forms of support (e.g. grants, donations, advantageous loans for development of their business, etc.);

- build up the business support infrastructure directly in the specific communities (networks of community based business advisers, their training, etc.).

A community based business adviser (CBBA) is the core of the model. CBBA's are usually members of the given communities, and they represent the link between the community at risk of social exclusion and the professional services provided by professional business advisers. It is the knowledge of the community, their language, their culture and the way of thinking that enables the community based business advisers to provide services effectively.

Business advice in Great Britain is financially supported from the public sources, and that is why there are national standards for these services in place. These standards define knowledge areas and competences of a business adviser.

2.2 SROI Analysis

The Social Return on Investment Analysis (SROI) is a method developed by the charitable fund focussing on investments into the social economy of Roberts Enterprise Development Fund (REDF) in San Francisco, USA, to measure all-society impacts of investments. The development of the method started in 1996 [GAIR 2002], the first coherent articles on the applied method were published in 2000, the first SROI procedure was published by the fund in 2001 [REDF 2001]. In Europe, SROI analysis was first piloted by the New Economic Foundation on the example of four social enterprises in London in 2004, in 2005 the foundation publishes the first European methodology called "The SROI Guide". The study of the Berlin consultancy firm of "iq consult", further described in chapter 2, belongs to the first applications of the SROI analysis out of Great Britain.

The Social Return on Investment Analysis (SROI) is a method how to understand the social, social economic and environmental value the organization creates by its activity beyond the scope of the financial value (profit). It means that it is usable both in the public and in the private sectors. The SROI analysis serves as a project or organization financial analysis supplement. The analysis outcomes provide the managers with important information for strategic planning, planning of projects, programmes and activities, as well as for evaluation of the organization's performance.

The SROI analysis stems from various approaches to understanding a non-financial value. It tries to quantify the non-financial value and, where it is possible, also express it in the form of cash flows. These flows are subsequently discounted to the present value and compared with the volume of the invested financial means. This procedure identifies the "social return on investments" – a SROI indicator.

The SROI analysis stems from the Cost-Benefit Analysis (CBA). It differs in the fact that it is intended for practical decision-making of the organizations' managers and investors. They also differ in the fact that the CBA is mostly carried out for investors outside organizations (e.g. for evaluation of the project funded from the EU Structural Funds).

The methodology has been mainly applied in the old EU member states – e.g. Great Britain[1], the Netherlands[2] and Germany [REICHELT 2007]. Nowadays, there are several approaches to the SROI analysis. They have been gradually developed during application of the procedure in various countries and environments, e.g.:

- REDF approach (continuously innovated the Roberts Foundation);

- NEF approach – the New Economic Foundation – British NGO's [LAWLOR 2008];

- GSVC approach – the Global Social Venture Competition – an international MBA programme of the University of California[3];

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[1] The first European network of organizations applying the SROI analysis - the SROI UK Network, see www.thesroinetwork.org, was created in Great Britain.
[2] See www.sroi.nl for more details.
[3] See www.gsvc.org for more details.

- SROI framework – developed by the British "SROI UK Network" as the recommended unifying approach to processing the SROI analysis in Britain.

The procedure of carrying out the SROI analysis in accordance with the SROI framework can be simply divided into the following phases [LAWLOR 2008]:

1. **defining the analysis objective** (definition of objectives, the type of analysis, summarizing the strategic targets of the organization, the research context);

2. **identifying the analysis parties concerned and the target groups** (e.g. the employees, customers, suppliers, neighbours, public budgets, communities);

3. **determining the scope of analysis** (determination of the fact whether it is the whole organization, its part, a project or a specific activity that is going to be analysed);

4. **analysing income and expenditure** (the income and expenditure leading to creation of the non-financial – social, environmental or economic value and expenditure leading to creation of the financial value are calculated on the basis of the zero option definition);

5. **mapping the value string of influences** (identification of inputs, activities, outputs and outcomes of the analyzed activities affecting the target group);

6. **setting indicators and collecting data** (mapping the benefits and drawbacks, choosing descriptive, quantifiable, monetizable indicators);

7. **predicting the future development** (only for the predictive analysis);

8. **calculating the value of indicators** (NPV calculation, SROI indicator calculation and carrying out a sensitivity analysis);

9. **drawing up a summary report**;

10. **monitoring** (only for the predictive analysis).

Phase 6 – setting indicators and collection of data is the key phase for credibility of the SROI analysis. Some benefits cannot be quantified or monetised in a credible way. Nowadays, there is not one single, generally accepted process for assigning a monetary value to social impacts. For some indicators, expressing their monetary value is obvious, for some others, it is necessary to use, for example, the shadow prices, which do not have to be generally accepted. Division of indicators by monetizability as described by [OLSEN 2008] – see Fig. 1.

QUANTIFIABILITY

TYPE I.	TYPE II.	TYPE III.	TPYE IV.
• Sales revenue • Investment returns • Dividendes • Etc.	• Goodvill • Projected revenues • Depreciation • Increased productivity • Emmision credits • Reduced recruitment costs • Etc.	• Health • Safety • Biodiversity • Celan air • Safe water • Education • Political stability • Etc.	• Life • Freedom • Dignity • Happiness • Etc.

Fig. 5: Typology of quantifiability of indicators within the SROI analysis

Source: Olsen, 2008

The outcome of the SROI analysis – the SROI indicator, cannot be interpreted separately from the entire process of analyzing. For interpretation of the analysis, the outcome is as important as the method of calculation, which provides information on creation of the non-financial value.

At the same time, the SROI analysis provides:

- information on the approach used for calculation of the SROI indicator value;

- related information making it possible to interpret the indicator accurately;

- specification of other, unquantified and unmonetized social values;

- information describing the analyzed activity or project and its context.

3. Problem solving

3.1 Measurement of the benefits of business guidance provided to people at risk of social exclusion by SROI analysis

The SROI analysis has been applied in the area of business support in Great Britain and Germany. The SROI analysis application aimed to reckon the benefits of business guidance, especially the benefits flowing into the public budgets, i.e. proving the return on investment of the public funds into business advice for people at risk of social exclusion.

Such return can be illustrated on the example of the project of "enterability" implemented by the consultancy organization "iq consult" [JANKE 2008] from Berlin. The project was focussed on helping physically handicapped individuals establish their trades and businesses. During the period of 4 years of the project (2004 – 2008), the offered guidance support was used by 340 individuals, of which 121 handicapped persons became self-employed, 61% of the beginning entrepreneurs operated successfully for a period of at least 2 let, 35% for more than 3 years.

The project SROI analysis [JANKE 2008] implies that the cost of the project was EUR985,000. The outcomes of the project include 95 supported and operating businesses, 16 newly created jobs in the newly established businesses, a 50% decrease in drawing welfare benefits.

The project benefits for the public budgets include:

- savings in monetary social support for handicapped people;

- a decrease in unemployment costs due to creation of new jobs;

- an increase in the tax yield from both direct and indirect taxes (the analysis dealt with direct taxes only).

The SROI indicator was calculated by comparing the costs and benefits discounted by the rate of 3.5 % p.a. The discounted project benefits amounted to EUR3,382,384, the discounted project costs EUR874,540, which makes the SROI indicator of 3.9. It means that each one euro invested into business guidance brought an all-society benefit of EUR3.9.

4. Conclusion

The case study conclusions imply that business support for people at risk of social exclusion is a service that is for the society, or the public budgets, unambiguously returnable. The scope of the paper does not allow a detailed description of the procedure of the SROI analysis, which enables transparent quantification of the social benefits of, not only, business advice. Application of the SROI analysis to the case studies in the Czech Republic would enable reckoning the benefits of business support in the conditions of the Czech tax system and thus it would support the efforts to enforce funding of these services from the public budgets. To date, business advice for people at risk of social exclusion is provided in the Czech Republic only sporadically within the projects funded from the EU Structural Funds1.

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[1] E.g. "Business as a Way out of Social Exclusion" project implemented by GLE, o.p.s. in Prague for immigrants, parents with children and people out of work for a long time, for more details, see http://www.gle.cz/projects/march09-project1.php.

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SENIOR LIFE QUALITY IN PARDUBICE

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Abstract: *The contribution is based on current demographics of aging, not only in Europe, but also in the Czech Republic. It is necessary to investigate both economical and social impacts in context of individual policies and to implement them into upcoming conceptions. Within the frame of the community plan of social and related services, The City of Pardubice has a concept of work with seniors that will be changing with respect to the results of the upcoming research.*

Keywords: *Seniors, Process of Ageing, Social Work, Social Care, Community Planning, Life Quality, Demographic Development*

1. Introduction

The existing international experience goes in line with the rule that no individual can be refused the opportunity to participate in social life and to take part in economic and social development. Seniors run greater risk of being declined this opportunity and thus, it is necessary to fight all forms of discrimination and secure the full enjoyment of human rights and basic freedoms. The combination of many factors, e.g. geographic mobility, urbanisation, economic development as well as differentiating the availability work and social institutions depending on age, brought about age segregation and prevents successful integration of seniors into the society. One of the crucial tools preventing social isolation and marginalisation of seniors is the economic, civic and cultural involvement. It also increases senior life quality and contributes to the functioning of communities and society as a whole. Seniors play a crucial role in families and the society even though their contribution is often overlooked and the social capital, which they represent, is rather commonly unused. The knowledge gained by the seniors through their life experience represents an important asset of the economic and social development. Seniors are active in many important ways, which are economically immeasurable, i.e. mainly care for family members, provision of their own food, maintenance of their own household, voluntary social work etc.

The main factor in the provision of full integration and involvement of seniors is the positive view of aging and senior age. It is important to emphasise the view of seniors as active participants. Increasing the economic, political and cultural participation of seniors should be based on the awareness that senior contribution exceeds the level indicated by their economic activity. It is thus necessary to recognise, promote and support their work provided for the family and the whole society. Participation on social, economic and cultural activities plays an important part in the prevention of social exclusion.

Extending human life extends also the life standard demands of the productive age into the period of life, when a person gradually becomes more dependent on the

support of others. That leads to the increase of costs compensating for the growing dependence of external help and, at the same time, leads to searching for new forms and the transformation of social services. Based on the recommendation of the Vienna International Action Plan for Ageing, many European countries, including the Czech Republic, set up national committees for seniors. Their task is to secure dynamic and coordinated national reactions to the ageing of the population as well as the protection of seniors. One of their goals is also the support of increasing senior life quality, assessment of individual policies and adjustment of all programs and policies to the seniors.

2. Demographic development in Europe

The Eurostat states that by the year 2040 the demographic development in most European countries will result in the portion of persons older than 65 – 79 let in the overall number of inhabitants increasing from less than 15% in 2005 to about 20%, and the persons older than 80 increasing from less than 4% to about 9%.

In spite of territorial differences, this represents a common trend, which can cause problems in many European countries. So far, the necessary care was provided by families, but the recent years connected mainly with greater female participation in the labour market, labour migration and growing number of single-member households; have changed the framework of socio-economic conditions. This development reflects also higher costs of senior care. Specialists point out that this trend is reflected in increasing costs of long-term care. They have estimated that the costs of long-term care from public sources will double by the year 2050. This trend will become most evident in the countries with currently low offer of social care. The individual demographic indicators show regional and local differences reflecting the standard of development, health state and life quality of the local inhabitants as well as other factors. "The age" of population can thus be to some extent considered an overall indicator of the society´s development.

Extending human life, transferring the life standard demands of the productive age into the period when a person is gradually more dependent on the help of others and the respective costs of compensation for the growing dependence on external help have led and still lead to the search for the transformation of social services.

Demographic ageing is often incorrectly seen as a negative phenomenon and the issues of demographic ageing are frequently reduced to reforming the pension system. The society, however, needs to do more in order to secure quality senior life and to utilise the potential of the growing number of seniors. It is necessary to make changes in many areas, mainly in the negative approach to the ageing of population, which is often connected with biased even atheist view of senior age. Such view gives rise to fears that corrode the inter-generation unity and provides space for discrimination. At the same time it overlooks the potential of seniors, as well as the outcomes and possibilities of scientific, technical and economic development.

Providing all people with the opportunity of self-fulfilment, education and active life is necessary for the improvement of senior life quality and the support of ageing population´s prosperity. The linear model "education, work, retirement" is becoming

more flexible and less sharp. Seniors are entitled to be evaluated as individuals on the basis of their capabilities and needs regardless of their age, sex, race, disability or other characteristics. Seniors with their knowledge and experience should stand at the centre of the changes taking place in the context of ageing population. People of any age should play an active role in determining the quality and type of services provided for them.

3. Demographic development in the Czech Republic

The VÚPSV institute team led by Doc. L. Průša carried out a study titled "The projection of the inhabitants of the Czech Republic to the year" (Průša, L.; 2009). This material serves as the basic starting point for building all social systems. The impacts of the ageing of population on the social services is discussed only marginally and so far, no complex studies quantifying the impact of the ageing of population on the need of social services in the country have been provided. The prognosis is determined by many factors together with the current difficulty of quantifying such factors as the change of legal state, philosophical concepts and approaches to the provision of social care and also the development of economic indicators. The above-mentioned projection also shows that the portion of persons older than 65 will be increasing significantly practically throughout the whole period (from1556 thousand in 2009, or from 14.8 % to 33%). The data prove that the number o persons dependent on the help of others will be significantly increasing in future years.

The reaction to the above-stated fact of the ageing of population came in the set up of multi-area working group. It was set up within the Ministry of Labour and Social Affairs and one of its tasks is to create the concept of long-term care and handicapped-senior care in their home environment. The change of the current system will require, among other things, also new qualifications such as community workers, home assistants, service managers etc. Creating the information and communication systems between the service providers and the clients represents one of the crucial tasks. The new system of long-term care should, according to the Ministry of Labour and Social Affairs, should include not only doctors, institutes, long-time wards etc., but also physiotherapy, ergo-therapy, clinics for memory disorder treatments and cognitive rehabilitation, nutrition counselling, palliative care, sheltered housing, camera-monitoring and other forms of care reflecting the individual needs of seniors (MPSV;2010).

Long-term care should be a part of the reform of social services. It is thus necessary to anchor the system of senior care in the legislation. Also the overall approach to seniors must change together with the education of the caring professions, the reorganisation of service and personnel structure. In its programme the government declared as one of its priorities to pay greater attention to senior life quality. That is the reason for making necessary conceptual changes and taking a number of different measures. Conceptual and preventive steps are always less costly and more effective.

In order to achieve conditions for healthy, decent and active senior age, the government and administration must function in a strategic and long-term partnership. Local and regional administration has a great impact on the accessible transport, housing, health and social services, cultural and social opportunities, free-time

activities, safety and other services and conditions needed for quality life. Administration should play the main part in creating the senior-friendly activities and conditions increasing quality on local level. The government should support the administration and strive for cooperation in achieving the set goals on the state level. At the same time, the government should take into account the specific needs of individual regions. It would by suitable to support the development on age-integrated communities. The organizers of such activities must be motivated to offer varied events, which will reflect the needs of all age-categories and will generate incentives for homogenous interest groups across age-categories. It is necessary to stress the importance of voluntary work to increase inter-generation communication also in this area. In terms of local politics it is important to systematically create senior-friendly environment. The enforcement of positive, active and development-focused view of ageing may also result from the activities of seniors themselves. In this respect, it is crucial to motivate seniors to participate actively in creating positive and realistic Fig. of senior age.

Thanks to the increasing education and improving health of the population, the ageing and increasing number of seniors represent an enormous potential for the social and economic development of the society. It is the interest of the Czech Republic to create enough opportunities for its senior population to lead active and quality life and to live in the society accommodating for its needs and priorities.

4. Demographic development in Pardubice

Municipalities play and will keep playing an irreplaceable part in the system of social and health services for seniors. It means that the municipalities have to base their policies on the European and state policies and programmes and project these facts into their own concepts. From the point of view of the administration´s and town´s social work we mean mainly the managerial perception of social work (Kappl, M.; 2008). In case of the senior target group, we encounter the dilemma of whether to take the way of social control or help (Kopřiva, K.; 2006).

Currently, the basic conceptual material in Pardubice is still the Strategic Plan of Development of the Town of Pardubice, which includes the Community plan of developing social and other related services up to the year 2011 (Community Plan of Developing Social and Related Services for 2008 – 2011;2008). As a part of the community planning, the 9 working groups (according to client target groups) meet once a month. These meetings are followed by the negotiations of a coordination group. One of the most numerous and most active groups is the senior group, which regularly analyses social and other services provided for the seniors within the town´s territory. The high degree of conceptuality of their work is proved by the fact that they see one of their main tasks in analysing the needs of seniors in relation to quality of their life. The gathered date will serve as the basis for the concept of social and other services for the town´s seniors in order to achieve the maximum satisfaction of seniors

as well as maximum cost-effectiveness.
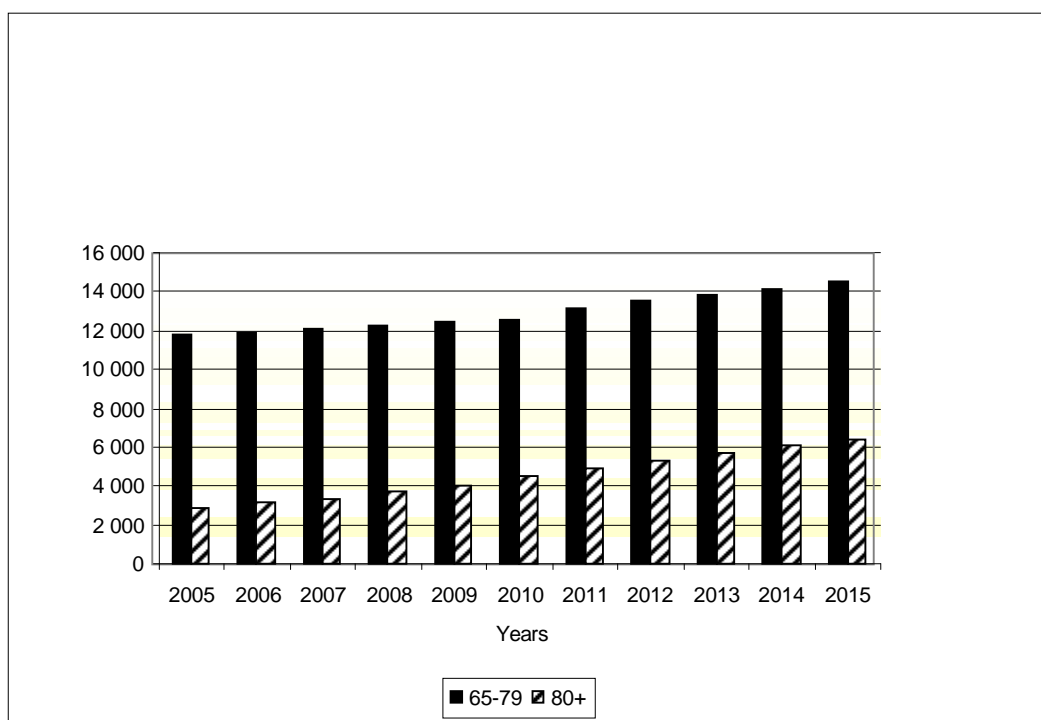
Fig. 1: Quantity of seniors

Source: Pardubice City Hall, Community Services Department of 2010

4.1 The development of the number of seniors in Pardubice in 2005 – 2015

The above Fig. shows the development of the number of seniors according to the prognosis of the number of inhabitants. It clearly displays the growing proportion of seniors aged 60 – 79, which should reach at the end of the assessed period more than 14 thousand persons, i.e. grow by 22 % of the value from the year 2005. The development of the number of persons older than 80 years of age is, however, more serious. Throughout the assessed period, this group will increase by more than 120 % of the value from the year 2005, i.e. from the original 2,895 persons to approximately 6,400 persons older than 80. This development will bring about greater demand for social services used mainly by this senior group. The demand will concern not only the capacity of institutions, but also the quality and scope of services.

4.2 Number of seniors in Pardubice January 1st, 2010

Total no. of inhabitants on 1. 1. 2010:	90,298 persons
Of which seniors above the age of 65:	16,922 persons (6,925 men, 9,997 women)
Per cent of seniors:	19% (18.7%)
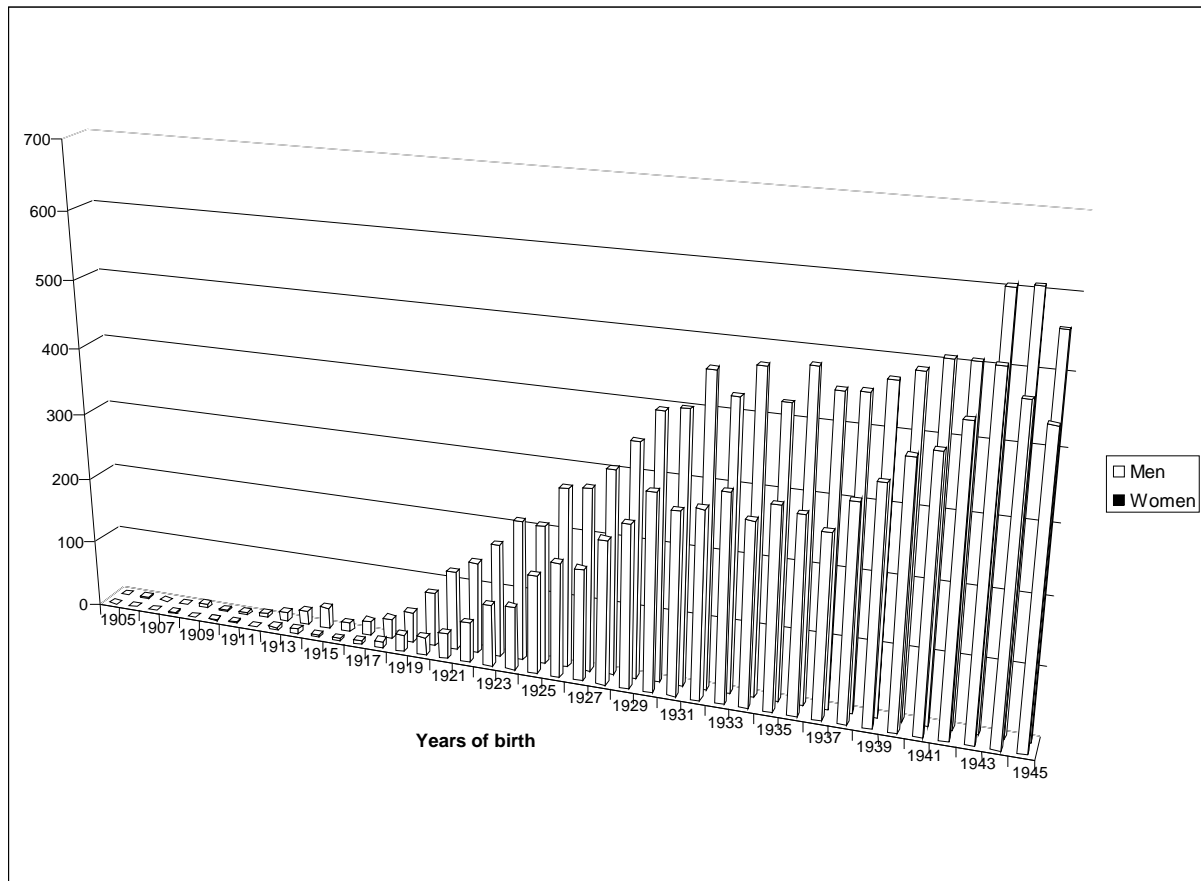
Fig. 2: Quantity of seniors in Pardubice

Source: Pardubice City Hall, Community Services Dept.2010

The statutory town of Pardubice through the Pardubice City Council and the Community Services Department provides senior care within its Community Plan of Developing Social and Related Services. The following activities of the town form an irreplaceable part of working with seniors:

4.3 Working with Seniors in Pardubice

The work with seniors is based on 3 pillars: Senior Council, Seniorcentrum and 26 Senior Clubs.

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                     │        └────┬────┘        │
                     ▼             ▼             ▼
              ┌────────────┐ ┌────────────┐ ┌────────────────┐
              │  Senior    │ │Seniorcentrum│ │ 26 Senior Clubs│
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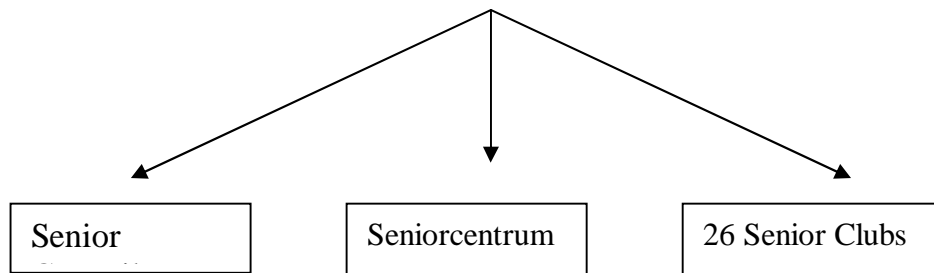
4.3.1 Senior Council

The Senior Council was founded in 1999. It is a 7-member counselling body of the Pardubice City Council. The Council members are suggested by the Senior Clubs and named by the Pardubice City Council for the period of two years. Senior Council deals with issues connected with the protection of the environment, traffic, town´s development, housing, health care, safety,... Senior Council meets monthly.

4.3.2 Seniorcentrum

Seniorcentrum is open 5 days per week and was founded in April 1998 as an institution for creating conditions for healthy ageing of Pardubice seniors. The activities of Seniorcentrum helps seniors lead quality life, participate in full and active social life. It strives for a lifestyle respecting the objective requirements of senior age and in its results helps seniors extend the age lived in full health, without problems and with overall life-satisfaction. The activities of Seniorcentrum are run by Seniorcentrum Council based on voluntary work.

Throughout the year, Seniorcentrum organises lectures on different topics (health, travelling, legislation etc.). Each month has their own programme and contains weekly, monthly and other regular events. The annual programme contains five basic areas: interests (lace making, dance group, tourism..), healthcare (yoga, exercises for women, rehabilitation exercises, fitness exercises, memory training…..), education (music and literature programmes, language courses, lectures and discussions, safety courses…), social (concerts, social events, anniversary celebrations, accordion evenings, week of events for seniors titled "Age Is No Obstacle") and counselling (free-of-charge legal counselling).

4.3.3 Senior Clubs

The town of Pardubice offers its seniors the use of 26 senior clubs (970 members). Every club has its chairperson, who is responsible for the club´s activity, attends regular monthly chairperson meetings. Every club meets as required, at least once a month, but often more frequently. The clubs organise lectures, walks, gallery visits, cultural events and trips as required by its members.

5. Conclusion

The municipalities, regions and the state face demanding tasks in connection with the ageing of population and they cannot fulfil them well without a high degree of coordination and without concepts, which will be created to reflect these demographic changes. In the following months, Pardubice Town Council will carry out a research focusing on senior life quality in Pardubice in the context of the Law on Social Services. It will map real needs of the seniors and the gained data will be reflected in the concept of social work and other policies of the town of Pardubice.

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ELECTRONIC SERVICES OF EGOVERNMENT IN THE EUROPEAN UNION COUNTRIES

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Abstract: This article deals with eGovernment (electronic public administration) on the level of the European Union. There are steps described, which initiates European Union, notably through the European Commission, which are confronted with the achievements of individual Member States. The result is a comprehensive look at the current state of eGovernment services in the European Union countries.

Keywords: eGovernment, Public Administration, European Union, Electronic Services, Information Society, Portals

1. Introduction

eGovernment means using the tools and systems by the Information and Communication Technologies (ICT) to provide better public services to all citizens and businesses. The ICT is already widely used by the government bodies, just as in the enterprises, but eGovernment involves much more than just the tools. Effective eGovernment also involves rethinking of the organization and processes and, so that the public services are delivered more efficiently to the people who need to use them. Implemented well, eGovernment enables all citizens, enterprises and organizations to carry out their business with the government more easily, more quickly and at lower cost. eGovernment is closely linked with changes of the public administration system in the country. [2]

2. Public Administration in the European Union

The public administration of each Member State has its own specifics, but the goal must be the same, especially to improve the quality of life while respecting the principles of sustainable development and simultaneously enhance the efficiency and quality of the public services. The European governance has to achieve the European standards and has to apply the principles of the 'acquis communautaire', which means the sum of the European Union (EU) mandatory for all its members and the superior national law. On the basis that the individual national systems of the public administration are included the so-called European administrative space, in which a number of new administrative relationships appear. The public administration however falls within the exclusive competence of the individual EU Member States. [5]

The public administration in all EU countries at the beginning of the 21st century has to adapt to the requirements of information society and the use of modern ICT. There must be also a new view on functions of the public administration because of the emergence of new problems. This is mainly because of the members of national and

ethnic groups who come to the European Union countries from various states, especially from Turkey and the countries in North Africa. For this reason, the information must be available in multiple languages, so interpreters are needed. Furthermore, issues of environmental protection, security, gender equality, respecting the rights of persons with disabilities, etc. can be included. These all lead to an arrangement of the ICT at all levels of the government bodies and automate processes and also to improvement in communication between the state and the citizens in the EU Member States. [7]

3. eGovernment in the European Union

In the EU internal market people are able to move freely – either for work or for private purposes – and consequently they have to be able to deal with public services outside their home country more and more. If eGovernment services are to provide significant added value to its citizens and businesses, then it is crucial that different government bodies, both within a country and in the different EU Member States, are able to share information easily and cooperate in serving the citizens.

eGovernment can help to make public services more efficient and easier to access, save time and money, not only to the citizens, but also to the businesses and the governments. The potential cost savings are massive. In Denmark, for example, electronic invoicing saves taxpayers €150 million and businesses €50 million a year. If introduced across the EU, annual savings could exceed €50 billion. In Italy itself, e-procurement systems cut over €3 billion in costs. Effective eGovernment will also improve governance and enable the citizens to become more involved in the activities of their governments. [2]

Across the EU, the governments and their agencies face similar issues and problems in introducing new ICT systems. Moreover, the freedom of the Union's internal market means more and more citizens and businesses need to deal with the public bodies outside their home countries. Whether they seek planning permission to build a new factory or a licence to get married, individuals and firms must be treated fairly and seamlessly wherever they are in the EU. That means that eGovernment tools should be capable of dealing with data from any Member State. This also requires governments to co-operate more.

By connecting the government departments, the companies and the citizens, eGovernment public services also become faster and more personalized, allowing the citizens and the companies to get on with their lives and build their businesses rather than waiting in line in the government buildings. eGovernment can also strengthen democracy by improving two-way communication between the citizens and their government.

While there is much research still to be done, this is not just a technical issue - technology must be combined with organisational change and new skills to fulfil the eGovernment promise. Moreover, the national eGovernment solutions must not lead to new barriers within the Single Market – if the national electronic identities are not interoperable, for example, both companies and people will face new barriers to work and life in the other countries.

Modernising Europe's public administrations therefore means to help the researchers, the companies and the public administrations to work together across Europe and develop the technologies, exchange best practices and forge a coordinated approach. The research is vital for the development of eGovernment throughout Europe, but only if the industry, the smaller companies and the academia and public administrations work closely together to make the government services more efficient and user-friendly. [2]

eGovernment at the EU level means a direct interaction between the citizens or the businesses from one Member State and the government bodies of another Member State, or the European institutions. It also means the exchange of data between the Member States for dealing with cases of the citizens or the businesses, which may raise requests (get information from the other Member States) on the government bodies of their own country (not only within the EU) and the exchange of data between the various EU institutions and the businesses or the citizens of the EU institutions and also between the businesses or the citizens of one or more Member States' government bodies.

4. eGovernment and electronic services

The electronic service is such electronic activity that satisfies a collective need which might be made from the public resources. The essence of the electronic service is remote access and the use of remote electronic connection to obtain available services. The electronic service should provide benefits to both sides, for the services' user and also for the service provider. The electronic services from the perspective of eGovernment are advantageous for both, the state and for service users who may be legal person or natural person. An important role is also played by a proactive approach provided by the public authorities. This is a situation where the public authorities provide most of the administrative activities for the citizens, without their direct participation. [6]

Computerization and electronization of selected services for the public institutions involves [6]:

- manpower reduction,
- reduction of physical space (both office and archives and storage facilities)
- costs reduction from the long term view,
- acceleration and simplification in the process of providing services,
- limited contacts with the users of the services,
- security and compliance procedures,
- higher satisfaction of service users,
- error reduction in provided data.

From the standpoint of legal or natural persons it involves [6]:

- provision of services outside the office hours of the institutions (it saves time),

- improvement in the quality of selected services (clear and correct data),

- remote access,

- online monitoring of the service transaction.

eGovernment services are based primarily on the network of interconnected registries and the public administration information systems. It is therefore necessary to provide such online services that will appeal to the citizens and the businesses. Consequently the Directorate General for Information Society and Media of European Commission has compiled a list of basic public services provided electronically to the citizens and the businesses as part of its activities to measure the progress in implementation and the level of eGovernment services across the EU. [1]

The measurements according to this list have been carried out since 2001 and the Czech Republic has been included in the measurements since 2004. The last report was published in November 2009 and there are all 27 Member States of the EU and also Croatia, Iceland, Norway and Switzerland compared, in the context of the objectives in the i2010 Strategy. List of the services for the citizens and the businesses is in Table 1 on the next page.

Each of 20 services is designed as a measure of the level on a scale of 0-5 (5-stage maturity model). The evaluation of the services takes place on two levels, both for the very existence of the measured service, and second, on its maturity. At the lowest level 0 there is no electronic access. The following levels are: information, one-way interaction, two-way interaction, transaction and level 5 named as automation. For example at level 1 there is the mere availability of getting information on the website such as phone numbers etc. At the highest level 5 there are fully automated execution services through the ICT, without officers' physical contact. There is also a possibility of an electronic payment or receiving a printed receipt. Not every service needs to reach level 5, some services are already fully automated at level 4 or some levels could be omitted. [1]

The first EU Member State to achieve full access to all online services for its citizens and businesses was Austria in 2007. Malta, Portugal and the United Kingdom were the others in 2009. [1]

Table 1: Electronic services monitored by the European Commission. Reference: [1]

Classification of the electronic services by the European Commission.	
Electronic services for citizens	Electronic services for businesses
1 Income tax: declaration, notification of assessment.	1 Social contributions for employees.
2 Job search services by the labour offices.	2 Corporate tax: declaration, notification.
3 Social security benefits.	3 Value added tax: declaration, notification.
4 Personal documents: passport and driving licence.	4 Registration of a new company.
5 Car register (new, used, imported cars).	5 Submission of data to statistical offices.
6 Application for building permission.	6 Customs declarations.
7 Declaration to the police (e.g. in case of theft).	7 Environment-related permits (incl. reporting).
8 Public libraries (availability of catalogues, search tools).	8 Public procurement.
9 Certificates (birth and marriage): request and delivery.	
10 Enrolment in higher education/university.	
11 Announcement of moving (new address).	
12 Health related services (interactive advice on the availability of services in different hospitals; appointments for hospitals).	

The European Commission established ePractice portal (available at http://www.epractice.eu/) that offers the information relating to eGovernment eInclusion (raising awareness of the citizens and the businesses on projects in the field of the ICT and their active involvement) and eHealth (electronic health) to support the emergence of new electronic services, the exchange of ideas, processes, information, and for comparing individual states (not just within the EU). This portal also helps to develop selected projects and makes information about them available.

5. eEurope and i2010

The first eEurope Action Plan was launched by the European Commission in December 1999 and was approved by the European Council meeting in Lisbon in March 2000. This plan's aim is to create Europe with digital literacy and to promote an entrepreneurial culture opened to modern ICT and also to ensure that the information will be available for all population groups.

In June 2001 the eEurope+ Action Plan was launched, which should accelerate the reform and modernization of the economy of the future Member States to increase their global competitiveness and promote social cohesion. For candidate countries,

which was the Czech Republic at that time, it was primarily meant to increase the availability of the internet and other public services for most users. In June 2000 the European Council presented and put into operation the action plan eEurope 2002. This plan assessed the previous eEurope strategies and set the additional targets for promoting the internet use, especially for students and research staff, and increased investment in people and knowledge (knowledge economy).

In June 2002 the European Council meeting in Seville launched eEurope 2005 Action Plan, which followed the eEurope 2002. This Action Plan is basically focused on developing the availability of broadband Internet access at prices that are optimal in terms of competitiveness, further network security and better use of the ICT in the public administration.

Following the eEurope action plans i2010 Strategy was published in June 2005. It is the European Information Society for growth and employment. It promoted the positive contribution that the ICT can make to the economy, society and personal quality of life. It was based on three main priorities, also known as three 'Is': Innovation, Investment and Integration into daily life. Concrete action plan for the i2010 Strategy was i2010 eGovernment Action Plan. By 2010, these priorities have been established [4]:

- 'no citizen left behind' – ensure that all citizens have easy access to eGovernment services,

- make efficiency and effectiveness a reality - to ensure that eGovernment services have been in practice an effective, transparent, legally binding and to eliminate the administrative burden for the citizens and the business entities,

- implement high-impact key services for the citizens and the businesses – 100% of the government contracts offer availability in the electronic form, the actual rate of use of at least 50%,

- instant access - enables the citizens and the businesses to use convenient, secure and authenticated access to public services across Europe,

- strengthen participation and democratic decision making in Europe – implementing tools to enable effective public consultation and participation in decision making.

i2010 expired at the end of 2009. On the basis of defined objectives, the number of people who use the internet regularly grew from 43% in 2005 to 56% in 2008, most of which is attached at almost daily basis and using high-speed access. The EU also made the progress in the use of 20 basic online public electronic services for the citizens and the businesses. The range of the services available to the citizens increased to 61% in 2009 (50% in 2007) and the services for the businesses to 83% (70% in 2007). More than a third of the citizens and nearly 70% of the EU businesses used the electronic services of eGovernment at the end of 2009. [1]

The latest strategy in this area should follow the i2010 and it should also determine priorities for the development of eGovernment and the ICT in the period of 2010-2015. This is called the Granada Strategy. The challenge of this strategy is to define strategic steps of the development of the information society in Europe with regard to the so-

called Digital Agenda and the EU Strategy 2020. The Granada Strategy is based on the following topics: infrastructure, advanced use of internet, security and trust, digital rights for users, single digital market, the electronic services, enhancing the competitiveness of the ICT sector in Europe, the international dimension of the Digital Agenda and measuring progress in the ICT. [3]

6. The beginnings of eGovernment in the EU

The beginnings of eGovernment in the EU can be traced back to the beginning of the 90s of the 20th century, when it was possible to communicate with some public authorities via e-mail. Among the first states to allow this to their citizens were Belgium, the Netherlands and the United Kingdom. As the importance of the ICT and the availability of the internet grew, the EU institutions began to solve the issues of the information society and the possibilities of electronization of the public administration.

The first document, which highlighted the importance of the ICT and addressed the possibilities of development of the electronic public services towards the citizens and the businesses, was the White Paper, since 1993 it has been entitled Growth, Competitiveness and Employment: The Challenges and Ways Forward into the 21st Century. The White Papers are generally documents issued by the European Commission that include proposals for action in certain areas. The White Papers are only recommendatory and are non-binding documents for the EU Member States. In 1995 the program: Interchange of Data between Administrations (IDA) was launched. It defined the format of data exchanged in the public administration, architecture and the requirements for the interconnection public administration information systems and ended at the end of 2004. Followed by the eEurope and i2010 Strategy, which was funded by programs: Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens (IDABC), which ended in late 2009 and Interoperability Solutions for European Public Administrations (ISA). The aim of these programs is to promote cooperation and facilitate communication between the public administration bodies of the EU Member States with using the electronic tools. [7]

The development of eGovernment is bound in all countries to various official documents - strategies, action plans, frameworks, initiatives, programs, etc., which in most cases only replicate or complement the strategy published by the European Commission. These documents are usually scheduled at 3, 5 or 10 years and are issued both at national and at local levels, which depends on the system of the public administration in each Member State. At the same time, many projects and electronic services in eGovernment are realized only at the local level (often only within a specific city or area) that is particularly evident in countries like the United Kingdom or Germany. [7]

7. Current level of electronic services in the EU countries

In response to these official documents, each Member State has developed its own documents and programs over the years with regard to their capabilities and priorities. Contents of most documents in the first phase concerned primarily to increased

availability of broadband internet in the population especially with regard to selected groups - mainly research staff and students. At the turn of the century the development was followed by programs – the internet in schools or the internet for seniors. Since the late 90s of the 20th century creating information portals has played a major role, which includes information about the importance of the ICT in everyday life and the first projects related to the electronization of the public administration. These programs were mainly needed for the creation of the public administration information systems, registries and databases, but also for the electronic data exchange between the public authorities. This phase took place in most of the Member States at the turn of the millennium. [7]

Following phase was a creation of the portals (especially between years 2001-2005), which allow the use of electronic services after the registration. This was used only by the businesses at the beginning - services related to tax collection and transmission of documents related to the company's activities. Then after a few years it was followed by services for the citizens. For the businesses and other taxpayers a separate portal was usually set up, for example, in Ireland it was portal Revenue - Irish Tax & Customs was launched in May 2005, which allows the citizens and the businesses to conduct all operations relating to the payment of taxes and administration online. Since June 2006 it has been possible to register a new company electronically in Belgium (applicants must have an account with a share capital).

Most countries also pay increased attention to a transparent public procurement. In December 2001, for example, portal E-Tenders was launched in Ireland where interested persons can find a list of all contracts they can respond to or insert their own offer. In September 2003 Electronic Marketplace was put into operation in Italy, in which the businesses from across the EU can offer their services and respond to the public procurement. In Cyprus it was e-Procurement System portal launched at the end of October 2007, which in addition to the procurement, the processing and the management of procurement also supports the electronic auctions.

Around the year 2004 there was a trend to unify the system which was divided into several specializations. The reason for this was not only the EU enlargement, but also the problem when individual states began to use different specifications in it. The first specialization is electronic identity represented by so-called eID (identity document) cards, which are used for identifying the holder, for facilitating communication with the public authorities and also to provide secure access to the electronic services available through the internet. Austria was among the first countries that started to issue these cards in February 2003. There are the citizen cards used for authentication (user authentication by password or fingerprint), and whose owner can use this card to enter into applications at http://www.myhelp.gv.at/ (launched in January 2009) where Austrian citizens can gain access to data which are kept in registries, or they may send the form to the selected public authorities. During 2004 the eID card was also fully implemented in Belgium, where the card can be used for identification and as a travel document too. [7]

Next specification is an electronic passport (ePas) that contains biometric information that can be used to authenticate the identity of travelers. European passports must have digital imaging and fingerprint scan (specific biometrics). These

are placed on the contactless chip. This combination of the biometrics aims to create an unrivalled level of security and protection against fraudulent identification papers. These passports have been compulsory in the EU Member States since July 2009.

Another form of electronization of the public administration is called eDemocracy, which includes eVoting and other forms of involvement of the citizens in decision making process.. eVoting was tested in Belgium in the late 90s of the 20th century and since 2003 most elections have taken place electronically. In May 2002 the electronic voting was tested in Ireland. In October 2005 Estonia also allowed their citizens to vote via the internet in the local elections (eID card have to be inserted into the reader connected to a computer and then after logging on the citizens could vote at a designated website). [7]

Other project in eGovernment domain is a program of e-Borders, which allows sharing data between the immigration services, the police and the customs authorities in the United Kingdom since April 2006. The National Health Service portal was launched in the United Kingdom in November 2008. It offers comprehensive information on this area and after registration the interested persons can use some services, for example: to find personal health information online or to make an appointment with a doctor. In May 2004 the Austrian government launched an electronic service delivery, which has recently allowed its citizens and businesses to communicate with the public authorities (similar to the Czech data boxes). These messages have the legal status as official documents. In December 2007 Bulgaria launched an anti-corruption portal, which provides the rights to their citizens to report corruption quickly and in an anonymous way.

Table 2: Member States in 2009 - 12 for public services controlled by the European Commission, expressed in % based on the fulfillment of 5-stage maturity model. Reference:[1]

State name	Electronic services for citizens (as marked in Table 1)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Austria	100	100	100	100	-	100	100	80	100	100	100	-
Belgium	100	100	93	90	100	74	100	68	100	53	57	80
Bulgaria	100	100	100	30	25	50	30	20	50	55	25	50
Cyprus	100	100	51	40	100	50	30	80	50	58	25	25
Czech Republic	80	100	78	30	50	90	100	100	30	88	25	20
Denmark	100	100	95	41	50	80	100	100	100	100	100	100
Estonia	100	100	78	80	100	58	100	100	100	100	100	100
Finland	100	100	100	70	100	50	100	100	-	100	100	-
France	100	100	95	70	100	75	100	100	100	76	100	50
Germany	100	100	100	80	100	57	100	100	37	100	42	-
Greece	100	100	42	40	100	20	30	60	100	50	50	51
Hungary	80	100	41	100	75	25	50	80	75	100	75	0
Ireland	100	100	72	100	100	85	100	95	75	100	-	-
Italy	100	100	85	80	100	75	100	80	52	75	28	35
Latvia	80	100	62	80	75	30	100	80	100	27	100	25
Lithuania	100	100	72	60	50	100	65	80	37	74	100	40
Luxembourg	80	80	80	50	100	50	100	100	76	100	25	-
Malta	100	100	100	100	100	100	100	100	100	100	100	100
Netherlands	100	100	100	75	100	52	100	100	73	100	76	-
Poland	100	100	65	45	55	65	20	80	50	-	50	75
Portugal	100	100	88	100	100	100	100	100	100	100	100	100
Romania	80	100	55	45	100	24	30	20	0	28	25	50
Slovakia	100	100	65	100	50	40	30	80	25	60	50	26
Slovenia	100	100	91	100	100	100	100	100	100	100	100	100
Spain	100	100	95	60	100	35	100	100	100	83	100	52
Sweden	100	100	100	100	100	100	100	98	100	100	100	100
United Kingdom	80	100	90	80	100	100	100	100	75	100	-	100

In tables 2 and 3 there are shown all the electronic services divided by the Member States of the EU in 2009. Leaders in the electronic services for the citizens are Austria, Malta, Slovenia and Sweden, for the businesses Austria, Denmark, Malta and Portugal. The electronic services are not monitored in some states, because they do not satisfy the conditions for these services defined by the European Commission. However, these services exist with regard to the public administration system in the country.

Table 3: Member States in 2009 - 8 business services monitored by the European Commission, expressed in % based on the fulfillment of 5-stage maturity model. Reference:[1]

State name	Electronic services for businesses (as marked in Table 1)							
	1	2	3	4	5	6	7	8
Austria	100	100	100	100	100	100	100	100
Belgium	100	100	100	100	100	100	65	100
Bulgaria	100	75	100	50	80	100	60	100
Cyprus	100	100	100	75	80	100	40	100
Czech Republic	100	100	100	100	80	100	80	100
Denmark	-	100	100	100	100	100	100	100
Estonia	100	100	100	100	80	100	100	100
Finland	100	100	100	75	100	100	100	100
France	100	100	100	100	100	100	40	100
Germany	100	100	100	75	100	100	100	100
Greece	100	100	100	50	80	100	40	50
Hungary	75	100	100	100	100	100	60	100
Ireland	100	100	100	75	100	100	80	100
Italy	100	100	100	100	80	100	12	100
Latvia	100	100	100	75	80	100	80	100
Lithuania	100	100	100	50	80	100	20	100
Luxembourg	100	75	100	100	100	100	80	100
Malta	100	100	100	100	100	100	100	100
Netherlands	100	100	100	50	100	100	37	100
Poland	100	100	100	100	80	100	20	100
Portugal	100	100	100	100	100	100	100	100

Romania	100	100	100	50	100	100	20	50
Slovakia	100	100	100	100	80	100	20	100
Slovenia	100	100	100	100	100	100	100	50
Spain	100	100	100	100	100	100	48	100
Sweden	100	100	100	100	100	100	80	100
United Kingdom	100	100	100	100	80	100	80	100

8. Conclusion

eGovernment is one of the main engines of growth in the information society and the use of modern ICT. The aim is to allow broader cooperation and information exchange between the Member States, so that there is a reduction of administrative costs, time save and faster processing of the public administration services. eGovernment is thus now becoming one of the most important tools for the acceleration, improvement, simplification in improving the transparency and accessibility of the public administration to the citizens. The citizens and the businesses need especially easy access to the information, convenient services, quick response to their requests, fast delivery of the services and of course data security and confidentiality. The public authorities have to become more proactive, increase their internal efficiency and service levels. They should provide greater transparency, reduce the operating expenses and develop new sources of growth.

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USING OF STOCHASTIC SIMULATION FOR MODELING OF COMPANY SALES PLAN IN MS EXCEL

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Abstract: Current real business processes are affected by a series of complex interactive and interdependent elements with probabilistic and dynamic characteristics. In this case it cannot be used mathematical methods with the exact analytical solutions for analysis of business processes and one of the alternatives is using of simulation. It is a very useful tool which can serve for modeling of the complex processes and for carrying out experiments with them.

This article discusses using of stochastic simulation to generate a variable demand for the products of certain virtual manufacturing and commercial company. Presented simulation includes process from stochastic behavior of anonymous demand for finished products of the company through the creation of binding orders and through the distribution channels of finished goods (distribution warehouse, company shop, direct customers). The results of stochastic simulation serve as a basis for subsequent use of descriptive statistics and statistic inference methods. Own simulation was performed by the Monte Carlo method and by using of widely available software MS Excel.

Keywords: Sales plan, Confirmed and Fejected Orders, Computer Simulation, Stochastic Simulation, Planned and Variable Demand, Distribution Function, Probability Distribution,Linear Regression, Monte Carlo Method, Random Variable, Random Numbers, Stochastic and Dynamic System, Arithmetical Mean, Standard Deviation, Point and Interval Estimate

1. Introduction

Computer simulation is a modern tool for analysis of complex manufacturing, supply, communication and other business processes. Simulation is a method that allows to managers to predict behavior of the system under the changing of external and internal conditions, to optimize business processes in relation to specified criteria (profit, costs, reliability). A considerable advantage of simulation is the fact that everything takes place only in a computer model without necessary interventions into the operation of the company. It is possible to explore alternative changes in the system through the simulation, to verify the impacts and consequences of these changes and select a solution which is the most suitable for a given situation. Computer simulation is a tool that is usable to all levels of the company: for management decision support of strategic importance, for design and production planning, for quality assurance and for operative decision making at the workshop level. [10]

Computer simulation can be characterized by three elements – the real system, model, computer and by two relationships – modeling and simulation [13] as can be shown in the following schema *(Fig. 1)*.
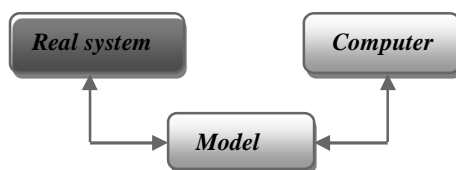
Fig. 1: Three elements and two relationships in process simulation

Source: Křupka, Kašparová, **2009**

It happens very often that we cannot solve the problem only by a mathematical model in complicated situations and it is necessary to find a solution of this situation by a simulation. Computer simulation is the only possibility of analysis and problem solution in these cases. Dynamic model is solved by a stochastic simulation which is known as Monte Carlo method at literature. This method looks for a solution of probability tasks by using many times repeated random experiments. Options of its use are wide and very diverse.

A typical feature of the Monte Carlo method is that in solving of the problem we create the sequence of random variables with a given probability distribution. In practice, these variables are usually described either by some empirical distribution function which has based on observations of random variables in the past or by continuous or discrete theoretical probability distribution. To create a sequence of random variables it is necessary to obtain the numerical realization of the input random variables - random numbers. Generation of these random numbers with a defined probability distribution is usually done in two steps. First, it is generated a primary sequence of random and mutually independent numbers with uniform distribution on the open interval (0, 1). Each number has the same probability of occurrence. A sequence of numbers with desired probability distribution is created by an appropriate transformation subsequently.

The RNG (Random Number Generators) are a normal part of spreadsheets and in the Czech version of MS Excel it can be used for generation of random numbers functions RAND(), RANDBETWEEN or complex tool RNG.

Intricate stochastic and dynamic systems are represented very often in economic reality and they cannot be solved by analytical procedures. Major application areas in which simulation methods are used: queuing systems, production systems optimizing, financial planning, supply management processes etc. Models which are characterized by a relationship between input and output data are indicated by abbreviation RIRO (random in, random out). [10]

When demand is not constant in observing periods (weeks, months), it is possible to use options in MS Excel to obtain an estimate of variable order in a certain time horizon. One way how to estimate demand is its generation by a given probability distribution. We can use for example the triangular distribution which has a trivial

expression of the probability density function and it may be suitable for demand estimating (for relatively easy specification of parameters without historical data but on the basis of experience and knowledge of relevant staff). It was used a normal probability distribution for generating of demand in the following stochastic model. This probability distribution is characterized by two parameters (arithmetical mean and variance) which were set at the beginning of simulation deterministically.

2. Problem formulation – model description

2.1 Company strategies and methods used in the production – capacity planning and planning of sales

1st strategy:

Capacity production schedule of finished products is framed always for 6 weeks in advance and is based on the actual (but random) gradual filling of the plan in individual weeks in advance (from 6. to 1. week, 0. already not). The random confirmed orders are added up gradually and so the capacity plan increases and reaches the maximum of an actual value at the first week in advance. The advantage of this strategy is that capacity plan is accurate because it corresponds to actual orders in the first week and therefore there are no losses from rejected orders and no losses from "overproduction" to the warehouse. On the other hand, the losses evolve from the disproportions between well-timed and accurate purchase of certain materials (it should be solved by maintaining of higher safety stock). Sometimes it also does not manage timely the preparation of production according to production plan.

2nd strategy:

Capacity production plan is fixed definitely in the 6th week in advance based on experience, knowledge of statistic methods (regression analysis) and data from the previous year. The advantage of this method is that although it has been created a "static" plan in sufficient advance, there may incur losses from rejected orders due to the adoption of a "soft" plan (undervalued capacity plan). Conversely, if set too "hard" capacity plan (i.e. expected plan was overvalued and thus higher than the actual demand for the current week), then will be losses from the temporary "overproduction". It is projected as "the production to warehouse" which leads to a temporary increase of the stock level of finished goods in a warehouse. This strategy is applicable when the losses from rejected orders or the losses from "overproduction" to warehouse are not large and acceptable. In practice, there usually exist ways how to solve this dilemma by additional managerial interventions into already accepted capacity plan. Regression analysis can be used for creation of point or interval estimates to determine the optimal planned capacity of orders.

3rd strategy (mixed):

This strategy is a compromise between those two above mentioned. This compromise allows (after adoption of foreseeable capacity plan) to change fixed plan additionally. However, this situation may have an influence on preparation of production and material ordering. In particular, in this strategy is used the possibility to

move orders of category B (below) to subsequent weeks. Thanks to the moving of certain parts of the received orders is recorded an effect of increased continuity of adopted capacity schedule. It increases productivity and thus reduces relatively some types of costs and it goes to economies of scale.

Used categories of orders (sorted by priority):

A: order cannot be moved to the following week (i.e. must be delivered in requested term);

B: order may be moved to the next week but only once (after the first move will be changed the priority from B to A);

C: individual contract (requires a specific material with a long delivery time) and must be planned as a whole.

2.2 Management of customer orders

A certain manufacturing and trading company has issued directions of managing director for sales department staff which contained these following rules *(The internal regulations for order management):*

The company customers (private persons, dealers, supermarkets, restaurants, hotels etc.) can order products according to printed catalogs, video offers on the internet or by personal inspection of the exhibit products at company shop that is placed at the distribution warehouse. Incoming orders of customers (written, e-mail, faxes, phones) are checked by a responsible worker and then are stored in so called ORDERS file, in which are constantly updated (changes, rejection, cancellation). Individual orders can come without limitation also a few days before their execution, but the term when order may be confirmed to customer, is established firmly. This *is 6 weeks before its realization.* Customers are familiar with this stipulation. All formally correct orders that were received to this deadline are confirmed back to customer bindingly. The customer may, however, to withdraw from it even after order confirmation, but he cannot withdraw without some sanctions from a certain date (usually 1 week before the start of production).

In case when the order will come after the term of internal closing date (i.e. *6 weeks* before the realization) it can be confirmed if and only if the capacity does not exceed the plan of distribution for the desired week of implementation. Otherwise the orders will not to be confirmed and the customer is informed about it. Unconfirmed but still valid order can be realized additionally in originally requested term as far as there will be so called *free stock* in the sales warehouse at the time of realization. This will be reserved for the customer preferentially before so called *direct sales* from the distribution warehouse to random customers.

If it has not been possible up to now unconfirmed order to cover from free inventory in the warehouse in the term of required realization then the order is rejected and cannot be met in the requested term. The customer is informed about this fact immediately and at the same time it is given him a possibility to transfer his orders to the nearest next term in which it could be possible to confirm his order.

Another option for unsatisfied customer demand is direct sale from the free distribution warehouse inventory (from the company shop that is a part of the distribution warehouse). This form of sale for immediate customer does not require a formal order but on the other hand it is uncertain in majority of cases due to unpredictability of the emergence of free stocks. This form of sale is intended for those potential customers who do not plan their demand in advance and accordingly for wider public. This situation is the most often associated with a personal inspection of the exhibited products at the company shop.

2.3 Sales plan – verbal description

Sales plan is compiled every week on basis of received orders and statistic forecasts with regard to marketing surveys, seasonality and trends in demand (including trends, fashion or demographic influences) and also with regard to the nature of the economic cycle in which the economy is just located. The time horizon of the plan is for 6 weeks in advance – in usual (the n-th) week will be included newly the sixth (n+6) week as the sum of orders that are recorded for the sixth week. This value (here designated as x_6) enters into a simple statistic regression model which provides an output value (here labeled y). This output value is a result of statistical regression that is obtained on the basis of recorded values of orders from past 52 weeks (i.e. the previous year).

It means that orders that are determined for the n-th week and which arrived subsequently in weeks $n-5, n-4, n-3, n-2, n-1, n$ (i.e. after regular internal closing date in week n-6) are recorded but they do not enter into the consumption plan for the n-th week. Plans remain fixed for weeks $n-5, \mathbf{K}, n$ overwhelmingly. These orders, however, can be continuously confirmed to customers when there is a free capacity until the limit of production plan for the n-th week.

Changes in already approved production plan may be accepted only exceptionally as a result of a higher management decision. They are such as the following situations: a) the strategic necessity to fulfill increased demands of an important customer (e.g. dealer) or b) unexpectedly large decline in demand compared with the production plan (this situation would lead to an excessive growth of inventories of finished products in the warehouse). These special cases are dealt with the specific managerial interventions into already accepted production and sale plan. These activities are not a subject of our research in the simulation model.

3. Problem solving – simulation model in MS Excel

3.1 Demand generation

In stochastic models where demand is characterized by certain fluctuations, the demanded amount can be approximated by a normal distribution with the given arithmetical mean and standard deviation. This probability distribution has been selected in our model to estimate the input parameters that were subsequently used for demand generating in each week. There is a function $NORMINV(p, \bar{x}, s)$ in Excel for

these purposes, where p is probability that is given by a generated random number $RAND()$, $\bar{x}$ is mean value and s is a standard deviation. Specially, to generate probability demand in our model, it has been used the following formula:

$$= WHEN(NORMINV(RAND();\bar{x};s) > 0; NORMINV(RAND();\bar{x};s);0)$$

Values of generated random demand are in columns I – O (values $x_6, \mathbf{K}, x_1$) in the Excel table on the following page. (Fig. 2)

3.2 Linear regression in simulation model

Values of the predictable demand were generated in 52 rows (i.e. for 52 weeks) and these data were used to calculate the linear regression coefficients (for a functional description of a linear dependence). The recommended production capacity (plan of finished products) is calculated according to equation of the regression line $\hat{y} = ax_6 + b$

where $a = \dfrac{Cov(x_6, y)}{s_{x_6}^2}$ and $b = \bar{y} - a\bar{x}_6$ ($\bar{y}$ is mean value of variable y and $\bar{x}_6$ mean value of x_6). [9]

Covariance is a measure of simultaneous variability of two characters and it is calculated according to the formula: $Cov(x_6, y) = \dfrac{\sum\limits_{i=1}^{n} x_{6_i} y_i - n\bar{x}_6 \bar{y}}{n}$. The measure $s_{x_6}^2$ is the variance of character x_6.

To calculate the covariance and variance we can use Excel built functions COVAR and VAR.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
						week		n-6	n-5	n-4	n-3	n-2	n-1	n	
			Input parameters			arith.mean	$\bar{x}$	6,2	3,5	4,2	5,1	3,3	0,9	3	
						st.deviation	s	12,7	7,3	5,5	8,7	5,3	3,1	5,6	
								P L A N N A B L E			D E M A N D			Unplanned demand	Sum of orders
								x_6	x_5	x_4	x_3	x_2	x_1	x_0 shop	y
	Random numbers														
0,9559	0,83154	0,3213	0,67862	0,75221	0,213329	0,35738	1.	27,8526	10,5098	1,64765	9,13554	6,91167	0	0,953298515	56,057252
0,69658	0,55046	0,825	0,72487	0,08643	0,057715	0,38561	2.	12,7353	4,42572	9,34021	10,2971	0	0	1,371566322	36,798303
0,1231	0,6885	0,01343	0,41643	0,54507	0,136813	0,22782	3.	0	7,08871	0	3,26406	3,9	0	0	14,252762
0,6359	0,36068	0,79794	0,07396	0,39002	0,361315	0,07784	4.	10,6135	0,89659	8,78854	0	1,81986	0	0	22,118508
0,43128	0,19083	0,76757	0,02124	0,23408	0,500172	0,6368	5.	4,00146	0	8,21969	0	0	0,9013358	4,959578076	13,122493
0,87021	0,55211	0,24653	0,1209	0,47835	0,315071	0,71697	6.	20,5179	4,45632	0,43	0	3,01225	0	6,213699129	28,416462
0,88293	0,31485	0,35003	0,39584	0,25572	0,282921	0,76283	7.	21,3098	0	2,08118	2,80211	0	0	7,006431579	26,193093
0,39691	0,21053	0,714	0,96698	0,94263	0,667156	0,68179	8.	2,88091	0	7,3081	21,092	11,6593	2,2394299	5,647217632	45,179744
0,34123	0,72246	0,57262	0,12134	0,09298	0,301096	0,40987	9.	1,00442	7,80813	5,20681	0	0	0	1,723934982	14,019364
0,44403	0,36924	0,53916	0,70929	0,17696	0,529514	0,55156	10.	4,4124	1,06287	4,74074	9,89638	0	1,129552	3,725799964	21,241937
0,27259	0,74825	0,00459	0,66174	0,63297	0,433994	0,93992	11.	0	8,38358	0	8,7299	5,10056	0,384734	11,70307883	22,598778
0,6061	0,62312	0,75766	0,79899	0,84162	0,039844	0,7374	12.	9,61845	5,78995	8,04332	12,3908	8,60612	0	6,557995913	44,448677
0,56263	0,26585	0,83703	0,97883	0,43727	0,536929	0,50716	13.	8,20202	0	9,6028	22,7632	2,46312	1,1873661	3,100496629	44,218541
0,81329	0,93222	0,10697	0,2178	0,53631	0,028404	0,9675	14.	17,5043	14,3954	0	0	3,78299	0	13,33376058	35,682694
0,81122	0,27578	0,81454	0,13667	0,28626	0,063106	0,30335	15.	17,4066	0	9,12114	0	0,30897	0	0,117246217	26,836717
0,06586	0,14571	0,59874	0,65811	0,74096	0,829184	0,06447	16.	0	0	5,5755	8,64367	6,72546	3,8479309	0	24,792559
0,50908	0,59394	0,08326	0,23366	0,92101	0,979934	0,57558	17.	6,48901	5,23512	0	0	10,783	7,2623779	4,067412013	29,769453
0,50806	0,89187	0,92169	0,72214	0,92256	0,258929	0,60463	18.	6,45646	12,5265	11,9908	10,2261	10,8392	0	4,485952568	52,038995
0,08518	0,51071	0,39796	0,40319	0,33604	0,437782	0,12444	19.	0	3,69593	2,77752	2,96773	1,05648	0,4145523	0	10,912208
0,94837	0,71618	0,49584	0,95017	0,04268	0,416582	0,61396	20.	26,8916	7,6722	4,14267	19,4243	0	0,2469963	4,622002529	58,377747
0,80073	0,35927	0,87621	0,98079	0,85328	0,386173	0,67082	21.	16,9218	0,86891	10,5593	23,1119	8,86819	0,003147	5,476134591	60,333185
0,3177	0,51237	0,59999	0,9149	0,52632	0,487696	0,62878	22.	0,17841	3,72636	5,59326	17,0326	3,64988	0,8043775	4,840295818	30,984841
0,92158	0,13159	0,48966	0,06185	0,72976	0,81676	0,29739	23.	24,18	0	4,05748	0	6,54414	3,6995729	0,021247337	38,481221
0,7776	0,38579	0,43134	0,11802	0,48102	0,555684	0,44178	24.	15,9042	1,38078	3,24869	0	3,0478	1,3341136	2,179873438	24,915576
0,9766	0,84378	0,2158	0,72321	0,34722	0,542579	0,09731	25.	31,4482	10,8737	0	10,2539	1,21795	1,2314916	0	55,025237
0,34119	0,29879	0,11407	0,86966	0,1303	0,751914	0,09699	26.	1,00281	0	0	14,8857	0	3,0096307	0	18,898106
0,25974	0,96597	0,93728	0,0955	0,37892	0,742579	0,69648	27.	0	16,8194	12,628	0	1,66598	2,9190865	5,880034325	34,032516
0,90588	0,00109	0,18855	0,31336	0,83686	0,871741	0,49977	28.	22,9104	0	0	0,86872	8,50261	4,4174396	2,996832653	36,699173
0,74017	0,22906	0,3044	0,74951	0,63351	0,532009	0,59593	29.	14,377	0	1,38519	10,9545	5,10814	1,1489929	4,359874231	32,97386
0,30933	0,40439	0,12062	0,22221	0,60084	0,331028	0,83643	30.	0	1,73343	0	0	4,65428	0	8,487433586	6,3877095
0,32416	0,51754	0,79165	0,35476	0,95922	0,469374	0,73646	31.	0,40747	3,82112	8,6669	1,85935	12,5309	0,6617871	6,541908992	27,947501
0,77914	0,36104	0,72278	0,85254	0,27661	0,557203	0,96255	32.	15,9701	0,90356	7,45121	14,2123	0,1574	1,3460362	12,97411999	40,040558
0,13791	0,97431	0,17684	0,47165	0,37886	0,328645	0,67876	33.	0	17,7221	0	4,48123	1,66506	0	5,599658795	23,868427
0,15761	0,57428	0,85733	0,10573	0,37285	0,174754	0,62357	34.	0	4,86722	10,0763	0	1,58111	0	4,763264241	16,524604
0,68449	0,41474	0,8545	0,55986	0,3333	0,111517	0,09158	35.	12,2999	1,92779	10,0077	6,41039	1,01667	0	0	31,662411
0,88878	0,85283	0,37873	0,21933	0,05162	0,539097	0,06576	36.	21,6947	11,1553	2,50146	0	0	1,2042924	0	36,555697
0,31762	0,56906	0,49827	0,0118	0,68605	0,931578	0,91332	37.	0,17543	4,77011	4,17621	0	5,86877	5,511716	10,62446229	20,502235
0,47149	0,15856	0,60805	0,31509	0,27335	0,534841	0,18887	38.	5,29167	0	5,70836	0,91118	0,10555	1,1710815	0	13,187845
0,68148	0,66184	0,70561	0,78211	0,30135	0,464843	0,11743	39.	12,1924	6,54775	7,17338	11,8804	0,54118	0,6264549	0	38,961521
0,76448	0,82082	0,04141	0,34442	0,19182	0,690433	0,43053	40.	15,3541	10,2049	0	1,6163	0	2,4409426	2,019809417	29,616218
0,51128	0,62826	0,05898	0,70297	0,38714	0,945372	0,33869	41.	6,55899	5,88899	0	9,73665	1,78	5,864792	0,670172191	29,829424
0,06424	0,85441	0,21295	0,14853	0,96118	0,470288	0,96354	42.	0	11,2055	0	0	12,6522	0,6689113	13,04277104	24,526625
0,43512	0,7652	0,00727	0,06683	0,35524	0,580628	0,268	43.	4,12556	8,77886	0	0	1,33251	1,5308534	0	15,767787
0,25833	0,06955	0,27937	0,69828	0,97456	0,560303	0,32517	44.	0	0	0,98405	9,6194	13,6479	1,3703898	0,461524019	25,621762
0,24286	0,04237	0,79785	0,5594	0,0718	0,785318	0,8981	45.	0	0	8,78674	6,40031	0	3,3498721	10,11641318	18,536923
0,73449	0,30864	0,77483	0,93983	0,4915	0,57651	0,74121	46.	14,1558	0	8,35171	18,6144	3,18713	1,4982157	6,623711488	45,807266
0,15988	0,68796	0,73116	0,99421	0,40795	0,464411	0,22864	47.	0	7,07759	7,58978	27,0639	2,06611	0,6230875	0	44,420431
0,45131	0,98866	0,39332	0,01213	0,83717	0,11673	0,07749	48.	4,64628	20,1352	2,71133	0	8,50942	0	0	36,002231
0,69422	0,76057	0,95606	0,69942	0,88143	0,614837	0,82052	49.	12,6495	8,66952	13,5868	9,64786	9,56554	1,8050387	8,137116731	55,924319
0,69835	0,8773	0,55078	0,44608	0,50354	0,213995	0,16163	50.	12,7997	11,9796	4,90191	3,92055	3,34699	0	0	36,948748
0,74316	0,43715	0,93295	0,36694	0,13649	0,845231	0,05691	51.	14,4945	2,34519	12,4397	2,14221	0	4,0501901	0	35,471785
0,9662	0,37512	0,06801	0,88178	0,11931	0,67363	0,18961	52.	29,4116	1,17621	0	15,4004	0	2,2948762	0	48,283089
						ar.mean	$\bar{x}_6$	9,75091						$\bar{y}$	31,957983
						sums		507,047							1661,8151

Fig. 2: Demand for individual weeks and the total expected demand to this period

Source: Michalcová, 2010

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These formulas are used when x_6 is independent variable and y dependent variable. Statistic dependence between these two characters can be illustrated also by regression line where y is independent variable and x_6 is depended on it. Both regression lines pass through so called central point whose coordinates are mean values of both variables. Equations of both lines:

$$\hat{y} - \bar{y} = \frac{Cov(x_6, y)}{s_{x_6}^2} \cdot (x_6 - \bar{x}_6)$$

and

$$\hat{x}_6 - \bar{x}_6 = \frac{Cov(x_6, y)}{s_y^2} \cdot (y - \bar{y})$$

where s_y^2 is a variance of character y.

Their Fig. *(Fig. 3)* recalls open scissors which we call the correlation scissors.

Fig. 3: Associated linear regression from one simulation run

Source: Michalcová, 2010

3.3 Confidence bands in regression analysis

Regression analysis can be used to determine the optimal capacity of the planned orders. For each regression value $\hat{y}_i$ we can determine the confidence interval. By identifying of these intervals for all values of processed area we obtain so-called confidence bands (two branches of a hyperbola around the regression line). The confidence interval for y_i of regression line for a given value x_i is:

$$\left(\hat{y}_i - t_{1-\frac{a}{2}}(n-2) \cdot s_{y \cdot x} \cdot \sqrt{\frac{1}{n} + \frac{(x_i - \bar{x})^2}{\sum_{i=1}^{n}(x_i - \bar{x})^2}} ; \hat{y}_i + t_{1-\frac{a}{2}}(n-2) \cdot s_{y \cdot x} \cdot \sqrt{\frac{1}{n} + \frac{(x_i - \bar{x})^2}{\sum_{i=1}^{n}(x_i - \bar{x})^2}} \right),$$

n is a number of values, t is a critical value of Student t – distribution with n-2 degrees of freedom, a is a level of significance, $s_{y \cdot x}$ is so called rezidual variance.

Formula for calculating of rezidual variance:

$$s_{y \cdot x} = \frac{\sum_{i=1}^{n}(y_i - \hat{y}_i)^2}{n-2}$$

The following Fig. shows the confidance bands from one simulation run for n =52, $a = 0,05$. *(Fig. 4)*
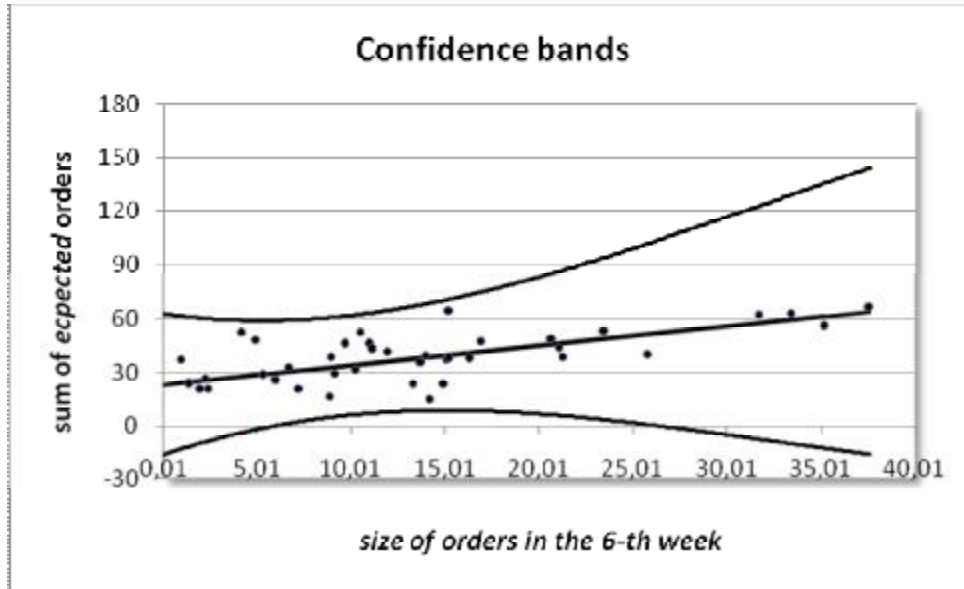
Fig. 4: Confidence bands from one simulation run

Source: Michalcová, 2010

Graphic development of orders x_6, total sum of orders (sum of plannable demand) y and production plan (according to linear regression $\hat{y} = a \cdot x_6 + b$) shows the following Fig. (Fig. 5):
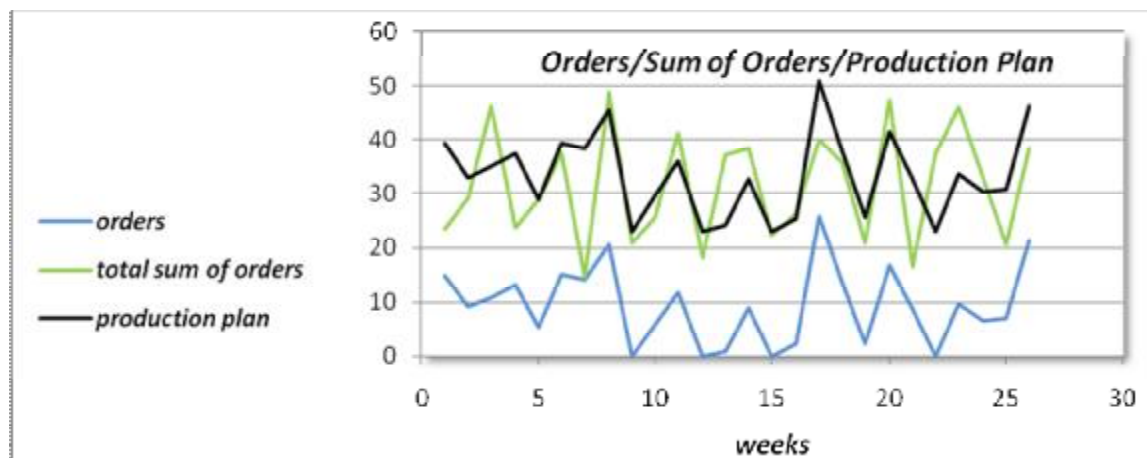
Fig. 5: Graphic development of orders, sum of orders and production plan for 26 weeks

Source: Michalcová, 2010

Sales plan in MS Excel

Model of sales plan builds on the above values - i.e. predictable demand and production plan of finished products by a simple linear regression. Indicators such as: production plan, planned final state of stock of finished products in the warehouse, losses of stocks for orders, losses of stocks for direct customers and rejected orders, total sale were imputed by a trivial way – by using balance equations and logical function WHEN. These indicators are listed in rows 2– 17 *(Fig. 6)*.

Fig. 6: Indicators of sales plan

4. Simulation model and analysis of results

4.1 Analysis of results

All of the above values were calculated using only by a single realization of the simulation run. When there are random variables in input characteristics, outputs are random variables too. The result of analysis is either some point or interval estimate. Therefore one simulation run is not sufficient to estimate output characteristics of modeled system. The simulation must be seen as a computer statistical experiment. [10]

With the determination of interval estimates based on data from the simulation model are linked certain problems because these data are usually unsteady (data distribution changes over time). Since consecutive processes interact we must not forget the problem of autocorrelation. Strategy how to deal with this problem depends on the type of simulation. Our type of simulation is called the *simulation with the final horizon*. [10] We assume that we know the initial state of the system and the rule for the end of simulation in this case. Simulation was ended in a predetermined time (52 weeks) in the given model.

4.2 Simulation with the final horizon and statistic inference

The problem of autocorrelation is solved by repetition (replication) of simulation run in the case of simulation with the final horizon. Determination of the interval estimate is not based on the original data but on the average values which are established from each individual simulation run. This procedure is known as the replication method. [10] To get a number of independent observations, simulation must be repeated in a sufficient number. There were made 40 replications in our model and the arithmetical mean $\bar{y}$ was calculated from these values. Let us suppose that we want to estimate the mean value of random Y. We receive an estimate of the mean value of quantity Y from each replication by:

$$\bar{y}_i = \frac{1}{n_i}\sum_{i=1}^{n_i} y_{ij}; i = 1,2,\mathbf{K}, k$$

, where k is a number of replications, y_{ij} is the j-th value of Y in the i-th replication, n_i is a number of observed values Y in the i-th replication. Furthermore we calculate a point estimate $\hat{m}_y$ of mean by

$$\hat{m}_y = \bar{y} = \frac{1}{k}\sum_{i=1}^{k} \bar{y}_i$$

, where k is a number of replications. The danger of autocorrelation already does not exist because it goes on the point estimate on the basis of independent values. We determined a confidence interval by formula:

$$\bar{y} - \frac{s}{\sqrt{k}}t_{\frac{a}{2}}(k-1) < m_y < \bar{y} + \frac{s}{\sqrt{k}}t_{\frac{a}{2}}(k-1) \qquad (*)$$

t is a value of t - distribution, $t_{\frac{a}{2}}$ is a critical value of t - distribution, a is a level of significance and s is a sample variance of average. Sample variance was calculated according to

$$s^2 = \frac{1}{k-1}\sum_{i=1}^{k}\left(\bar{y}_i^2 - \bar{y}\right)^2$$

. Observations (which are obtained by the replication method) satisfy the condition of independence and can be also used to obtain confidence interval of variance of sample mean.

The following table *(Table 1)* shows the results of 40 simulations. Critical value of t - distribution is determinate with confidence coefficient $1-a = 0,95$ (level of significance $a = 0,05$).

Table 1: Results of 40 simulations in Excel

arithmetical mean	standard deviation	critical value of t - distribution	confidence interval for predictable demand
27,14	0,859596	2,0227	(27,0954; 27,1846)

Source: Michalcová, 2010

There were used the following functions in Excel to calculate the values in the table: AVERAGEA for arithmetical mean calculation, STDEV for standard deviation calculation, TINV for calculation of critical value of t – distribution and confidence interval is calculated by formula (*).

5. Conclusion

In cases when demand is stochastic variable influenced by different seasonal fluctuations, demographic changes, market turbulence, fashion etc. we can take advantage of its generation on the basis of chosen probability distribution. Statistic methods (descriptive statistics methods, statistic inference methods) can be used to analyze the results of stochastically many times repeated simulation of the given ordering sub-model of manufacturing and commercial company. There was demonstrated a simple regression model in this article which provided output values (variable demand) based on data (recorded values of orders) from the past 52 weeks. It is actually a transformation of random demand to a company production plan which is important for example for ordering materials etc. Instead of simple regression analysis can be used multiple regression analysis which has a chance of more accurate forecasts of values y obtained from the set of all values $x_6, \mathbf{K}, x_1$ in the range of 52 weeks for the previous period. It can be also used a method of simple or multiple time series to detect trends in demand etc.

This article is not focused only statistically but may serve as a basis for the trivial use of existing methods for the analysis of the real situation. Its triviality is also in using of widely available spreadsheet MS Excel. Of course, we can use for the analysis of business processes some of the specialized sofware (ARENA, SIMUL8, WITNESS), but it may not always be available.

It has been used popular and widespread program MS Excel to create a model. It is obvious that when we make the more simulation runs, we get the more accurate results of simulation. It would be time consuming to implement e.g. 1000 simulations "manually" in a spreadsheet. Stochastic simulation can be supplemented by programming of simulation cycles using Visual Basic programming language that is included with Excel.

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SIZE EFFECT IN INTERNATIONAL MARKETS: A SURVEY OF LITERATURE

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Abstract: The purpose of this paper is to examine whether the size effect prevails in the international markets because there is a criticism that size effect is an outcome of data snooping bias. This study finds that size effect survives in capital markets in United States [US] as well as in other international markets. Further, the study reveals that the size effect appears only in the up-market condition. Recently, size factor has become a popular member in multifactor asset pricing models. However, the role of the size factor in multifactor models in conditional markets is still uncovered.

Keywords: Anomalies, International Markets, Size Effect, Size Factor

1. Introduction

Market anomalies are empirical results that seem to be inconsistent with revealed models of asset-pricing behavior. They indicate either market inefficiency [profit opportunities] or misspecifications in the underlying asset-pricing model. Around three decades ago [BANZ 1981] reported that small firms have significantly higher risk adjusted excess returns than the large firms in US equity markets over the period of 1936-1975. He named this finding as the "size effect". However, Banz did not find the possible reasons for the size effect and it opened a gap of knowledge to examine the size effect and reasons for it to other researchers. Hence, a large body of research has been conducted to address this issue and matters related to it. This paper presents a review of the academic literature related to size effect in international equity returns.

The existence of a size effect in stock returns would have important implications for both practitioners as well as academics due to several reasons. First, if the higher returns on small stocks are due to a large exposure to an underlying risk factor not incorporated in asset pricing models, firms can compute their cost of equity capital more reliably on the basis of an asset pricing model that takes this source of risk into account. Second, the issue whether small stocks yield higher returns than large stocks and whether size effect due to compensation for risk is very important finding for practical investors. Third, the risk based explanations for size anomaly would change the academic view on the validity of standard asset pricing models and also have an impact on research methodologies such as event analysis methodology [RUTLEDGE et al. 2008].

At the beginning, most of the research on size effect concentrates on the US stock markets. Therefore, first the study concentrates on the review of US findings. Subsequently many researchers attempted to give explanations to the size effect. One explanation is that the size effect is the result of data snooping bias. In order to examine the validity of data snooping, the out of sample international studies in size

effect are reviewed next. Further, there are few findings that size effect varies with the market conditions. The use of size effect in multifactor models is also discussed.

The objective of this paper is to present a review of academic literature on size effect and its applications in international equity markets. Therefore, areas to be further research are concerned as a sub objective.

The reminder of the paper is structured as follows. Section 2 presents methodology in empirical studies of size effect. In the section 3 empirical evidence on size effect in the US equity market is examined. An overview of the international evidence on size effect is presented in section 4. Section 5 examines size effect on bull and bear markets. Use of size effect in multifactor asset pricing models is examined in section 6. Section 7 addresses the possible areas for further research and last section is the conclusion of the study.

2. Methodologies used in the empirical literature

This study is begun with an overview of the different methodologies used in empirical literature.

First, a widely used approach is the methodology of [FAMA AND MACBETH 1973]. According to this method, individual company beta [β] is computed to form portfolios using four years of monthly stock returns based on Capital Asset Pricing Model [CAPM] as shown in equation 1.

$$R_i = R_f + b_i(R_m - R_f) + e_t$$ --(1)

Where,

Ri = monthly returns for asset i

Rm = monthly return on market portfolio

Subsequently, following five years data are used to re-compute beta so as to obtain the average beta of the portfolios. Monthly portfolio returns, with equal weights of individual securities are then re-computed during the next period. The portfolio betas are re-calculated each month to have a time series of betas. Then the portfolio average returns are regressed cross-sectional with portfolio betas and logarithm of market values of equity [size] as shown in equation 2. This allows to test both of the hypothesis that beta and size explain the cross-section of stocks returns by computing time-series average of the coefficient on beta and size. The Fama-MacBeth methodology is applied by the majority of studies on the size effect in the US and it is presented in [BANZ 1981] as follows.

$$E(R_i) = g_0 + g_1 b_i + g_2[(f_i - f_m)/f_m]$$ ---(2)

Where,

$E(R_i)$ = expected return on security i

g_0 = expected return on a zero- beta portfolio

g_1 = expected market risk premium

f_i =market value (size) of security i

f_m =average market value, and

g_2 = constant measuring the contribution of f_i to the expected returns of a security.

Second, some papers use univariate sorting procedures to test the size effect. Every month t all stocks in the sample are ranked and sorted into portfolios on the basis of their market capitalization [size] and compute portfolio returns. The difference between the average return on the smallest and largest portfolio over the sample period is a measure for the size effect. Risk adjustment is done using CAPM as shown below [See, for example BASU 1977].

$$R_{pt} - R_{ft} = a_p + b_p(R_{mt} - R_{ft}) + e_{pt}$$ -- (3)

Where,

$R_{p,t}$ = continuously compounded return portfolio p in month t

$R_{f,t}$ = monthly risk free rate at time t

R_{mt} = continuously compounded return on market portfolio in month t.

a_P = the intercept of the regression to measure excess returns [Jensen's alpha] of portfolio P. If the risk explains size anomaly, a_P should be zero.

b_p = the beta of portfolio P.

In addition to above two methods, some papers use [FAMA AND FRENCH 1992] double sorting method [sorting stocks on both size as well as other factors such as beta, book-to-market etc] to test the size effect [See, for example, CHOU et al. 2007].

3. Empirical evidence on size effect in US markets

The size effect refers to the negative relationship between stock returns and market value (market capitalization) of common equity of the firm. The summarized findings of US studies are presented in the table 1. BANZ [1981] was first to uncover this phenomenon based on New York Stock Exchange [NYSE]. Employing the methodology similar to [FAMA AND MCBETH 1973] Banz documented that small firms earn significantly higher excess returns (Alfa) than other size based portfolios during the period from 1936-1977. Further, Banz pointed out that the returns difference of buying small firms than the very large firms was 12 percent per month [19.8 percent per annum].

REINGANUM [1981] analyzed the size effect in a shorter period of 1975 to 1977 with a sample of 566 NYSE and American Stock Exchange [AMEX] firms over the period 1975-1977. He found that the smallest 10 percent of the firms outperformed the largest 10 percent by 1.6 percent per month. The smallest of the 10 size portfolios had

a beta roughly equal to 1 and a return of about 1 percent on a monthly basis in excess of the return on the equally-weighted market index. The largest size portfolio had a beta of 0.83 and underperformed the market by roughly 0.6 percent per month. [BROWN ET AL. 1983] re-examined the size effect using the Reinganum data set of 566 firms over a longer sample period of 1967 to1979 using the Fama Macbeth approach. They found that there was an approximately linear relation between the average daily return on 10 size-based portfolios and the logarithm of the mean size of all firms in the portfolio.

Tabl. 1: Summarized studies of size effect on US market

Study	No. of portfolios	Sample	Test period	Returns smallest	Return largest	Size premium
BANZ [1981]	5	NYSE AMEX	1936-1977	Na	Na	1.52
REINGANUM [1981]	10	566	1975-1979	Na	Na	1.6
BROWN ET AL. [1983]	10	566	1967-1979	1.2	-0.6	1.8
KEIM [1993]	10	1500-2400	1963-1979	1.6	-0.8	2.4
FAMA AND FENCH [1992]	10	NYSE, AMEX & NASDAQ	1962-1989	1.64	0.90	0.74
KIM AND BURNIE [2002]	10	680-835	1976-1995	2.32	1.16	1.16
AL-RJOUB ET AL. [2005]	10	NYSE, AMEX & NASDAQ	1970-1999	1.51	0.50	1.01
FASTERDAY ET AL. [2009]	10	NYSE, AMEX & NASDAQ	1946-2007	1.60	1.1	0.5
MOSSMAN AND RATHAYIL [2010]	10	NYSE, AMEX & NASDAQ	1960-2005	1.57	0.87	0.77

Source: Survey findings

They also showed that the size effect was unstable over time and were reversed in the period 1967 to 1975. KEIM [1983] reported an average excess return of small stocks of 2.4 percent per month in a sample of NYSE and AMEX firms over the period 1963-1979. Evidence was provided that daily abnormal return distributions in January have large means relative to the remaining eleven months, and that the relation

between abnormal returns and size was always negative and more pronounced in January than in any other months. Despite various important contributions by other researchers after the original work by Banz, the literature on the size effect changed off after the appearance of [FAMA AND FRENCH 1992]. Their paper combined the size and book-to-market (B/M) anomalies detected by earlier studies and demonstrated that the empirical shortcomings of the CAPM were too important to be ignored. FAMA AND FRENCH [1992] found that the smallest size decile outperformed the largest by 0.74 percent per month. The results of Fama-MacBeth regressions confirmed that while beta did not help to explain the cross-section of returns, size as well as B/M equity factors had significant explanatory power. The flat relation between beta and returns was believed as the beta was dead. After the millennium, [KIM AND BURNIE 2002] reported that mean rate of return on stocks decreased as firm size increased. Their sample period was from January 1976 to December 1995 and number of sample firms varied among years from 680 to 835. They reported that small size portfolio has a mean return of 2.32 percent and it was double that of large size portfolio. More recently [AL-RJOUB ET AL. 2005] examined size effect using all NYSE, AMEX and National Association of Securities Dealers Automated Quotations (NASDAQ) operating firms for over the period 1970-1999. They reported that average returns of small size firms outperformed the average returns of large size firms during the total sample. However, during the ten year period from 1980-1989 size effect was reversed and in the next decade it again appeared. EASTERDAY ET AL. [2009] re-examined the January related size effect using common stocks traded on NYSE, AMEX and NASDAQ during the period 1946-2007. They found that small firms' returns outperformed the large firms' returns by 0.5 percent for all months. However, the return difference [size premium] between the small firms and large firms was extremely higher for January months. The size premiums were 6.4, 13.1 and 5.8 percents for the sub periods 1940-1962, 1963-1979 and 1980-2007 respectively. MOSSMAN AND RKBMAYIL [2010] found that size effect was persisting during the period 1960-2005. Further, they used the traditional macro economic variables selected by [CHEN, ROLL AND ROSS 1986] to study their effects on size anomaly. Their empirical results showed that macro economic variables did not demonstrate any strong ability to explain the size anomaly returns.

The above findings revel that size anomaly persists in US market over a long period of time [1926-2007]. Further, it is evident that size effect is related with the January effect in US and it seems that investors are not learning of the effect and arbitrage it away.

4. International evidence on size effect

Since 1980 large number of studies has examined the size effect on international data. Table 2 summarizes some of the important studies. The table shows that average monthly returns of small size portfolio are higher than that of the large size portfolio for all the countries.

LEVIS [1985] examined size effect in London Stock Exchange [LSE] from 1958 – 1982 using all the stocks at LSE. He formed 10 equally weighted portfolios and found that small size portfolio has average returns of 1.33 percent while the large size

portfolio has 0.94 percent. However, small firms had lower risk [beta equal to 0.64] than did large firms [beta equal to 1.02]. MILLS AND JORDANOV [2000] also found that small size portfolios outperformed the large size portfolios in LSE from 1985 to 1995. They reported that small firms had significantly higher excess returns than large firms. Further, they found greater predictability for large firms suggesting a risk related size effect that was not explained by beta.

WAHLROOS AND BERBLUND [1986] examined the size anomaly at Helsinki Stock Exchange from 1970-1981 periods. Using the Fama MacBeth cross-sectional regression method, the risk adjusted mean annual returns for the small size portfolio was 8.7 percent per year while it was negative [-2.2 percent] for the large size portfolio. [HERRERA AND LOCKWOOD 1994] examined the size effect on Mexican stock market using data from January 1987 to December 1992. They found that average returns increased with increased [decreased] in beta [size], using the portfolios segmented on size alone. For example, for Mexican size sorted low, medium, and high portfolios' average monthly returns were 5.80 percent, 3.46 percent, and 1.64 percent, and their betas were 1.31, 1.12, and 0.79 respectively.

ELFAKHANI ET AL. [1998] examined the size effect based on nearly 2000 stocks traded in two stock markets exists in Canada: Toronto Stock Exchange and Montreal Stock Exchange from June 1975 through December 1992. Using the Fama-MacBeth methodology they found that average stock returns decrease with the increase of firm size. This evidence was true even after controlling for the Beta variation.

GAR ZA-GOMEZ ET AL. [1998] examined the relationship between cash flow risks, firm size and returns from 1957 to 1994 in Tokyo Stock Exchange. They found that as firm size decreased cash flow risk was increased. Further, smaller firms showed positive excess returns. Thus, firm size may proxy for cash-flow risk and this risk was not captured by beta in explaining the excess returns of small firms over large firms. CHOU ET AL. [2007] also found same results. Further, they found that when stocks were sorted on size, the size was inversely related to the monthly beta, a result that was very similar to the US results.

Among the other studies [MARONEY AND PROTOPAPADAKIS 2002] examined the size effect on seven markets namely, Australia (AUS), Canada (CAN), Germany [DEU], France [FRA], the United Kingdom [UK], Japan [JPN], and the US. The sample period for US and CAN is November 1983 to October 1994 and for AUS, FRA, DEU, UK, and JPN was November 1986 to October 1994.

Their findings of average returns for small and large portfolios were as present in the following table.

Tab. 2: Average returns of small and large portfolio

Country	Small portfolio (%)	Large portfolio (%)	Size premium (%)
AUS	30.4	18.6	11.8
CAN	44.3	8.6	35.7
FRA	17.5	13.8	3.7
DEU	26.6	12.6	14.0
GBR	22.2	18.4	3.8
JPN	21.5	5.7	15.8
USA	47.3	16.7	30.6

Source: Maroney and Protopapadakis [2002]

ANNAERT ET AL. [2002] examined the size anomaly over 15 European country stocks of 2866 from January 1973 until December 2000. Every stock in the sample belonged to one of the following countries: Austria, Belgium, France, Germany, Denmark, Finland, Ireland, Italy, Netherland, Norway, the UK, Switzerland, Spain, Portugal or Sweden. According to the value weighted portfolio returns, small European stocks earned a monthly return of more than 2.6 percent per month, which is much higher than the 1.2 percent per month for the largest stocks. This result was found after excluding the 20 percent smallest stocks of each country from the sample. They found a significant size premium of 1.45 percent per month, or about 19 percent on an annual basis by employing the [FAMA AND FRENCH 1993] three factor model.

Tab.3: Summarized studies of size effect on international markets

Country and study	No. of portfolios	Sample	Test period	Returns smallest	Return largest	Size premium
UK: LEVIS [1985]	10	LSE	1958-1982	1.33	0.94	0.39
Finland: WAHLROOS AND BERGLUND [1986]	10	50	1970-1981	1.2	0.30	0.90
Mexico: HERRERA AND LOCKWOOD [1994]	3	100	1987-1992	5.80	1.64	4.16
Japan: GAR ZA-GOMEZ ET AL. [1998]	10	326-1077	1957-1994	2.38	1.11	1.27
Canada: ELFAKHANI ET AL. [1998]	5	694	1979-1992	2.00	1.02	0.98

UK: MILLS AND JORDANOV 2000]-	10	304-500	1985-1995	3.09	0.95	2.14
Europe:[ANNAERT et al. [2002]	10	2866	1974-2000	2.64	1.19	1.45
Greece: LELEDAKIS ET AL. [2003]	5	203	1990-2000	5.36	3.97	1.39
Japan: CHOU ET AL. [2007]	10	TSE	1975-1997	1.74	0.76	0.98
Sri Lanka: NANAYAKKARA [2008]	5	101	1998-2005	1.83	0.37	1.46
India: SINGH [2009]	4	158	1991-2002	2.33	0.61	1.72

Source: Survey findings

There are number of studies of size effect done based on Athens Stock Exchange [ASE]. LELEDAKIS ET AL. [2003] examine the cross-sectional variation of stock returns for the 1990 -2000 period using the [FAMA AND FRENCH 1992] portfolio grouping procedure. They used size, beta, B/M equity, leverage, earnings-to-price, dividend yield and sales to price as independent variables in the model. However, they found that only size had a significant explanatory power in explaining cross-sectional variation of stock returns. Further, [THERIOU ET AL. 2005] and [KOUSENIDIS 2005] also found that size had a negative relationship with stock returns at ASE.

SINGH [2009] examined five market anomalies including size anomaly using 158 equity shares in Bombay Stock Exchange [BSE] as shown in the table 3, the author found significant size premium of 1.72 percent returns per month. Further, the author reported that "risk is multidimensional and definitely include size, which is probably a proxy for some underlying risk".

NANAYAKKARA [2008] found that there was an evidence of 1.46 percent monthly difference of returns between smallest stocks and largest stocks traded at Colombo Stock Exchange.

The above findings report that size effect is visible in the international markets. For most of the studies size effect is not captured by CAPM beta. Most studies in agreement that some risk factors not included in traditional asset pricing models are captured by size effect.

5. Size effect and bull versus bear market

Several studies examined the size effect in bull versus bear markets. Generally these studies found that size effect was different depending on the primary condition of the market. BHARDWAJ AND BROOKS [1993] examined the size effect in bull and bear market using dual-beta market model for NYSE and AMEX stocks from 1926 to

1988. The study classified as either a bull month or bear month if the market return in that month was higher or lower than the median market returns over the entire period. The table 4 below shows that for the total period monthly average returns decrease with the size increase. But small firm stocks under-perform large firm stocks in bear months but out-perform them in bull months.

Tab.4: Size effect evidence on Bull and Bear Markets

Country and study	Number of portfolios	Sample	Size portfolio	Average returns*		
				Total period	Bull	Bear
US: BHARDWAJ AND BROOKS [1993]-	20	NYSE AMEX	Small	2.81	9.80	-4.20
			Large	0.81	4.32	-2.61
US: KIM AND BURNIE [2002]	10	680-835	Small	2.32	5.23	-0.59
			Large	1.16	4.18	-1.87
Chaina: RUTLEDGE ET AL.[2008]	10	1278	Small	Na	0.135	-0.039
			Large	Na	-0.125	0.004

Source: Survey findings

* Returns presented under [RUTLEDGE ET AL. 2008] are average daily excess returns

Na = data is not available

KIM AND BURNIE [2002] found some what different findings to [BHARDWAJ AND BROOKS 1993] taking a sample of 680 to 835 surviving firms from 1976 to 1995. They found that average monthly returns of portfolios were negatively related with size. Portfolio mean returns were positive in bull market and they were negative in bear markets. RUTLEDGE ET AL. [2008] examined the size anomaly in Chinese market from 1998-2003 on conditional markets. They identified the bull market period as the up market of Shanghai A-share month index level and bear market as the downward trend of the index. They reported that in the bullish market average daily excess returns were a monotonically decreasing function of market value of the firm. However, in the bear market small firm recorded negative returns while large firms reported positive returns.

In summary of this sub section, studies found that during bull markets small firms have returns higher than large firms. However during bear markets, small firms have returns that are worse than large firms. Therefore it can be concluded that size effect is visible only in bull market conditions.

6. Size effect and asset pricing models

According to the literature discussed, the size effect was the first of the firm variables that was shown to be related to excess returns. FAMA AND FRENCH [1993] used the size anomaly for the first time to create a size factor[1] in their famous three factor model [market, size and B/M] to explain the cross-section of average stock returns. Since [FAMA AND FRENCH 1993] many researchers have used the size factor to create factor models to explain the variation in cross-section of stock returns [see for an example, FAMA AND FRENCH 1996; DREW AND VEERARAGHAVEN 2002; DREW NAUGHTON AND VEERARAGHAVEN 2003; WANG AND XU 2004; MALIN AND VEERARAGHAVEN 2004). Followings are the recent evidences that use size anomaly in asset pricing models.

MOBAREK AND MOLLAH [2005] examine the stock return determinants of Dhaka Stock Exchange using 123 non-financial companies from 1988 to 1997. The study found that size factor is significantly negatively related with stock returns. The same finding received by [BAHL 2006] for 79 stocks listed on the BSE in India. Using monthly data from Shanghai and Shenzhen Stock Markets from 1994 to 2002, [WANG AND IORIO 2007] found that beta was not an important factor in explaining stock returns but size and B/M factors play a significant role in explaining stock returns. [SIMLAI 2008] re-examined the three factor model of [FAMA and FRENCH 1993] using NYSE, AMEX AND NASDAQ stocks from 1926 to 2007. The author finds that B/M as well as size factors played a strong role in explaining stock returns. In another study [KONSTANTINOS 2008] examined the significance of size B/M and momentum risk factors in explaining portfolio returns in Australian Stock Market (ASM). Overall findings confirmed the existing evidence that there was a strong size effect and a week B/M effect in ASM. BANDOO [2008] also found that size and B/M factors were statistically significant in explaining stock returns at Mauritius Stock Exchange.

7. Further research

Literature shows that the relationship between beta and return is significantly positive in up markets and significantly negative in down market [FLETCHER 1997; SRIYALATHA 2010]. Further, section five of this paper reveals that size anomaly is conditional on state of the market and previous section showed that size factor plays a significant role in explaining cross-sectional variability of stock returns.

However, it is extremely lacking [if not unavailable] to find studies on multifactor asset pricing models [including size factor] in conditional market states. Therefore, this study proposes that multifactor asset pricing models [including size factor] should be expanded in conditional markets because beta as well as size anomaly are subject to market conditions.

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[1] [FAMA and FRENCH 1993] formed size and B/M mimicking portfolios by taking the returns difference between the smallest 30 percent and the largest 30 percent of the ranked values of size and B/M portfolios.

8. Summery and conclusion

The size effect refers to the negative relationship between stock returns and market value of common equity of the firm. The size effect was the first of the firm variables that was shown to be related to excess returns. There has been extensive research on size effect in finance literature throughout the last three decades after the inception of size effect by [BANZ 1981]. The purpose of this paper is to examine whether the size effect is prevail in international markets because there is an argument that size effect is a outcome of data snooping bias. Survey of size anomaly in international market would be able to find whether it is special feature in U.S market or common characteristic in capital markets all over the world.

This paper examines size effect in US market since its inception in 1981 to 2010. Studies reveal that size effect survives in the US market with some fluctuations over time. Further, suggest that size effect play a role of proxy for correction of market risk. The international evidence on size effect shows consistent results for the studies concerned here. Small firms seem to outperform large firms in a large number both in developed and developing international markets. The international market findings of size effect reject the criticism that empirical evidence is the result of data snooping bias.

The survey reveals that size effect is survives only in the bull or up market and in the bear or down market size effect can not be seen.

Recent empirical studies have found that size factor which creates by deducting returns of largest size portfolio from the returns of smallest size portfolio, plays an important role in explaining stock returns.

In summary, it can be concluded that size effect is survives in the US as well as other international capital markets. However, size effect is visible only in bull market. Size factor seems to be a key member of multifactor asset pricing models. The potential fruitful extensions of the size anomaly related research studies are: a. to further verifies the relationship between size effect and market conditions of bull [up] or bear [down] markets; b. to examine the size factor loaded multifactor asset pricing models in conditional markets.

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STRUCTURAL CHANGES OF THE CZECH ECONOMY AT REGIONAL LEVEL

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Abstract: This paper deals with regional industry structure of the Czech Republic and structual changes that have occured in last twenty years in the Czech regions. It attends to the industry structure between the years 1998 and 2008 in more detail. There was used cluster analysis to sort regions and create a classification of them in accordance with their similar characteristics.

Keywords: Structural Changes, Regions, Cluster Analysis, Industries, Economic Performance

1. Introduction

Every region[1] is characterized by certain specifics that are related to historical, natural, geographical, demographical, economical, political and other aspects which determine the economical growth of region. Prosperous region is characterized by prosperous microeconomic subjects. The market substantially influences the level of fruitfulness of firms and the usage of their products. This influence must be in accordance with presumption of continuous persistency of firm [9]. The above mentioned regional specifics are the local factors which are in particular important for determination of sources of wealth of region. These sources are the production factors like labour, capital and land. The quality, quantity and productivity of production factors, the influence of multiplier effects, the influence of redistribution processes and the rate of leakages from region are important for economical growth of region. Needs of production factors and their features vary at particular sectors (and regions). Despite of privilege of manufacturing industry in the Czech economy each region has different structure of branches, differs in own productivity or in rate of employment and the other characteristics. These aspects determine the economical productivity and competitiveness of region and influence the interregional disparities.

Other articles already deal with similar topics in terms of "Scientific Papers of the University of Pardubice" as well. The article "Disparity krajů ČR" [8] deals with evaluation of disparities of regions by means of method of cluster analysis. This analysis will be used in this paper as well. Various socio-economical characteristics were used for cluster analysis there. The result of this analysis was division of regions into four groups. The findings of article "Modelování konkurenceschopnosti regionů v podmínkách globalizace" [12] were among other that extraordinary successful regions contain capital cities or these regions are identify with the capital cities. Above

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[1] Region at the level of NUTS III is thought in this article.

mentioned question which is related with production factors is solved in paper "Vývoj produktivity z pohledu sektorů národního hospodářství v kontextu vývoje členských států EU" [11]. The impact of productivity of factors labour and capital on progress of GDP is solved in mentioned article. The paper "Measurement of regional disparities and economic competitiveness of regions" [13] deals with factors of regional competitiveness and with indicators of regional disparities in context of regional competitiveness.

The classification of regions at the level of NUTS III in the Czech Republic according to the structure of braches in years 1998 and 2008 and according to rate of structural changes in mentioned years is the aim of this article.

2. Structure of Czech Economy

Before the year 1989 the predominance of industry over tertiary sector was typical for Czech economy. This situation was already due to historical evolution from epoch of Austria-Hungary and of the so called first republic. The existence of central planed economy in the second mid-20th century contributes to this situation. In the first mid-1990s the Czech economy was indifferent to structural changes. The low rate of unemployment was the evidence of the absence of structural changes. [2] It happen by the subsequent transformation to leave of uneconomical production, liquidation of "automatic" industrial credits, privatization, implementation of trade and price liberalization, reform of system of law transition to free convertible currency. The structural changes were created at the micro-level and than were made at macro-level. These changes manifested the change of importance of particular sectors in Czech economy – the importance of tertiary sector was grown. The Czech industry moved to branches with higher added value, with higher stress to export (e.g. the share of industrial production in export increased[2]) and the productivity of labour grew as well. The Czech economy reoriented at energy-saving and less damaging the living environment production. The growing rate of unemployment especially in regions with concentration of suppressed production related to the structural changes. Only the part of redundant workers was absorbed by tertiary sector. This absorption was different in regions. And this made the higher regional differentiation of employment. Nevertheless the structural and local lack of labour forces has become by limiting factor after the year 2008. [4]

The high inflow of foreign direct investments linked to transformation. These investments flew into important centres with industrial tradition and with qualified labour forces (especially the areas of car industry and related electrotechnics, manufacturing of machinery, production of plastic material etc. are mentioned there). These investments supported the regional specialization[3]. The foreign investors built "on greenfields", thereby the previous specialization was changed[4]. In 1995 – 2005 the substantial size of investment flew into areas of transport, stocking, post and

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[2] In 2000 the sales from direct export shared in total industrial sales by 37,5 % and in 2006 shared by 43,8 %. [3]

[3] E.g. the creating of joint-venture of Bosch Diesel and local traditional firm Motorpal i Jihlava.

[4] E.g. investment into branch of manufacturing industry, electronic, computer technology. See the firms TPCA in Ovčáry at Kolín, Panasonic in Plzeň or Foxconn in Pardubice.

telecommunication, activities linked with immovables, with leasing, computer technologies, research and development and services for enterprises. [2] The size of investment decreased in primary sector. This decrease was evoked by alternative ways of purchases of tangible assets, by exhausting of potential of building of big projects concerning the production and electricity distribution. The agriculture stagnated in this decade and the importance of extractive industry decreased as well. This decrease was evoked by decreasing of investment in coal-mining industry. When we want to explore the dynamics of investment, we can see above-average growth in manufacturing industry and in branch of other public, social and personal services and in civil engineering as well. The branch of agriculture, hotel industry and accommodation, extractive industry, electrical industry and financial enterprises embodied undersized dynamics of growth of investment. [1]

The manufacturing industry plays the key role in Czech industry. Employment, sales, count of firms and reaching profit or size of investment grew thanks this industry. The position of manufacturing industry strengthened over the years thanks to strong changes in ownership. E.g. the car industry showed a loss over 5,2 milliard CZK in 1997, while in 2004 made profit 15,6 milliard CZK. [4] The medium-high-tech branches are the centre of gravity of manufacturing industry. These branches have the largest growth potential whereas these branches are equally spatially allocated than high-tech branches. [4] In 2000 the metallurgy dominated in Czech industry. The metallurgy shared in sales in manufacturing industry by 16,2 %. In 2006 the car industry already dominated there (the share is 20,4 %). [3]

The largest growth of share was in branch of production of electrical and optical instruments whose share in sales of manufacturing industry increased about 7,1 %. [3]

3. Regional industry structure

Regions differ in their socio-economic parameters and have been developing over the time differently. A very important factor is industry structure, because industries differ in the level of the labour productivity and determine wage regional level. The following Tab. 1 shows how each industries in each regions participated in gross value added in 2008.

Tab. 1: Proportion of each industries in each regions in the creation of gross value added in 2008 (in %)

Sector[5]/Region[6]	HMP	SCK	JCK	PLK	KVK	USK	LBK	KHK	PAK	VYS	JHM	OLK	ZLK	MSK
A	0,2	3,1	5	4,2	2,7	1,3	1,5	4,6	4,5	7,3	3,1	4,2	2,5	1,6
B	0	0	0,1	0	0	0	0	0	0	0	0	0	0	0
C	0,1	0,2	0,4	0,1	10,4	6,1	-0,3	0,5	0,1	-0,2	1,1	0,4	0,1	6,8
D	8,4	**34**	**23,8**	**30,5**	**21,7**	**26,9**	**37,1**	**31,2**	**30,3**	**36,3**	**23**	**28,9**	**39,1**	**31,8**
E	4,9	2,8	11,7	3,9	4,7	10,3	1,6	5,5	5,3	8,4	2,4	1,9	1,8	4,6
F	5	5,7	6,9	6,8	6,3	8,3	7,6	6,8	7,6	6,7	8,3	7,8	7,9	6,7
G	16,8	14,2	10,5	11,2	10,4	8,4	10,3	10,3	11,1	8,6	14,6	11	11,9	11,4
H	2,5	1,3	2,2	1,6	4,2	1,4	1,8	1,9	1,4	1,2	1,6	1,4	1,5	1,2
I	12,5	12,5	10,9	9,2	8,8	10,2	9,7	9,1	10,5	9	9,3	11,4	8,1	8
J	9,3	1,9	1,7	1,9	1,7	1,2	2,7	1,6	2,7	1	2,2	2,1	1,4	1,3
K	**23,5**	11,5	9,5	13,6	9,4	7,6	10,5	9,3	10,4	8,3	16,4	10,7	11,1	9,4
L	6,3	4,4	6,1	5,6	5	6,5	4,1	6,9	4,3	3,5	5,7	6,7	3	5,2
M	3	3,2	4,5	4,3	4,3	4,1	5	4,6	4,7	4	5,4	5,4	4,7	4,8
N	2,8	3	4,4	4,6	6,9	4,5	4,8	5,3	4,5	4,1	4,2	5,1	4,1	4,7
O	4,7	2,2	2,4	2,5	3,6	3	3,5	2,5	2,6	1,7	2,6	3	2,7	2,6

Source: own elaboration based on [5]

Tab. 1 illustrates that in all regions except the Capital city of Prague, where the largest proportion had the "Real estate, renting and business activities", showed the highest proportion the "Manufacturing" in gross value added. Economic performance of regions, according to [6], was influenced by a composition of manufacturing, which consists of various sub-sectors with a different labour productivity[7]. A significant role in the manufacturing industry played manufacture of machinery and equipment, electrical and optical equipment and transport equipment manufacture in the Czech Republic. There was decreasing the importance of textile production, leather, chemicals and ceramics and glass industries.

When it comes to the regional industry structure in 2008, there showed the "Trade; repair of motor vehicles, motorcycles and personal and household goods", "Transport, storage and communications" and "Financial intermediation and instance" a higher proportion than "Manufacturing" in gross value added in the Capital city of Prague. A

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[5] A = Agriculture, hunting and forestry; B = Fishing, C = Mining and quarrying, D = Manufacturing; E = Electricity, gas and water supply; F = Construction; G = Trade; repair of motor vehicles, motorcycles and personal and household goods; H = Hotels and restaurants; I = Transport, storage and communication; J = Financial intermediation and instance; K = Real estate, renting and business activities; L = Public administration and defence, compulsory social security; M = Education; N = Health and social work; O = Other community, social and personal service activities. (Sector by OKEČ = Industrial Classification of Economic Activities.)

[6] HMP = Capital city of Prague; SCK = Central Bohemia Region; JCK = South Bohemia Region; PLK = The Plzen Region; KVK = The Karlovy Vary Region; USK = The Usti Region; LBK = The Liberec Region; KHK = The Hradec Kralove Region; PAK = The Pardubice Region; VYS = The Vysocina Region; JHM = The South Moravian Region; OLK = The Olomouc Region; ZLK = The Zlin Region; MSK = The Moravian-Silesian Region.

[7] High levels of labour productivity is achieved mainly in the banking and insurance sectors as well as in commercial services. By contrast, in agriculture, education, accommodation and catering industry and in public and social services, labour productivity is lower. [6]

high proportion of the "Manufacturing" showed the Central Bohemia Region and the Zlin Region, which had the highest proportion within the Czech Republic.

In the South Bohemia Region, there was a lower proportion of the "Manufacturing " but the highest proportion of the "Electricity, gas and water supply" and also this was a single region which showed the "Fishing" industry – a very low proportion in the creation of gross value added though. The Plzen Region was characterized by a slightly higher proportion of the commercial services compared to other regions (excluding the Capital city of Prague and The South Moravian Region).

The highest proportion of the "Mining and quarrying" and the "Health and social work" in gross value added within all regions showed The Karlovy Vary Region. The Usti Region had a high proportion of the "Electricity, gas and water supply", as well as the South Bohemia Region, and a higher proportion of the "Construction" , compared to other regions. Relatively low proportion had the "Trade; repair of motor vehicles, motorcycles and personal and household goods" and the "Real estate, renting and business activities" in this region.

In the Liberec Region, there was a high proportion of the "Manufacturing" and the lowest proportion of the "Electricity, gas and water supply" within the Czech Republic. The Hradec Kralove Region showed a high proportion of the "Manufacturing" and a higher proportion of the „Agriculture, hunting and forestry" compared to other regions, the Pardubice Region was similar to the Hradec Kralove Region in industry structure characteristics a lot.

The Vysocina Region was typical of the highest proportion of the "Agriculture, hunting and forestry", of a high proportion of "Manufacturing", a relatively high proportion of the" Electricity, heat, water, and of the lowest proportion of the "Financial intermediation". The South Moravian Region was characterized by a relatively low proportion of manufacturing and commercial services, while the Olomouc Region had a higher proportion of the "Transport, storage, communications, and a low proportion of the "Electricity, heat and water". The Zlin Region showed the highest proportion of "Manufacturing" in the Czech Republic and a relatively high proportion of "Trade; repair of motor vehicles, motorcycles and personal and household goods". The Moravian-Silesian Region was not significantly different from the national average, except a higher proportion of the "Mining and quarrying".

Four sectors, which represent the highest proportion in the creation of gross value added in each regions, show the following Tab. 2 and Tab. 3, the first one for the data of 1998 and the another one for the data of 2008.

Tab. 2: Industries with the highest proportion in the creation of gross value added in each regions in 1998

Rank/ Region	HMP	SCK	JCK	PLK	KVK	USK	LBK	KHK	PAK	VYS	JHM	OLK	ZLK	MSK
1.	K	D	D	D	D	D	D	D	D	D	D	D	D	D
2.	G	I	I	K	G	I	G	G	I	A	K	K	K	G
3.	I	G	G	G	I	F	K	I	K	I	G	I	G	I
4.	D	K	F	I	C	K	F	F	F	G	I	F	I	K

Source: own elaboration based on [5]

Tab. 3: Industries with the highest proportion in the creation of gross value added in each regions in 2008

Rank/ Region	HMP	SCK	JCK	PLK	KVK	USK	LBK	KHK	PAK	VYS	JHM	OLK	ZLK	MSK
1.	K	D	D	D	D	D	D	D	D	D	D	D	D	D
2.	G	G	E	K	C, G	E	K	G	G	G	K	I	G	G
3.	I	I	I	G	C, G	I	G	K	I	E	G	K	K	K
4.	J	K	G	I	K	G	I	I	K	K	I	F	I	I

Source: own elaboration based on [5]

Based on the data of Tab. 2 and Tab. 3, there can be compared structural changes in regions over the time. There can be seen that the order of proportion of four major industries did not change over the time in the Plzen Region and the South Moravian Region. Slight changes occurred in the Capital city of Prague, the Central Bohemia Region, the Olomouc Region and the Moravian-Silesian Region. Generally, there occurred a decline in the "Construction" and an increase in the "Electricity, gas and water supply" and "Trade; repair of motor vehicles, motorcycles and personal and household goods", the "Manufacturing" still holds a leading position over the time horizon of ten years.

4. Classification of regions using the cluster analysis

To create a classification of regions and identify regions with similar characteristics, there was used a cluster analysis. Input data were the statistical data of regional industry structure at NUTS III level in the Czech Republic. To determine a situation and development of industry structure, there were analyzed the data of 1998 and 2008. The analysis was performed in the SPSS program.

With regard to the objective of this article, there was chosen the cluster analysis which can reveal a structure of studied objects. Advantage of this approach is also the fact that surveyed regions are divided into internally homogeneous clusters. Objects within a cluster are as similar as possible and objects in different clusters are diverse vice versa. Examined objects were the NUTS III regions within the Czech Republic, criterions were proportion of fifteen industries (according to the OKEČ classification) in the creation of gross value added.

For the analysis was chosen the hierarchical aglomerativ approach, which is characterized by the reliance on individual objects and their gradual merging with

building a hierarchical system of subsets. To calculate a distance among regions, there was used the squared Euclidean distance. Because the input data are in the same units, there was not necessary to norm the data. To clustering was used the Ward method, which tends to eliminate small clusters, thus forming clusters of roughly equal size, see Hebák [7]. Graphical representation of a hierarchical structure of found groups is performed by a hierarchical tree (dendrogram), which shows the gradual process of clustering.

For determining the number of clusters can be used the heuristic approach. This approach determines the number of clusters based on finding gaps among connections along axis showing the distance among clusters. A good solution is associated with a sudden jump among the coefficients distance, see Vrtěnová [14].

Results of the cluster analysis are illustrated in the following Fig. 1-3 and Tab. 4 – 6. As mentioned above, there were examined regional data for the years of 1998 and 2008, and for monitoring of structural changes were used changes in dates between the examined years as input values. The cluster analysis was followed by the method of comparison, there were examined similarities and differences in industry structure of each regions.

Fig. 1: Dendrogram of clusters of regions in 1998

Source: own elaboration based on [5]

Tab. 4: Clusters created from the data of 1998

Cluster	Regions
1	PLK, OLK, KHK, PAK, JCK, JHM, VYS
2	LBK, ZLK, SCK
3	USK, MSK, KVK
4	HMP

Source: own elaboration based on [5]

Result of the cluster analysis for the data of 1998 is four clusters listed in Tab. 2. The first cluster, which includes most of regions, namely it is the Plzen Region, the Olomouc Region, the Hradec Kralove Region, the Pardubice Region, the South Bohemia Region, the South Moravian Region and the Vysocina Region, is characterized by a high proportion of the „Agriculture, hunting and forestry" in comparison with other regions. Most of other indicators approximated the countrywide average. In the second cluster, there are included the Liberec Region, the Zlin Region and the Central Bohemia Region. These regions showed the highest proportion of the „Manufacturing" in gross value added. The Usti Region, the Moravian-Silesian Region and the Karlovy Vary Region are included in the third cluster, which combines regions with a high proportion of the „ Mining and quarrying" and the „Health and social work", whereas with a low proportion of the „Real estate, renting and business activities". Last, the fourth, cluster consists only of the Capital city of Prague and showed a high proportion of the "Trade; repair of motor vehicles, motorcycles and personal and household goods", the "Transport, storage and communication", the "Financial intermediation and insurance", the "Real estate, renting and business activities" and the "Other community, social and personal services activities " industry. It is also characterized by its low proportion of the "Manufacturing" and, of course, of the "Agriculture, hunting and forestry".
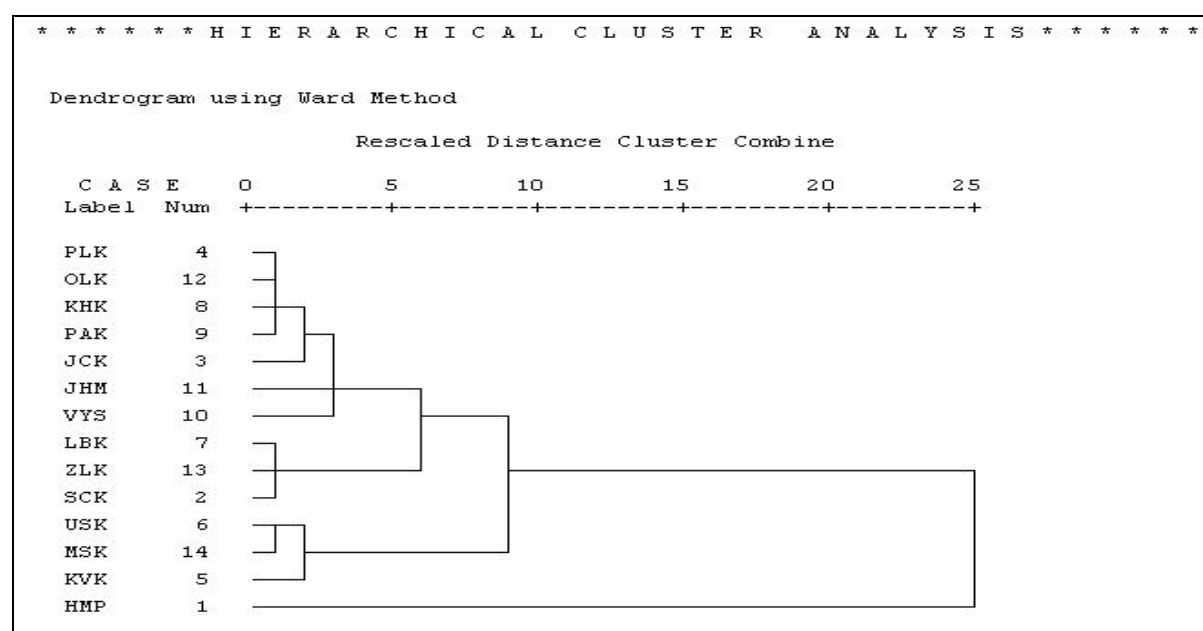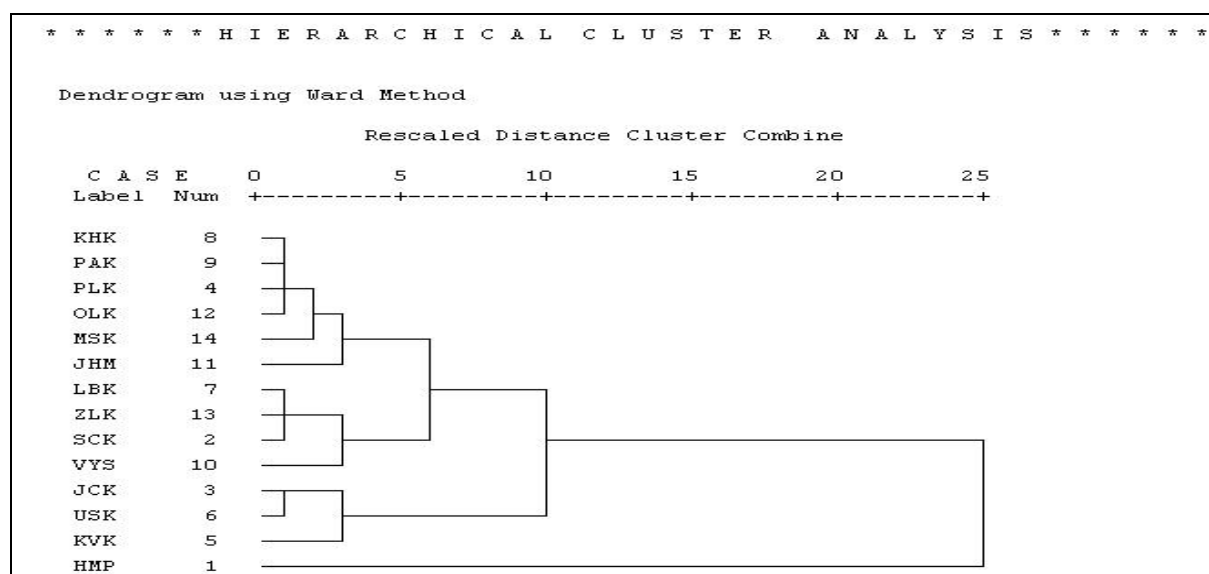

Fig. 2: Dendrogram of clusters of regions in 2008

Source: own elaboration based on [5]

Tab. 5: Clusters created from the data of 2008

Cluster	Regions
1	KHK, PAK, PLK, OLK, MSK
2	JHM
3	LBK, ZLK, SCK
4	VYS
5	JCK, USK
6	KVK
7	HMP

Different results were obtained from a cluster analysis realized from the data of 2008. Regions were divided into 7 clusters. The first cluster consists of the Hradec Kralove Region, the Pardubice Region, the Plzen Region, the Olomouc Region and the Moravian-Silesian Region. These regions are characterized by higher proportion of the "Agriculture, hunting and forestry". Then can be noted that the values are at about the national average in this cluster. The second cluster is represented only by the South Moravian Region, which showed a low proportion of the „Manufacturing", compared to other regions, a high proportion of the "Trade; repair of motor vehicles, motorcycles and personal and household goods" and a high proportion of the "Real estate, renting and business activities". This industry structure is significantly affected by the presence of the city of Brno in the South Moravian Region, this city has strengthened the urban characteristics.

The Liberec Region, the Zlin Region and the Central Bohemia region represent the third cluster. There was the highest proportion of the „Manufacturing", whereas a low proportion of the „Electricity, gas and water supply". The fourth cluster is represented by the Vysocina Region. For this region was typical the "Agriculture, hunting and forestry". Specific is the fact that this region contributed with the highest proportion of the agricultural production in the Czech Republic. There was also the lowest proportion of the „Trade; repair of motor vehicles, motorcycles and personal and household goods", the „Financial intermediation and insurance" and a high contribution of the „Manufacturing" in gross value added. The Usti Region and the South Bohemia Region represent the fifth cluster, for this one was typical the highest contribution of the „Electricity, gas and water supply". In the case of the South Bohemia Region, there has played an important role putting a nuclear power station into operation in Temelin since 2000. The sixth cluster is represented by the Karlovy Vary Region, which was characterized by the highest proportion of the "Health and social work" in gross value added, which was probably caused by the importance of the spa industry there. This region was also characterized by the highest proportion of the "Mining and quarrying" and with a low proportion of the "Manufacturing". The last, the seventh cluster, includes only the Capital city of Prague, for which was specific a low proportion of the „Manufacturing", compared to other regions, and also a very low contribution of the "Agriculture, hunting and forestry" again. Typical for Capital city of Prague is a high proportion of industries with high value-added of capital and labour as the "Trade; repair of motor vehicles, motorcycles and personal and household goods", the "Real estate, renting and business activities" and the "Other community, social and personal services".

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* * * * * H I E R A R C H I C A L   C L U S T E R   A N A L Y S I S * * * * * *

Dendrogram using Ward Method

                          Rescaled Distance Cluster Combine

   C A S E      0         5        10        15        20        25
   Label   Num  +---------+---------+---------+---------+---------+

   USK      6   ─┐
   KHK      8   ─┤
   OLK     12   ─┤
   LBK      7   ─┼─┐
   ZLK     13   ─┘ ├───────────────────────────────────────┐
   PLK      4   ─┐ │                                        │
   MSK     14   ─┼─┘                                        │
   VYS     10   ─┘                                          │
   SCK      2   ─┐                                          │
   JHM     11   ─┤                                          │
   PAK      9   ─┤         ┌────────────────────────────────┘
   HMP      1   ─┤ ┌───────┘
   KVK      5   ─┴─┘
   JCK      3   ─┘
```
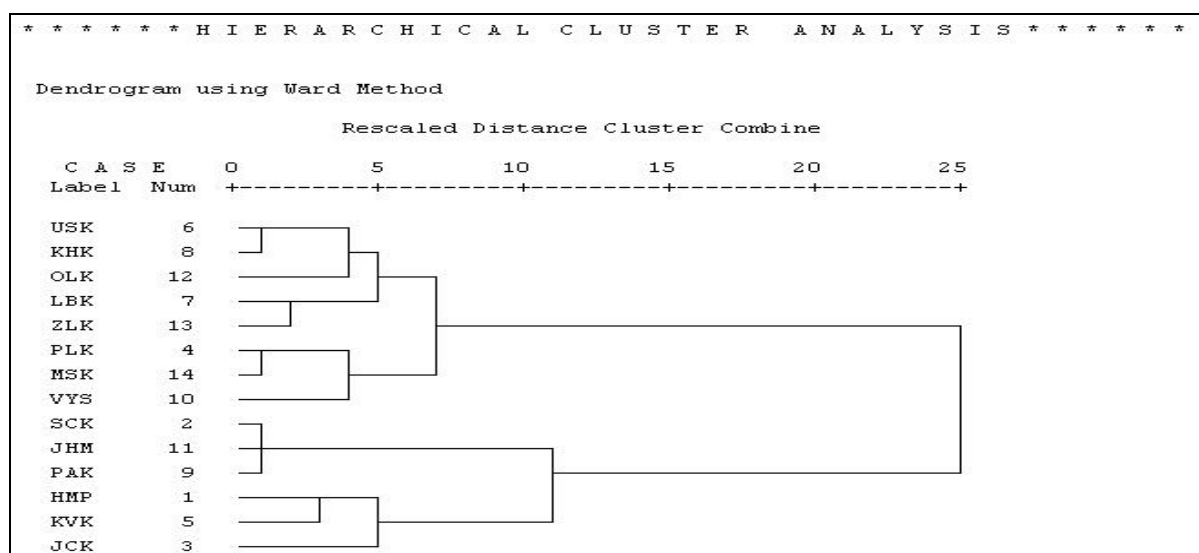
Fig. 3: Dendrogram of clusters of regions based on changes in industry structure between 1998 and 2008

Source: own elaboration based on [5]

Tab. 6: Clusters created for „jump" changes between 1998 and 2008

Cluster	Regions
1	USK, KHK, OLK, LBK, ZLK
2	PLK, MSK, VYS
3	SCK, JHM, PAK
4	HMP, KVK, JCK

Source: own elaboration based on [5]

Cluster analysis was also applied to the data representing changes occurring in regional industry structure by comparison the data of years 1998 and 2008. This analysis was searching regions with similar development of industry structure in principle. Essential was not an overall representation of different industries, but a trend in industry structure.

Fig. 3 and Tab. 6 show results of the analysis. Regions were divided into four clusters. The first cluster consists of the Usti Region, the Hradec Kralove Region, the Olomouc Region, the Liberec Region and the Zlin Region. There were no significant common changes in these regions during the ten-year horizon. There was the lowest frequency of changes in industry structure in these regions. In the second cluster, there are the Plzen Region, The Moravian-Silesian Region and the Vysocina Region. Typical of them was a high increase in the „Manufacturing". The Central Bohemia Region, the South Moravia Region and the Pardubice Region represent the third cluster, which had the highest increase in the „Trade; repair of motor vehicles, motorcycles and personal and household goods" industry and a dramatic fall in the „Agriculture, hunting and forestry". Interesting is the fourth cluster, which consists of the Capital city of Prague, the Karlovy Vary Region and the South-Bohemia Region. Of this cluster was typical a significant decline in the „Manufacturing" in favor of the „Real estate, renting and business activities". There is evident that the structure in

itself was different in both regions, but both regions went through similar changes in industry structure.

The analysis enabled a segmentation of regions according to similarities in industry structure in the Czech Republic, and then also dividing into several groups - clusters. There was created a typology of regions this way. Given the limitations of this article, there was carried out a classification of regions only by industry structure, a similar analysis would be possible also with other statistical indicators. Each analysis of regions showed different distribution among different clusters in different years, even when examining changes between years. An example might be a different inclusion of the Pardubice Region and the Hradec Kralove Region in two different clusters in the case of changes in industry structure. When examining the structure of each year, these regions are always included in one cluster together. Then, there is necessary expanding the number of input parameters for such analysis.

5. Conclusion

A premise of economic growth of regions is their appropriate production factors endowment and productivity of these ones. Since each industry is differently labour and capital demanding, and the above mentioned productivity is diverse, industry structure is one of the determining factors of economic performance. The Czech Republic has experienced significant structural changes with a trend of decline in the primary sector in favor of the tertiary sector in the creation of gross value added in last twenty years. It meant focus on industries with higher labour and capital productivity. Although there has been a leading role of the „Manufacturing" industry, there have been specific differences in industry structure among regions, and there is possible to search some similarities and some differences among them. That is why cluster analysis was performed, the regions were divided into hommogenous clusters, the criterions were contributions of each industries in gross value added.

The cluster analysis was performed for the years 1998, 2008 and for changes in dates between the given years. Result for the data of 1998 was four clusters, the first one was typical of intensive agricultural characteristics, the second cluster showed the highest proportion of manufacturing industry and of the third one was typical a high proportion of the „Mining and quarrying", and the „Health and social work" in the creation of gross value added. The fourth cluster was formed only by the Capital city of Prague, which was characterized by an intensive contribution of industries with high labour and capital productivity even in 1998. There were found structural changes in 2008 compared to the data of 1998, thus there was changed the classification of regions. There were separated the South Moravia Region, the Karlovy Vary Region, the Vysocina Region and, of course, the Capital city of Prague. Significant was analysis of the data representing changes which occurred when comparing the years 1998 and 2008. This classification was based on changes in industry structure of regions when essential was a trend of their development. As results of the cluster analysis show, the Usti Region, The Hradec Kralove Region, the Olomouc Region, the Liberec Region and the Zlin Region did not experienced any significant common changes during the ten-years horizon. The Plzen Region, the Moravian-Silesian Region and the Vysocina Region were characterized by a high increase in the

„Manufacturing". The third cluster consists of the Central Bohemia Region, the South Moravia Region and the Pardubice Region, for that was common the greatest increase in the „Trade; repair of motor vehicles, motorcycles and personal and household goods" and a significant decline in the „Agriculture, hunting and forestry" industry. Interesting is, that in this case the Capital city of Prague is not separated, but showed as significant decline in the „Manufacturing" in favor of the „Real estate, renting and business activities", as the Karlovy Vary Region and the South Bohemia Region experienced.

Based on the cluster analysis, there was performed the classification of regions according to similarities in industry structure. But regional economic performance is influenced not only by industry chracteristics, therefore there would be usefull to divide regions into clusters on multiple input parameters for more general regional classification.

Acknowledgement

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CALCULATION OF A MUNICIPALITY PERCENTAGE SHARE IN THE SHARED TAXES YIELD BY MEANS OF GENETIC PROGRAMMING AND ITS REGIONAL COMPARISION

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Abstract: The application of the genetic programming method is executed in this contribution in order to determine the percentage share of a concrete municipality in the shared taxes yield in the Czech Republic. Results obtained by using the genetic programming method are compared with the real data publicised in the Ministry of Finance of the Czech Republic notices. The comparison is done both for the size of municipality category for the entire Czech Republic and for the space – according to individual regions for the period from 2008 to 2010. The objective of this contribution is to verify the accuracy of the results obtained by the genetic programming method and the possibility of their utilization in practical usage, in particular for the prediction of the share of the individual municipality in the shared taxes Šeld.

Keywords: Tax Assignment to Sub-national Government Level, Shared Taxes, Genetic Programming, Regional Self-governments, Regional Comparison

1. Introduction

Tax Assignment to sub-national Government Level („RUD" in Czech - Tax Assignment to sub-national Government Level) for municipalities is a widely discussed topic in the Czech Republic. There are two associations which strive for the change in the current system, these are the Union of Towns and Villages („SMO" in Czech) and the Association of Local Administrations („SMS" in Czech). The Ministry of Finance of the Czech Republic (MFCR) asked, in year 2008, a consortium of universities working under the umbrella of the Economic University (VŠE) to elaborate a study on „*Analysis of financing state administration and local administrations*". The objective of this study was to gather information fundamental for creating proposals leading to change in relevant RUD legislation [2]. The objective of such changes should not have been to increase the municipalities´ share in the total gross tax revenues re-distributed according to the RUD, but it should be more the correction of some heavily criticized disproportions inbuilt in the current system [6, 7]. Financial crises have caused a dramatic decline in tax collection in which both the national budget and the local administrations (regions and municipalities) have a share, thus any efforts to change the construction of shared tax re-distribution to municipalities and changes in RUD legislation are currently not in the centre of attention.

However, it may be expected that the already fading financial crises impacts on national budgets and the essential consolidation of public finance will bring the

question of optimal local administrations financing back into attention. This subjected article is a contribution to the discussion over this topic. The objective of this contribution is to propose and design an algorithm for re-distribution of shared taxes to municipalities by application of the genetic programming method and to compare this with the current shared taxes re-distribution system.

2. Existing valid tax assignment to sub-national government level

The effective RUD legislation – Act on Tax assignment of selected taxes yields to sub-national independent administrations and to certain state funds (Act no. 243 from year 2000 on RUD), has been in effect since year 2001. This Act sets the rules for re-distribution of tax yields among the state, regions and municipalities. During the period of its validity the Act was several times up-dated, the last up-date was done in year 2008, and it was published as Act No. 377/2007 Coll. effective from January 1, 2008.

According to the valid existing legislation municipalities get the following shared taxes yields allocations [2]:

- 21,4 % of the natural person income tax from dependent activities collection;
- 21,4 % of the national legal entities tax collection (excluding taxes paid by municipalities themselves);
- 21,4% of the national natural person income tax collected by reduction tax;
- 21,4% of the national tax collection from the VAT;
- 21,4% of the national natural person income tax from independent business activities tax collection (only 60% of this national tax collection is re-distributed).

Municipalities receive only 30% of the yield from natural person's income tax according to the natural person place of residence. This portion of the tax is linked to the municipality and it works as a motivation element towards promoting business activities in municipalities. 10% of the national yield of this tax belongs to the state, and only the remaining 60% of the tax yield is assigned to be re-distributed among the national budget, regional budgets and municipal budgets.

Next to the above-mentioned shared taxes municipalities get also exclusive tax revenues – these are real estate tax and the legal entity tax paid by municipalities. Detailed diagram of the valid RUD is showed in Appendix.

The concrete amount from the national gross shared taxes yield is allocated to individual municipalities based on three criteria:

- Total area of the municipality – criterion weight is 3% (the share of the municipality is defined as the share of this municipality area in the total Czech Republic municipalities´ area). The usage of this area criterion gives advantage to those municipalities that have lower population density. It also compensates increased expenditures for repair and maintenance of local communications and expenditures for transportation services. This criterion is also advantageous for

those small municipalities who cannot, if willing so, integrate with neighbouring municipalities due to local geographic conditions.

- Simple number of inhabitants – criterion weight is 3% (the share of the municipality is defined as the municipality simple number of inhabitants in the total number of Czech Republic inhabitants).

- Number of inhabitants adjusted by gradual transitions between municipality size categories coefficients – criterion weight is 94%. Only the part of the number of inhabitants which falls into the relevant number of inhabitant's interval (Table 1) is calculated by the given coefficient of gradual transitions. This ensures that the shares of individual municipalities create a continuous curve with any jump steps in between individual size criteria. This methodology is not used for Prague, Brno, Ostrava and Plzen)[1].

The calculation algorithm is defined in the following way. First the share of the capital city Prague, the share of city Brno, Ostrava in shared taxes are found, then the total share in shared taxes is found for municipalities in the Czech Republic. The share of a concrete municipality (it is announced each year in the MF CZ by-law) is then defined as the multiple of the number of inhabitants of the municipality and the relevant coefficients of gradual transitions in the sum of these multiples for all municipalities (without Prague, Brno, Plzen and Ostrava).

Table 1: Gradual transition coefficients and multiples of gradual transitions

Municipalities with number of inhabitants from - to	Gradual transitions coefficients	Gradual transitions multiple
0 – 300	1,0000	1,0000 x number of inhabitants in municipality
301 – 5 000	1,0640	300 + 1,0640 x number of inhabitants in a municipality that are above the number 300
5001 – 30 000	1,3872	5 300,8+1,3872 x number of inhabitants in a municipality that are above the number 5 000
30 001 – a more	1,7629	39 980,8 +1,7629 x number of inhabitants in a municipality that are above the number 30 000

Source: [2]

3. Genetic Programming

The genetic algorithm (GA) transforms a population of individual objects, each with an associated value of fitness, into a new generation of the population. The Darwinian principle of survival and reproduction of the fittest and analogue of naturally occurring genetic operation such as crossover (sexual recombination) and mutation is using for the GA.

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[1] These towns have their own re-calculation coefficients.

A special group that evolve separately, but which draw from GA is genetic programming (GP), where GP is an extension of the GA in which the genetic population contains computer programs. GP makes use of the same techniques as a GA, but it implements over acceptable data structure (N–ary tree). The node of the tree contains entity from two sets (the set of primitive function and the set of terminals) [3, 4, 8].

A functions can be arithmetic (+, -, *, /, etc.), algebraic (sin, cos, exp, log, etc.), logical classical or fuzzy (not, and, or, etc.), conditional operator (If - Then - Else, etc.). A terminal symbol (A, B, C, etc.) can be input variable of program, integer, real, logical, …, constant, function without arguments having secondary effect.

In case of GP are definitions next basic operations: crossover, selection and mutation [3, 5]. Advantage GP in comparison with GA is, that GP is obtained not only common model for solving problems, but also description how is problems solution (particular analyst representation). The basic flowFig. for GP is in [14].

3.1 The design of models for calculation of GP share

For the process of searching for a formula for calculation of the percentage share of a municipality in shared taxes with using GP the following attributes have been utilized:

- Common number of inhabitants of a given municipality (O),
- The total number of the Czech Republic inhabitants (CO),
- Total area of municipality (U),
- Total area of the Czech Republic (CU),
- Percentage share of municipality in shared taxes (P).

Design of model for the P calculation is described in Fig. 1.

The result of the GP is the following function that replaces the standard method of calculation of percentage share of CZ individual municipalities in shared taxes:

genG_P = (((($\mathbf{O}$+O)+(((O+(-4212+(O+O)))+(O+((((O+O)+O)+O)+O)))+(O+O)))+ ((O+O)+(O+O)))/((($\mathbf{U}$+$\mathbf{CO}$)-(((((O+(-3880-(-9978*((-4212+(((O+(O+O))+(-4212+ (O+O)))+U))+4212)))))+(((U+(-4212+((((((((6568+(-9978+(-5704*(O-(-8872*(O+ O)))))))-O)+((-8872-(-1560*(((((((((2084+((6568-((O+(-4212+(O+O)))*((((O+(O+ (2084*CO)))--3880)+((O-(-1560*((CU-((O+(-4212+(O+O)))*((((((-3880*(-9978* (3340+(O+O))))+CO)-(-1560*((((CO+(CO+((-3880*CO)+(-3870*(-9978+CO)))))- O)+(-8872*CO)))/(O)))+CO)/(O))))/(O)))+O)))/(O)))+((-8872*((-3880+(O+O))+O))* ((O+(((((O+O)+(((-2218+-3880)+O)+(O+(((O+(-3880+(O+(((O+(-4212+(O+(((O+ O)+(((-1868+-3880)+O)+(O+(O+O))))+O)))))+O)+O))))+O)+O)))))+O)+O)+O))+(O+ O)))))+(O+(-8872*(-9978*(3340+((4756+(O+3016))-(O+O)))))))-O)+((O-((-4212+ (O+O))*(((O+(4756+(-9978*CO)))+(O*(CO+(CO-(-9978*((O+(O+O))+O)))))))))/((O+ U))))+O))+(-5860+(-4212*(-9978*((4756+(O+3016))-(O+O)))))--3880)+(O+CO))-- 4212))/(O)))+(-4212*(O-(-8872*(O+O))))))))+-4212)-O)+-8872)-O))/(O)))+O)+ 3016))+((((-5704-(-9978*((-212+((O+(O+O))+O))+(O+O))))+O)+-5704)))/(O)+($\mathbf{CU}$+ (((((4756+(O+3340))+O)+O)+((3016+(O+3340))+O))+O)))))   (1)

Equation (1) can be consequently used in, for example, table calculator for the realization of the stated calculation. In case of need this equation can be simplified by the usage of basic mathematical operations.

This function contains 4 input attributes (O, CO, U, CU) and 11 various constants generated by programme (for example 4212, 3880, 9978, 5704 etc.).
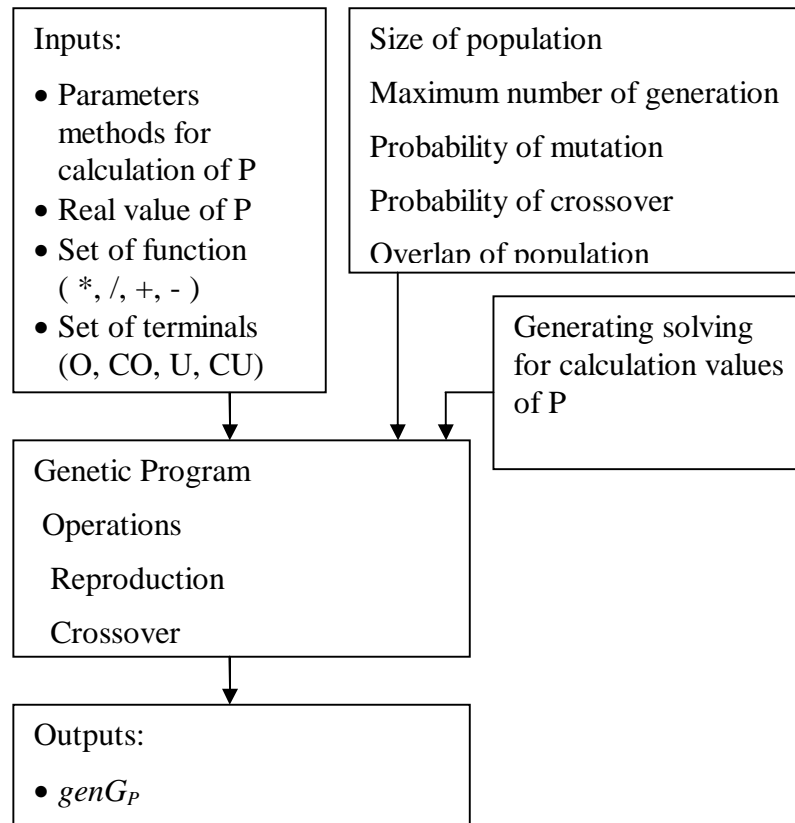
Fig. 1: FlowFig. for design of models for calculation P

[Source: elaborated with using 12]

3.2 Comparison of Results in years 2008-2010

The resulting function for the calculation of P (1) was applied to the input values (values O, CO, U, CU) and results were compared with values P listed for year 2008 in [11].

The deviation ratio of calculation AP of the resulting function was evaluated according to the following relation:

$A_P=(P-genG_P)/P.$ (2)

The results of comparing Ap of the resulting analytical function genGP for data from year 2008 according to the size of individual municipalities are stated in Table 2.

From Table 2 issues that function created by means of GP provides results with sufficient accuracy in comparison with the standard way of calculation. The accuracy of calculations and the improvement of the prediction capability of function genGP of

result GP has been proven also by the comparison of actual shares of individual municipalities published in MFCR notices for years 2009 a 2010 [10, 9] with calculations results achieved by using equation (1) for function P value. The average deviation error for the individual years is the lowest in year 2009 (AP=0,885), for year 2010 the deviation ratio is AP=1,001. Higher inaccuracies in calculations have been demonstrated only in the category of the smallest municipalities with number of inhabitants lower than 300 inhabitants: (in year 2008 1,939), in the following years the deviation in the calculation accuracy is lower also for this category of municipalities (in year 2009 AP=1,803 and in year 2010 AP=1,930). With these municipalities the created function assumes higher share in the P value.

Table 2: Evaluation of the Calculation A_P

Number of Inhabitants	2008		2009		2010	
	Number of Munici-palities	A_P	Number of Munici-palities	A_P	Number of Munici-palities	A_P
299 to 0	2452	1,939	2422	1,803	2404	1,930
499 to 300	1135	0,760	1127	0,630	1118	0,752
999 to 500	1311	0,446	1329	0,314	1345	0,432
4 999 to 1 000	1072	0,172	1091	0,037	1104	0,154
9 999 to 5 000	141	0,043	142	-0,088	142	0,024
19 999 to 10 000	70	0,097	70	-0,024	69	0,079
29 999 to 20 000	27	0,098	27	-0,020	27	0,079
39 999 to 30 000	10	0,093	10	-0,020	10	0,074
49 999 to 40 000	5	0,199	5	0,094	5	0,182
99 999 to 50 000	16	0,162	15	0,065	15	0,149
199 999 to 100 000	1	0,133	2	0,032	2	0,114
TOTAL	6240	1,026	6240	0,885	6241	1,001

[Source: own proceeding]

Table 2 and Fig. 2 again illustrate the results of the comparison of accuracy of forecasting the shares of individual municipalities in the shared taxes yield for the individual size categories for the given years.

3.3 Results Comparison by Regions

When comparing results obtained by the application of function (1) for the calculation of the share of a municipality in the shared taxes yield by regions we can see that even in the individual regions (Fig. 3) the results do not differ from the results

obtained for the individual size categories for the entire Czech Republic (Fig. 2). The best prediction (the lowest deviation ratio) from the actual shares was reached in year 2009, somewhat worse results have been obtained for prediction P in year 2010. In Fig. 3 there is illustrated the size of the deviation ratio AP in the individual years (2008 to 2010) for the Czech Republic regions (the CR) and the average deviation ration for year 2008. In this graph we can see that the highest value of the deviation rate AP is in the South Bohemia, Hradec Kralove, Plzensky and Vysocina regions.

Comparing data in Fig. 3, 4 and Table 3, 4 we can state the following conclusions. The deviation rate AP from the average value Ap from year 2008 in the Czech republic regions framework corresponds with the frequencies of municipalities in the individual size categories (Table 3, 4 and Fig. 4). From Fig. 4 it is clear that the highest percentage representation of municipalities in the smallest size category (0 – 299) is in the four above stated regions with the highest deviation ratio. From this it is clear that a specific calculation of the municipality share in the shared taxes yield with this category is not fully accepted by the equation (1). This causes the growth of the deviation ratio in those regions where is the highest number of municipalities with number of inhabitants from 0 – 299.
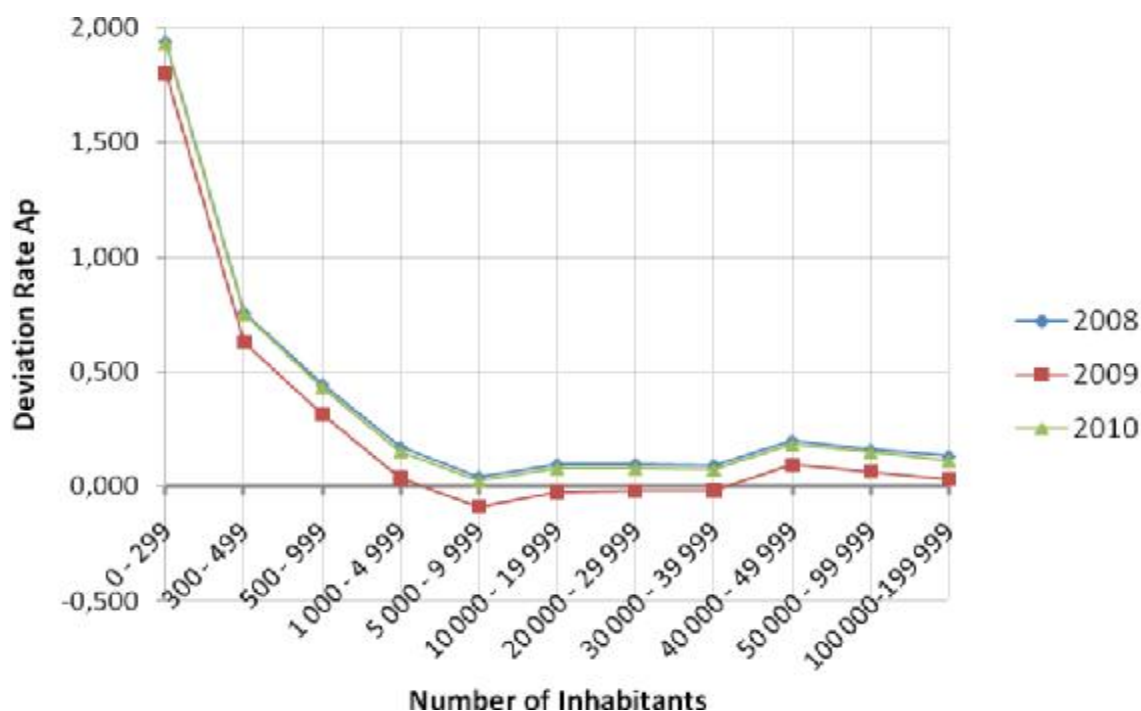
Fig.2: Deviation Ratio Error AP according to municipalities size in years 2008-2010

Fig. 3: Deviation Ration Error AP according to regions in years 2008-2010

[Source: own proceeding]

Table 3: The Frequency of Municipalities by Number of Inhabitants in Regions

Region	Number of Inhabitants											TOTAL
	0 - 299	300 - 499	500 - 999	1 000 - 4 999	5 000 - 9 999	10 000 - 19 999	20 000 - 29 999	30 000 - 39 999	40 000 - 49 999	50 000 - 99 999	100 000 - 199 999	
South Bohemia	335	110	78	79	13	2	3	1		1		622
South Moravia	194	120	180	155	13	4	4	1				671
Karlovy Vary	33	23	32	30	6	4	1	1		1		131
Hradec Kralove	189	95	86	56	14	5	1	1		1		448
Liberec	67	27	63	43	10	2		1	1	1		215
Moravia-Silesia	38	37	77	114	17	4	5	2		4		298
Olomouc	101	75	101	107	3	6	1		2		1	397
Pardubice	193	96	87	58	7	8	1			1		451
Pilsen	264	74	76	73	8	4	1					500
Central Bohemia	436	248	258	164	20	14	1	2	1	1		1145

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Region	0 - 299	300 - 499	500 - 999	1 000 - 4 999	5 000 - 9 999	10 000 - 19 999	20 000 - 29 999	30 000 - 39 999	40 000 - 49 999	50 000 - 99 999	100 000 - 199 999	TOTAL
Usti nad Labem	104	79	80	65	9	9	3		1	4		354
Vysocina	449	96	94	47	10	4	2	1		1		704
Zlin	49	55	99	81	11	4	4			1		304
TOTAL	**2452**	**1135**	**1311**	**1072**	**141**	**70**	**27**	**10**	**5**	**16**	**1**	**6 240**

[Source: own proceeding]

Table 4: The Frequency of Municipalities by Number of Inhabitants in Regions in percentages

Region	Number of Inhabitants										
	0 - 299	300 - 499	500 - 999	1 000 - 4 999	5 000 - 9 999	10 000 - 19 999	20 000 - 29 999	30 000 - 39 999	40 000 - 49 999	50 000 - 99 999	100 000 - 199 999
South Bohemia	53,9	17,7	12,5	12,7	2,1	0,3	0,5	0,2	0,0	0,2	0,0
South Moravia	28,9	17,9	26,8	23,1	1,9	0,6	0,6	0,1	0,0	0,0	0,0
Karlovy Vary	25,2	17,6	24,4	22,9	4,6	3,1	0,8	0,8	0,0	0,8	0,0
Hradec Kralove	42,2	21,2	19,2	12,5	3,1	1,1	0,2	0,2	0,0	0,2	0,0
Liberec	31,2	12,6	29,3	20,0	4,7	0,9	0,0	0,5	0,5	0,5	0,0
Moravia-Silesia	12,8	12,4	25,8	38,3	5,7	1,3	1,7	0,7	0,0	1,3	0,0
Olomouc	25,4	18,9	25,4	27,0	0,8	1,5	0,3	0,0	0,5	0,0	0,3
Pardubice	42,8	21,3	19,3	12,9	1,6	1,8	0,2	0,0	0,0	0,2	0,0
Pilsen	52,8	14,8	15,2	14,6	1,6	0,8	0,2	0,0	0,0	0,0	0,0
Central Bohemia	38,1	21,7	22,5	14,3	1,7	1,2	0,1	0,2	0,1	0,1	0,0
Usti nad Labem	29,4	22,3	22,6	18,4	2,5	2,5	0,8	0,0	0,3	1,1	0,0
Vysocina	63,8	13,6	13,4	6,7	1,4	0,6	0,3	0,1	0,0	0,1	0,0
Zlin	16,1	18,1	32,6	26,6	3,6	1,3	1,3	0,0	0,0	0,3	0,0

[Source: own proceeding]
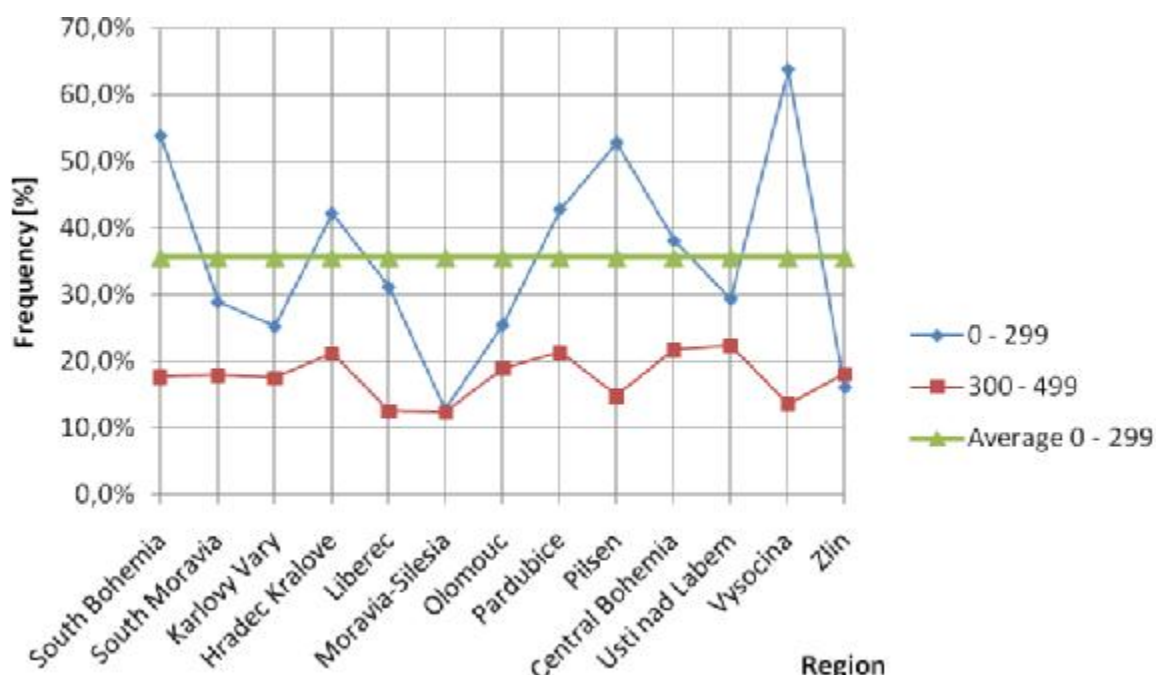
Fig. 4: The Frequency of Municipalities with the Lowest Number of Inhabitants by Regions in year 2008

[Source: own proceeding]

Conclusion

The advantage of using the derived function (1) for the prediction of the share of a concrete municipality in the shared taxes yield for the municipality representatives lays in its simplicity (despite the apparent complexity of the generated up function genGP) and as it has been proved above also in the sufficient accuracy of the prediction. For a municipality only four parameters must be known – size of municipality area according to cadastre measurement (U), size of the entire CR area (CU), next the number of municipality inhabitants (O) and the total number of the CR inhabitants (CO). When instituting the stated values to function (1) and with using the table processor, each municipality is able to forecast its share in the shared taxes revenues (P) with sufficient accuracy, with sufficient advance in time and without the need to use the quite complicated process given by the effective Act on RUD [1], eventually even before the publication of the relevant MF CR notice on the individual municipalities shares for the next fiscal year.

This contribution is focused only on a partial part of the system of municipal financing – tax yield allocation to municipalities. The objective however is also to show the utilization of state-of-the-art modelling methods in this area. The entire system of the RUD and municipal financial management must be seen and analyzed as a complex system [6, 7]. New method for municipal financing proposal must be based on deep analyses of municipal financial management on both the income and expenditures

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sides and in view of municipalities changing needs issuing from the impacts on financing in some services sectors.

The proposal of the design for re-distribution of shared taxes collections on some standards bases that would provide for the financing of the basic needs of inhabitants in municipalities, or for the financing of needs the municipality needs for its catchment area remains to be a question. In this area we see a major space for the utilization of multi-dimensional modelling methods.

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Appendix

Natural person income tax from dependent activities (national yield)
- 8.92% Regions each region in the defined %
- 21.4% Municipalities according to recalculated number of inhabitants
- 1.5% Municipalities According to number of employees
- 68.18% National budget

Real estate tax
- 100% Municipalities from real estate in the territory of the municipality

Natural person income tax collected by deduction (national yield)
- 8.92% Regions each region in the defined %
- 21.4% Municipalities according to recalculated number of inhabitants
- 69.68% National budget

Legal entity income tax without taxes paid by municipalities (national yield)
- 8.92% Regions each region in the defined %
- 21.4% Municipality according to recalculated number of inhabitants
- 69.68% National budget

Value added tax (national yield)
- 8.92% Regions each region in the defined %
- 21.4% Municipalities according to recalculated number of inhabitants
- 69.68% National budget

Legal entity income tax paid by municipalities or regions
- 100% Regions taxes paid by regions
- 100% Municipalities taxes paid by municipalities

Natural person income tax from business activities
- 30% Municipalities according to legal entity residence
- 10% National budget national yield
- 60% National yield
- 8.92% Regions each region in the defined %
- 21.4% Municipalities according to recalculated number of inhabitants
- 69.68% National budget

Appendix RUD valid as of year 2008 (without National Transportation Infrastructure Fund, fees and fines)

[Source: 13]

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SELECTED PROBLEMS OF CALCULATION OF FAILED STATES IN THE WORLD

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Abstract: The link between economic stability, democracy and the state of security is very tight. Different levels of economies of individual countries in the world with our performances and results make the order, which show not only their economic position but also their level of security. These levels are created by different calculations, from which we can economic, social and security levels of these states fairly easily deduced. The appropriate indices can be constructed from different indicators and they can help to estimate different levels of political, economic and social position selected of states.

Keywords: World Security, Calculation of Selected Economic Indicators, Indexation of States, Sequence of the Worst and the Best States, Failed States

1. Intoduction

State failure in its capacity has a decisive influence on the level of democracy in the country. Democracy is closely linked with the economic and fail-safe situation in such countries.[2] The concepts of state failure or malfunctioning states have a short history tied to the end of the Cold War.[8] The recent history shows us that the world powers ended their rivalry through other states, where the war conflicts were led. These war states were military representatives, and were supported economically by the world powers: financially, materially, through a variety of consultants, etc. This assistance, mainly economic nature, allowed these governments of such states the existence. But the assistance was unexpectedly terminated after 1990. Lack of finance, economic incompetence and helplessness of these states have led that these states are not only becoming more and more dysfunctional, but even failing, failed and collapsed, plus a refuge for various interest and terrorist groups.[3]

In the contemporary state of the world is a determining factor in each country to achieve a healthy degree of democracy. The level of democracy and security in every country can be measured by various indices of the composite set of indicators. The following text will be described and explained design of selected indices, we decided to include a representative index showing the state of democracy, security and the level of national economies in the world. This situation is then crucial for the stability of certain geographical areas in the world.[10]

The aim of this paper is to show and comment on selected indices and compare the levels marked the worst, but even the best country in the world. Selected indices of evaluating all different countries according to established methodology and results of the order states where we have chosen the worst [best], i.e. such states where the level of democracy and economy to the lowest [highest] values.

The last part is the built table with an overview of selected countries from all these indices and index values are used to create comprehensive ranking worst [best] states.

2. Problem Formulation

They were chosen following three indices for purposes of the contribution from tens of several. The other indices have some missing information or the methodology was not clear enough etc.

2.1 Human Development Index [HDI]

The first notes the use of human development index is since 1990 the United Nations in its annual report on human development.

This index evaluates countries according to levels of human development:

- High level of development
- Medium level of development
- Low level of development – underdevelopment

The basis of the HDI has three dimensions:

- *Life Expectancy:*

    A field signifying longevity, life expectancy at birth;

- *Education and Skills:*

    Focus on the literacy of the population [with a fixed weight of 2/3] and the combined primary, secondary and tertiary sector to the gross enrolment ratio [GER – the Gross Enrolment Ratio] with weight 1/3;

- *Standard of Living:*

    Calculated as the natural logarithm of gross domestic product per capita [GDP per capital] in purchasing power parity as an indicator, based on national statistics, according to the formula [see closer methodology HDI]

2.1.1 Methodology of HDI

HDI definition is contained in the UN Development Program Organization. Generally, if we want a diverse variable x converted to a single index [so that we can add various indices], we use the following rule [formula]:

$$x - index = \frac{x - \min(x)}{\max(x) - \min(x)},$$

where max(x) … the highest value of the variable x

 min(x) … the lowest value of the variable x.

HDI index is the weighted sum of three indices [below] with a weight of 1/3.

Life Expectancy Index [LEI]:

$$LEI = \frac{LE - 25}{85 - 25}$$, where LE or Life expectancy - expected number of years remaining at a given age

Education Index [EI]:

$$EI = \frac{2}{3} \cdot ALI + \frac{1}{3} \cdot GEI$$

$$ALI = \frac{ALR - 0}{100 - 0}$$, where ALI – Adult Literacy Rate [aged 15 and older]

$$GEI = \frac{CGER - 0}{100 - 0}$$, where CGER … combined gross enrolment ratio [composed of two components: familiarity with weight 1/3 and literacy with weight 2/3]

Gross domestic product [GDP]:

$$GDP = \frac{\log(GDP\ pc) - \log(100)}{\log(40000) - \log(100)}$$
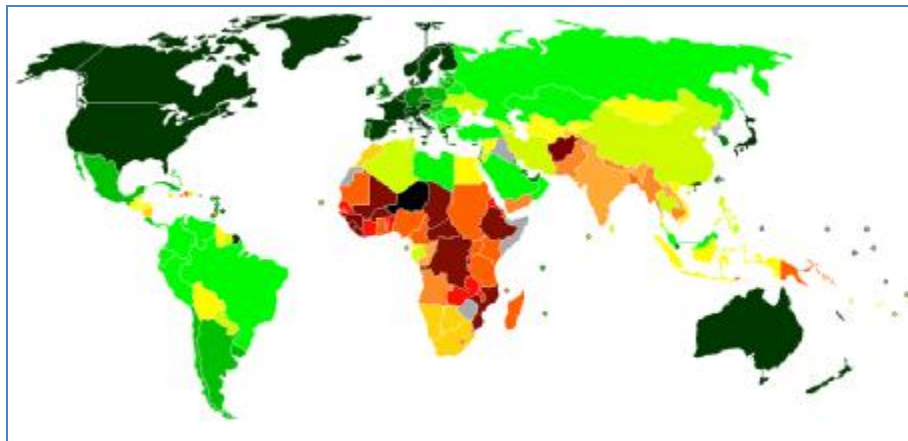
Figure 1: Map showing the index of HDI in 2009 [based on 2007 data, published on October 5, 2009]

Legend:
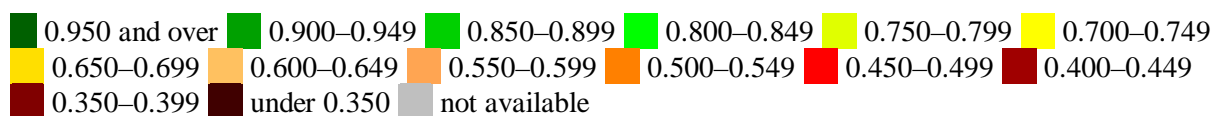
■ 0.950 and over	■ 0.900–0.949	■ 0.850–0.899	■ 0.800–0.849	■ 0.750–0.799	■ 0.700–0.749
■ 0.650–0.699	■ 0.600–0.649	■ 0.550–0.599	■ 0.500–0.549	■ 0.450–0.499	■ 0.400–0.449
■ 0.350–0.399	■ under 0.350	■ not available			

2.1.2 Criticism of HDI

HDI has been criticized in terms of lack of global perspective. Index focuses exclusively on national performance.

In addition to this index is blamed its boundaries from 0 to 1. This is due, because thus rich countries can not improve its position in some of the ingredients in the HDI index, although there is room for growth, longevity, etc. in the country.

To defend the HDI index is the fact that it can be used as a tool for social policy, which would be the basis for measuring the impact of economic policies and quality of life.

2.2 Global Peace Index [GPI]

Global peace index examines the status and degree of freedom in individual nations, regions. The index compiled at the Institute for Economy and Peace in collaboration with international experts investigating the world peace.

GPI was first presented in 2007 there were examined 121 countries [or states]. The number of countries expanded each year when the data are updated. Number of states is even to 149 for this year.

2.2.1 Methodology of GPI

The research team was drawn from The Economist Intelligence Unit in collaboration with academics and experts in the field of peace. They had the 24 of indicators on which they measured the peace. These 24 indicators had the most affect the investigation of the subject in various countries.

Tab. 1: Characteristic of the 24 indicators of GPI

Indicator	Source	Year[s]	Coding
Number of external and internal wars fought	UCDP	2000 to 2005	Total number
Estimated deaths due to external wars	UCDP	2004 to 2005	Total number
Estimated deaths due to internal wars	UCDP	2004 to 2005	Total number
Level of organized internal conflict	EIU	2007	Qualitative scale, ranked 1 to 5
Relations with neighbouring countries	EIU	2007	Qualitative scale, ranked 1 to 5
Level of distrust in other citizen	EIU	2007	Qualitative scale, ranked 1 to 5
Number of displaced persons as percentage of population	World Bank	2003	Refugee population by percentage of the origin country's population
Political instability	EIU	2007	Qualitative scale, ranked 1 to 5

Level of respect for human rights [political terror scale]	Amnesty International	2005	Qualitative measure
Potential for terrorist acts	EIU	2007	Qualitative scale, ranked 1 to 5
Number of homicides	UNSCT	2002 and 2004	Intentional homicides, including infanticide, per 100 000 people
Level of violent crime	EIU	2007	Qualitative scale, ranked 1 to 5
Likelihood of violent demonstrations	EIU	2007	Qualitative scale, ranked 1 to 5
Number of police and security officers	UNSCT	2000 and 2002	Civil security Officers per 100 000 people
Number of jailed persons	ICPS	2006	Persons incarcerated per 100 000 people
Military expenditure as a percentage of GDP	IISS	2004	Cash outlays for army forces as a percentage of GDP
Number of armed services personnel	IISS	2004	Full-time military personnel per 100 000 people
Import of major convention	SIPRI	2001 to 2005	Imports of major conventional weapons per 100 000 people
Exports of major conventional weapons	SIPRI	2001 to 2005	Exports of major conventional weapons per 100 000 people
United National deployments	IISS	2006 to 2007	Total number
Non-United National deployments	IISS	2006 to 2007	Total number
Number of heavy weapons	BICC	2003	Weapons per 100 000 people
Ease of access to small arms and light weapons	EIU	2007	Qualitative scale, ranked 1 to 5
Military capability or sophistication	EIU	2007	Qualitative scale, ranked 1 to 5

Source: Global Peace Index. Available at WWW:
<http://www.visionofhumanity.com/GPI_Indicators/index.php>

If any indicator is measured by a qualitative measure of the scale 1 to 5, proceed by the following formula:

$$x = \frac{x - Min(x)}{Max(x) - Min(x)},$$

where max(x) … the highest value of indicators in the countries included in the calculation

of the index,

min(x) … the lowest value of indicators in the countries included in the calculation

of the index.

The result is always in the range of 0 to 1 and end of the match the score of 1 to 5.

The research of GPI follows:

1. We note that the GPI index found some degree of rate correlated with indicators: income, education level and regional integration.

2. Countries with high levels of transparency in the public right and a low level of corruption, we could classify as country living in peace.

3. Small, stable countries which are part of the regional units, can most likely expect a high value of the GPI.

World map [see Fig.2], which shows the index of GPI 2008. The different colours indicate the state is the country. Colour scale represents 7 colours.

The green colour indicates countries that are stable, there GPI index takes low values. The colour is greener in the country, we can say that the country is in a quiet mode, stability and peace [see closer Tab 2]. These include e. g.:

New Zealand [1,188; 1st place], Austria [1,290; 4th place], Norway [1,322; 5th place], Ireland [1,337; 6th place], Czech Republic [1,360; 12th place]

The red colour is already alarming. She has signalled danger, the country is less stable, peace and freedom are almost too. Index value of GPI takes high values [for detail see Tab.2]. For vulnerable countries that are unstable, turbulent consider according to the index GPI:

Central African States – Central African Republic [2,753; 136th place], Nigeria [2,756; 137th place], Democratic Republic of the Congo [2,925; 140th place], Somalia [3,390; 148th place], the states are: Pakistan [3,050; 145th place], Afghanistan [3,252; 147th place], Iraq [3,406; 149th place].
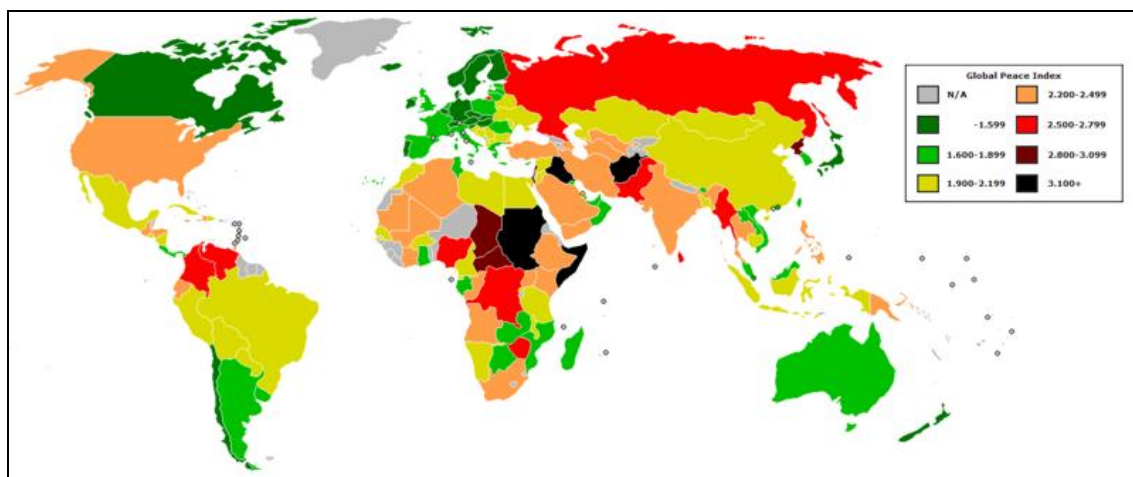
Figure 2: Map showing the index of GPI in 2008

Global Peace Index

⬜	N/A	🟧	2.200-2.499
🟩	-1.599	🟥	2.500-2.799
🟩	1.600-1.899	🟥	2.800-3.099
🟨	1.900-2.199	⬛	3.100+
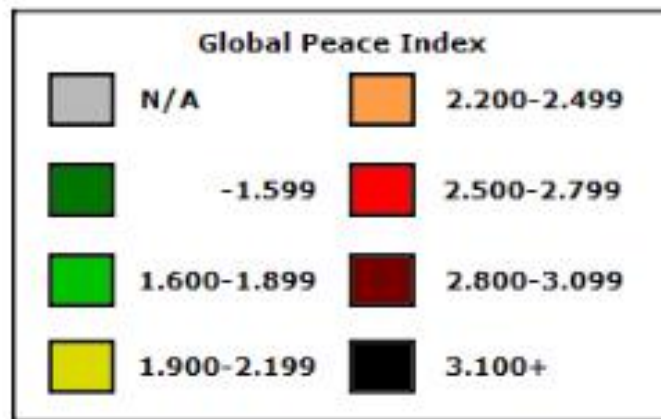
Figure 3: Legend index map showing GPI in 2008

2.2.2   Criticism of GPI

Even the GPI index, which could be considered a comprehensive description and evaluation of the status of the countries surveyed, is criticized. Publishers of the magazine "The Economist" admitted vagueness of some of the indicators, especially in the expenditure of soldiers. Especially in the U.S. have a problem with this indicator in terms of expenditure patterns of other soldiers. Subsequently, it was blamed for the index, the index value each year as a GPI. Can we take this index as a monitoring of individual countries overtime. Monitor whether a country is in quiet mode or not. Another criticism was directed at the absence of violence against women and children. GPI index indirectly affects this area, in some cases, it completely omitted. Particular case, such as Egypt, where women are 90 percent of the sexual organs mutilated. Or China, where the woman "infanticide" is still a problem in the context of the UNICEFF study 2000th.

On the other hand, the index is used by many international organizations like the World Bank, the Organization for European Economic and Development [OECD], etc.[9]

2.3 Failed States Index [FSI]

Since 2005 the Fund for Peace and the magazine Foreign Policy, publishes an annual index called the Failed States Index. The list only assesses sovereign states [by membership in the UNO].

2.3.1   Methodology of FSI

The FSI is constructed from twelve indicators. These indicators are built in three groups: social indicators, economic indicators, and political indicators.

The Failed States Index diagnose threats to national and then we can easily define a strategy for strengthening weak, failing, failed and collapsed states.[10]

Index consists of 12 indicators of fragility, which are divided into three groups:

1.Social indicators;
2.Economic indicators;
3.Political indicators.

Social indicators

This area examines the social indicators of the social environment of the state. We are interested in population density in relation to food supply and sustainable source of life. Further pressures are caused by certain groups of people, such as a particular religion, some economic productivity and social interaction.

Here we define four parameters:

1. Demographic pressures;
2. Massive movement of refugees and internally displaced peoples;
3. Legacy of vengeance-seeking group grievance;
4. Chronic and sustained human flight.

Economic indicators

In this area we are interested in the economics of law. Is a country of poverty level, the level of education of the population. Furthermore, how is the country with employment, which groups are most often classified into groups of unemployed. In addition, we are interested in what the business cycle the state is, if facing economic decline, or whether it is only a recession.

Here we define two parameters:

5. Uneven economic development along group lines;
6. Sharp and/or severe economic decline.

Political indicators

This includes juvenile law, the legitimacy of the state. The extent to which the State is able to provide the most extreme public goods.

Here we define six parameters:

7. Criminalization and/or delegitimisation of the state;
8. Progressive deterioration of public services;
9. Widespread violation of human rights;
10. Security apparatus as „state within a state";
11. Rise of factionalised elites;
12. Intervention of other states or external factors.

The resulting sequence of state is based on the total score of 12 indicators. For each parameter set 0 to 10 scale where 0 is the lowest intensity [most stable state] and 10 is the highest intensity [least stable state]. The overall score is the sum of 12 indicators, a scale of 0 to 120.

For better comprehensibility is colour scale [Fig. 3] which distinguishes three types:

1. Red colour: the critical state of law;
2. Orange colour: the state is in danger;
3. Yellow colour: the state is weakening at the border.

In the event that the state will score between 30 and 59.9 is considered stable and the colour scale is indicated by dark gray. If a country gets a lower score of 30 is considered the most stable colour and is marked with light gray.

Countries in zone "ALERT" [red colour] received score between 90 and 120. Countries in zone "WARNING" [orange colour] received score between 60 and 89.9. The zone "monitoring" [yellow colour] is the country obtained scores between 30 and 59.9. The last zone is "SUSTAINABLE" [green colour] includes countries with a score of 29.9 or less. I covered states with a stable economy and the overall economy.

We must say that if the state falls into certain categories [from above], so it doesn't just mean that as a dysfunction state. That group only indicates the areas in which the state is very prone to make from it gradually became a dysfunctional state. Everything is always a matter of time and then on the political scene of the state. Therefore it is necessary to have this in mind, if we want to make judgments about a country. This index would be a good supplement for time series where they both watched the development of indices, the country's economy [or the total economic wealth, respectively].
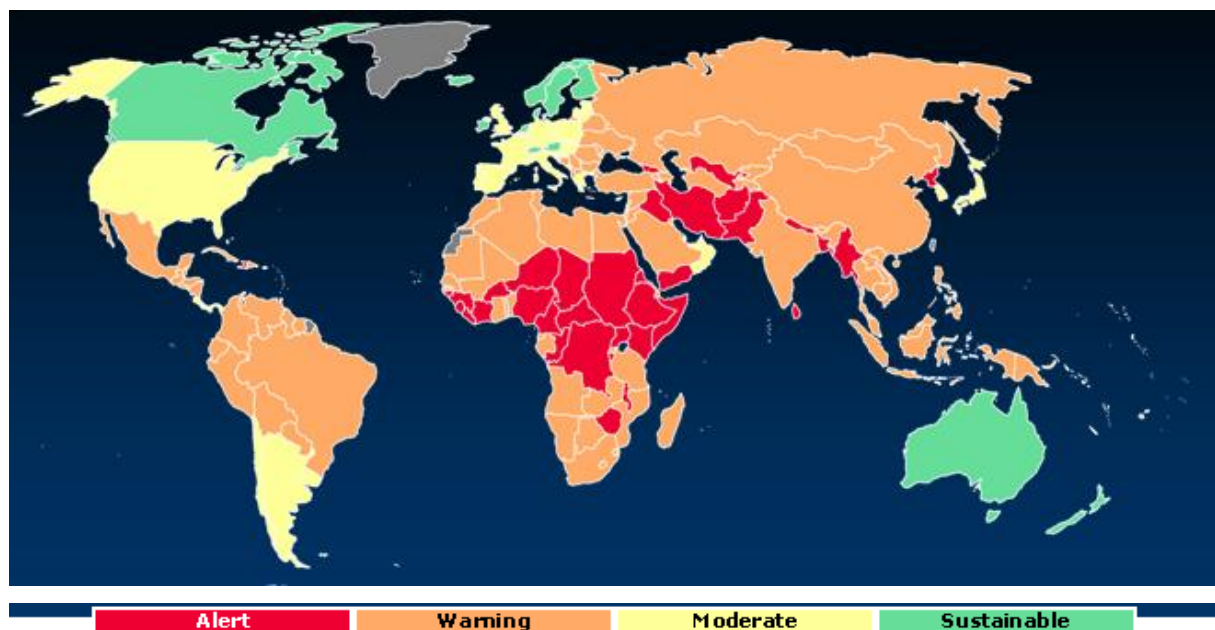
Figure 4: Map showing the index of FSI in 2010

From the Fig. [Fig.3] shows that the countries making progress score greater than 60, is located in Central Africa. Moreover there would put the countries of southern Asia, located about India. For countries that are in the area of monitoring, most of Western Europe, as many South American countries, Mongolia, USA, etc. In these states are recorded area which could over time and any action to weaken the state.

There are stable states in other areas. These are Australia, New Zealand, Japan, Scandinavia, Ireland, Iceland and other countries with a green tint.

2.3.2 Criticism of FSI

This index is at least detailed from all of three selected indices. The part of economic index has only two indicators and they are not sufficient for the particular situation in the country. This section should be extended to enhance this part of index because other economic indicators may better compile the economic situation in the country. This index should be developed as full as possible and it is important to the real economic situation and it should reflect the level of the society in the state.

However, it is similarly but better developed in the social part of index. There are used four indicators which are also sufficient for the survey. It would be appropriate to finalize this issue on the level of the HDI index.

On the contrary the political part of the FSI in compile the best way, but still that does not adequately reflect the situation in the state. More details should be handled internal and external security as well as individual characteristics which are into the previous index GPI included.

3. The Solved Problem

In this chapter we persued the worst ten states and the best ten states in terms of selected indices. Each state's sequence is determined by the indices and everything is recorded in the table. In the penultimate column is recalculated the geometric index and the last column has the final sequence of states. The last column shows where the states are lacated on our recalculated scale by the results of all three indices. There are not any special weights for these indicators assigned. We decided all of three individual indices as equivalent in this case because these indices by their nature affect practically the same issue [state failure] merely from different perspectives.

Tab. 2: Schedule showing position of the worst states

State	HDI	GPI	FSI	Geometrical average	Own sequence
Iraq	7th place	1st place, 3.341	6th place	3rd place	2nd place
Afghanistan	6th place	2nd place, 3.285	7th place	6th place	5th place
Somalia	1st place	3rd place, 3.257	1st place	2nd place	1st place
Israel	15th place	4th place, 3.035	23rd place	12th place	7th place
Sudan	3rd place	5th place, 2.922	3rd place	4th place	3rd place
Democratic Republic of the Congo	5th place	6th place, 2.888	5th place	5th place	4th place
Chad	2nd place	7th place, 2.880	4th place	4th place	3rd place
Pakistan	10th place	8th place, 2.859	10th place	9th place	6th place
Russia	19th place	9th place, 2.750	30th place	18th place	8th place
Zimbabwe	4th place	10th place, 2.736	2nd place	4th place	3rd place

Source: own

Tab. 3: The Schedule showing position of the best states

State	HDI	GPI	FSI	Total sequence	Own sequence
New Zealand	20th place, 0.950	1st place, 1.202	7th place, 23.3	6th place	5th place
Norway	1st place, 0.971	2th place, 1.217	1st place, 18.3	1st place	1st place
Denmark	16th place, 0.955	2th place, 1.341	6th place, 23.2	6th place	5th place
Iceland	3rd place, 0.969	4th place, 1.225	12th place, 29.0	5th place	3rd place
Australia	2nd place, 0.970	5th place, 1.252	8th place, 25.9	4th place	2nd place
Sweden	7th place, 0.963	6th place, 1.269	3rd place, 20.6	5th place	3rd place
Japan	10th place, 0.960	7th place, 1.272	13th place, 31.2	10th place	9th place
Canada	4th place, 0.966	8th place, 1.311	11th place, 27.7	7th place	8th place
Finland	12nd place, 0.959	9th place, 1.322	2nd place, 19.2	6th place	5th place
Slovenia	27th place, 0.917	9th place, 1.322	21st place, 36.6	17th place	10th place

Source: own

From the tables above, there is evident, it is not in this part of the work reflected the most current information. Also, these indices are not and do not process situations that are similar problems that show selected indices. For instance, we can bring the European countries as well that get into trouble and are closer evaluation index FSI. It is Greece or Iceland in present time.

Alternatively, it can indicate the complicated economic situation in Ireland or now in Spain. All those European states that do not belong into the category of Failed States, even though they are very close, only because of the methodology used, but other indices as indicators of the system is not sophisticated enough to capture the situation in these countries. These countries could be incorporated into other lower category but have an enormous geopolitical advantage which lies in its integration of the various international organisations [NATO, European Union – EU, etc.], and it is also with high probability because of their location in Europe.

The most visible situation is apparent in the case of Iceland which had collapsed the banking system in fact. Similarly, it has been in Greece, where the country has stood on the brink of destruction due to collapsing public finance. In the other state, in Iceland, there has been an exceptional aid by the EU, and in the other side Iceland has sent a serious intention to enter in the EU. In the case of Greece there has been the massive financial assistance from the EU. There are the reasons why the mentioned countries are not captured in the order of indices.

There are evaluated the causes in this work but just the effects are visualized in different countries around the world in different situations which are tested according to different indices.

4. Conclusion

Finally, we note that different, though similar methodology of the individual indices can classified different countries around the world into similar orders. However, the reason for our recalculating can be seen for instance in the case of Russia which has the very different place in every index.

It is clear in this order that the so-called failed, failing or collapsing states in the world are similarly classified by individual programs, and our treatment these differences produced on the final ranking. As already mentioned, we decide to have the same weight for each index and each of the three indices [HDI, GPI and FSI] has for the recalculation the same weight.

[For complete information: the total number of selected states which was tested, was restricted to 144 for GPI and HDI, respectively in the case of FSI 139.]

We put together a similar way to illustrate the best countries in the world ranking, which can be seen in comparison with the worst states where they were used vastly different value of input and output data.

Used indices reflect states and there are not counted other areas depressed by regional conflict and dysfunction, respectively "state failure" in another geographical unit than the state as the member of the United Nations. Such typical area are the areas in Palestine, which are not the state, but it is clear from the context that the regions are with similarv characteristics of the state. The example of Palestine is important bacause it is not the state in this sense and is not represented in the UN. This is but a necessary condition for such construction Bertelsmann Stiftung Index [BSI], which only works with government departments, which are member countries of the UN. It is one of the BSI indices, which looks similar to the theme from another angle, but not

transparent methodology[1]. Even more different indices recalculated according to other methodologies similar subject matter, but these chosen three indices are the best in our discretion and sufficient to assess to what degree of state failure [or conversely stability] are selected states.

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EUROPEAN MULTICULTURALISM AT THE CROSSROAD: THE MULTICULTURALISM FAILED, OR THE STATE FAILED?

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Abstract: Multiculturalism is in fact today globalized world, but loses its original meaning of word. This cultural separatism can be hazardous to its explosiveness latent and unresolved problems of different cultures concentrated in large units becomes a sources of ideological, social and even the every day conflicts. It is politician responsibility to fix it if multiculturalism is not exactly by their imagination. Recent words that multiculturalism failed should be explain.

Keywords: Multiculturalism, Ethnicity, Nationality, Migration, Xenophobia, Racism, Terrorism, Education and Social Programmes

1. Intoduction

Multiculturalism has changed its original meaning, both formally and substantively as well. The conceptual significance disappeared in current contact with ordinary people shortly in a few years. Multiculturalism is a word that is relatively often used but every user has watched this phenomenon pushed aside slightly from the real meaning. Moreover multiculturalism is in a close relationship to terrorism in the divers parts of the world in the last ten or twenty years. And both terms also have a close relationship to human rights which should be primarily taken care of a good policy and of the social policy in particular in each country in the modern civilized world. By the way it is quite important to know the global terrorism is known roughly ten or twenty years.

And it's not just a matter of our country which does not know exactly what to do if multicultural tendencies are too different from our expectancy because of lack of experience. It is a bigger problem in democracies of present Europe and the world known as the West. The last news from our nearest west neighbour forms the meaning of terms above in completely different light. Mrs. Angela Merkel has said recently the multiculturalism failed. Really? Has it been multiculturalism which has failed?

2. Formulation of the problem

2.1 A short history and origins of multiculturalism

The historically first concept of multiculturalism, according to some sources in Switzerland was the late fifties of the last century. The society in this country is created by the population of three major national-cultural-geographical units of the neighbours: the German speaking element has been given from the north and east from Germany and Austria, Italian influence has gone from south and from the west has

come French constituent. The Swiss confederation is known for its peculiarities, not only for its stable and transparent foreign policy, but also for its sophisticated domestic policy, where for instance such administrative officers must be trained for their work and their duty to be good in and speak fluently all three languages which are official languages in anywhere in the Swiss Confederation plus English language as contact language for foreigners. Furthermore good knowledge of languages means also good knowledge of geographical facts and other information about other nations. The level of democracy and governance reflects the attitude of multicultural coexistence.

According to other sources of the concept of multiculturalism was in the early sixties of the last century in Canada, where the original Indian population, descendants of settlers and new immigrants had to find a common way of coexistence. And development in this field and political organization in Canada would improve the French-speaking province of Quebec in otherwise English-speaking Canada.

Later, another source says the emergence of multiculturalism in the same period in the Anglophone countries, generally in relation to the cultural needs of non-European migrants. At that time culminated in the migration from non-European destinations within Europe. Multiculturalism is a phenomenon which exists as humanity itself. Just the term itself is tied up in the middle of last century when there was a partial remedy the damage and injustice to the original inhabitants of former colonies held by the world powers - especially Britain. It should be pointed out that multiculturalism was originally developed for genocide and terrorize the indigenous population in the former colonies and Great Britain as their share of the slavery apology until after 2000.

2.2 Historical background of contemporary consequences of multiculturalism

History of Europe is full of quite complicated turns in connection with multiculturalism. Every decade in 20th century has had some significant historical event which changed conditions for migration or even for mere travelling. Second half of 20th century is very significant for a forming present situation in our country and Europe at all. Both of World Wars started in Europe and changed every single condition for coexistence of nations and individuals almost everywhere in the world.

After World War 2, during the Cold War, the mere idea of possibility of free travelling or any free migration from (and back) our socialist country and the East Block as well, was associated with substantial repressions usually through criminal law and was often punished by imprisonment in all of East European countries.

Travellers and labour force can migrate over all Europe much more, simpler and safer than anytime before in the contemporary globalizing world. The free person movement has been the desirable phenomenon, and even codified as a right for citizens of Member States of the European Union. It should be also stressed it is mainly economic decision that makes the right of the EU citizens. However, it is very important social act and versatile opportunity that had been refused to East European people from purely political interests for many decades in the half part of 20th century.

Multiculturalism should be an example of smooth coexistence of different cultures on a small territory than is usual for the culture and environment that is significantly

different from the original. But it gives all of the basic conditions for life without conflicts.

Unfortunately, the opposite is often true. This is evidenced by almost daily reports from Europe, neighbouring countries around, and also from our country: xenophobia and ethnic intolerance of varying degrees is rising virtually in all European countries, including those that are historically the most tolerant and strifeless of them (e. g. Scandinavian countries).

Even though the European Union and all of Members of the EU individually give a lot of money on the fight against antisocial phenomena, the record is not adequate to the amounts spent on improvements of multicultural environment. However, the question remains what amounts of money are adequate.

Reports of large urban centres in Western Europe indicate that there is not being the day avoided more or less discrepancies between the different ethnic groups. There are problems in Germany with its almost traditional extremist waves paradoxically mainly from the east part of Germany, originally part of the Soviet zone, later from the socialist block. There are complications not only attacks against Turkish diaspora in the west part of Germany but they have had problems with Germans from East part, called derisively ossies, by West Germans. And Germany is not too different country from others in Europe. It can be there are different conditions, different historical line, and different ethnics but the same democracy and almost the same historical experience as any other country in west Europe. So what is so exiting with failing multiculturalism in Germany?

There is not too different situation in France. There have been huge problems with the Arab ethnic group from the North Africa mainly in the suburbs of Paris. The problems are more significant because of lack of willingness to cooperate with the state authorities that would like to help those people to better integration of ethnicity in the society. Especially, the Algerian Arabs in Parisian suburbs are well known rather than their unwillingness to cooperation by their truculent disapproval of integration in the official society. It looks like a cul-de-suc but it is very big problem for the official power to look for both sided mutual acceptable pointing departure for another way to integration of minorities.

The multicultural society in Great Britain especially in London can refer to specific situations. Great Britain has wide-ranging and the most colourful multicultural society which is concentrated in London or similarly in several of the biggest cities in the UK as Birmingham etc. There they have been problems among different ethnic groups. For instance it is not so long there were scuffles between east European migrants and unemployed youngsters in Dublin. However, Great Britain is from European countries with biggest ethnic problems comparatively quite calm multicultural society thanks to very good inner policy including peaceful multicultural coexistence. But it does not mean the British multiculturalism is without latent problems. There is bigger multicultural problem in Great Britain every five or ten years. The biggest proof of is very well known tragic terrorist attack often referred to as 7/7 in 2005 - it was five years this year. This attack was committed in London´s public transport by four young Muslims from Birmingham. The four bombers were motivated by Usama bin Laden and anger of Britain´s involvement in Iraq War.

There are many different problems in other countries in Europe. It is quite logic the south of Europe is flooding by immigrants, especially from non-Christian counties. Over the last few decades Italy has been transformed from a nation of emigrants to a target for mass immigration. Italy has problems with new migrant wave from Albania. There has been growing a level of very high criminality committed by Albanians especially in the north of Italy (e. g. Milano). But Italy has more different nationalities in its list of immigrants and it is natural peoples from North Africa, esp. Morrocans. But even from far off destinations as China etc as well. And everyone has to live with anyone else together in peace.

It is well known fact the European Union pays very good money to Moroccan politicians to eschew flooding south Europe by Moroccans especially to protect to Spain which is just 14 kilometres over the Mediterranean See to the nearest Moroccan beach in Africa.

But north of Europe is not hidden from multicultural problems with migrants. For instance Sweden has been known as calm country with peaceful inhabitants. But the extensive immigration from foreign countries outside Christiandom promoted by the Swedish government outrun current tolerance of Swedish citizens to foreigners. The last news gives us a testimony that the broad Swedish tolerance and patience with unsuccessful integration is gone. The last news from Sweden is much more dramatic. We can clearly see on this example that the difficulties with multiculturalism are from Swedish government action: It is the same economical and political mistake that made German government in connection to Turkish workers in Germany in the sixties.

East Europe is not without problems with immigrations, multiculturalism and coexistence different nationalities in selected countries. To the east from the Czech Republic there are problems between Slovakia and Hungary because of the problem of Slovak Hungarians (Hungarian and Slovak) on the south of Slovakia. Moreover, a particularly significant media interest and staffed by Hungary to their uncontrolled growth Romaphobia and fascism.

Problems among majorities and minorities (or between minorities reciprocally) are very often not being notified because the parties simply do not report it - either they think it is not worth to report various verbal and minor physical attacks etc., or they are not offenses against cohabitation, and these are passed on orally within ethnicity to create the position of one others. Addresses up to the big unmanageable or overlooked issues, which will mostly be of interest to the media. Problems here arise on all sides by different cultures. For example in Great Britain which is largest multicultural country there are minor conflicts between Africans and Asians including Indians and Chinese but also between different ethnic groups of blacks themselves etc. Also East European minorities in Great Britain have problem with coexistence to each other such as the Poles and Lithuanians in London where are these minorities form the largest ethnic group from Eastern Europe.

But it is only Great Britain which has very good inner policy to migrants from different parts of the world and decade year long experience and relatively strict rules to avoid any problems which very above said in this text. It is also very important good solid economy which can help in any problems in social field on the local level or countrywide for peaceful coexistence.

Another issue is willingness of migrants to adapt themselves in the new conditions and accept the rules major community. But this process has to be not made ad hoc but responsibly prepared forward to eliminate any problems ort complications to minimum by every government on every level from central to local.

The following matrix clearly shows examples of possible attitudes of different well-known minorities/nationalities called diasporas in different countries in the contemporary world at the occasion to be integrated.

	WILLING TO BE INTEGRATED	*UNWILLING TO BE INTEGRATED*
ACCEPTABLE TO MAINSTREAM	*Chinese in Thailand* *Russians in Israel* *Mexicans in US* *Ukrainian in Canada*	*Amish in US*
UNACCEPTABLE TO MAINSTREAM	*Africans in Brazil* *Palestinian in Kuwait*	*North Africans in France* *Zionist in Palestine* *Chinese in Malaysia*

Source: Esman, M. J. Diasporas in the Contemporary World. (p. 172)

2.3 The short history in context of multiculturalism in the Czech Republic

Although it seems from today's perspective, the Czech Republic has a relatively diverse and multicultural history and its geographic location is destined to multiculturalism: in the history our country met peoples from all corners of Europe, although mainly on the battlefield. Studies of the origin of citizens in different localities of the Czech Republic by DNA yielded conclusive evidence that any army left an indelible mark.

In modern times Habsburg government was a monarchy which in many ways resembled today's European alliance. Arising from Czechoslovakia the background was given the Czech Republic historically and not so bad how it can be seen now without emotions. The possibility of existence our nation in the multicultural society where was normal that everyone can meet other nationalities. Many experienced journeymen went on to look for work experience in anywhere in Habsbourg Monarchy to learn basic of languages. Also many monarchist officials worked throughout the monarchy – they had to know just the official language which was German. The

German influence was constantly in our country throughout history until the end of the World War II.

Czechoslovakia was established as independent Czechoslovakia with the major nations of the Czechs, Slovaks and West Ukrainians (Carpatho-Ruthenia) after World War I. At the end of the World War II, the Soviet Union occupied Carpatho-Ukraine and Czechoslovakia remained the main Czech and Slovak peoples. And there were lost two big nationalities in Czechoslovakia at the times up to the end of World War II: Germans and Czech citizens with German descent – they were the most significant ethnic minority and they were forcibly displaced from Czechoslovakia, and the Carpathian-Ukraine nation that was annexed by the USSR after World War II. There were almost erased another two minorities from Czechoslovakia – Jewish diaspora and Romany nation. The Romany and Jewish minorities both decimated the systematic persecution and slaughter in World War II lost too many of their members.

Therefore, in the period between the end of the World War II and the end of the Cold War, the society in Czechoslovakia, later in the Czech Republic was unusually ethnically homogeneous, and by the historian development was so artificially created and has become an unprecedented phenomenon is also undesirable, because the ethnic purity of the Czech Republic has alienated people from other nations, no wonder Czech citizens do not tolerate and respect ethnic differences so widely and failed to adequately adapt to the changing conditions of coexistence of multiple cultures in one state.

Moreover, the so-called Victorious February in 1948 establish the forty years future of building our state department as an unventilated building, from which it was almost impossible to travel and if so only after a very strict office procedures.

3. Multiculturalism at the Crossroads

Current issues of multiculturalism are most apparent in Western countries, and this can be seen especially in its major cities forming large agglomerations. The most of the major complications arising between the majority and minority based on nationality and in large urban areas are often problems among minorities themselves as well. At this stage, I see three important historical moments guiding the multinational multicultural societies in Europe in recent time:

The first is the end of the Cold War and the fall of the communist empire in Central and Eastern Europe in 1989. This event is related to the opening of borders in Eastern Europe and the most of the former Soviet Union countries and this is associated to uncontrolled work and social migration in contexts.

The second point is true and important historical milestone in the 21st century, the 11th attack on the WTC September 11, 2001 in New York that awakened the whole of Western civilization to realize that making cultural differences between ethnic groups, nations, or in this case existing civilizations is an error, which is probably a reflection of hateful intolerant structures.

A third peak is, albeit somewhat less strong than the previous point, the attacks on public transport in London in July 2005.

The two countries (US and UK) were hit by bomb attacks in their cities. It should be noted that both of them are multi-ethnic world's major centres and they have over two hundred different peoples and nationalities in their territories both of them. All of ethnic groups and the administration must deal with everyday problems of everyday life very often enhanced by the cultural differences of people.

A very important factor in this field is an educational process at all levels. Yet education is not just one, but one of the major solutions, which is closest to prevention. Education in itself could not eliminate all conflicts. The point is that there are always people who will seek support for their claims and beliefs but educated population can find your own answer sooner than extremists. Education can help with a fight against terror faster and deeper than guns. Similarly education can avoid societies from current problems with religion or cultural habits which is not so good known to other societies.

4. Conclusions

This contribution does not look for motives of coexistence different nationalities in one society together to be called the multicultural society. The primary intention of this contribution is to show that any modern society in any state or region of Europe can not live without multiculturalism and multiculturalism can not be left to live spontaneously in any country in Europe without conscionable and fair care from the first moment. Every government or state authorities have primal responsibilities to take care about calm and peaceful coexistence. Anyone can not avoid to be part of multicultural Europe. Even in so ethnically clean countries as the Czech Republic can not be apart.

The Czech Republic is in the middle of Europe, and hence it should appear in the significant area of multiculturalism with very high probability. There are some ethnic communities in our country that are followed up by Czech citizens with a suspicious interest, which has its roots in prejudice. It would certainly like to be refuted by contemporary politicians, but they forget their historical context and trying to honestly explain their future. Many opinions on the Internet, which are mostly hidden behind certain anonymity, are an eloquent testimony of what people really think. And it's not just about the hidden anti-social contributions and ideas hidden in anonymity - is to feel free from fear, which stems from ignorance and total failure of political work with the present population.

Similar situation is not only in the Czech but in different variations everywhere in Europe. It is only one way to make our worlds better - sensitive social policy in multicultural relations can achieve very significant, but not too fast results. It must be every day patient and well thought out work for well educated and very conscionable street workers and social workers. I rely on my long experience of staying in the UK, which is considered the most multicultural country in Europe Union. It is of course due not only historically but also geographically - the position of London and its transport capabilities will determine the multicultural privileges associated with migration. It has always been easier, cheaper and more effective to keep care with prevention.

The Angela Merkel´s statement which has claimed that multiculturalism failed have been spread over all Europe in recent days. If any government, state organizations or

institute can fail it is possible but multiculturalism can not fail. Multiculturalism is a phenomenon which simply exists or not.

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AGRICULTURE INFORMATION NETWORK OF SMALL AND MEDIUM SIZE VEGETABLE FARMERS IN SRI LANKA.

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Abstract: Article mainly pay attention; which types of information need, which types of information receive to them and weakness of pertaining vegetable information network. Sample of Kandy district vegetable famers selected to examine vegetable market network. According to findings there are many weakness are pertain present market information network. The survey indicates that there is a very high demand for information among vegetable farmers though information they receive doesn't meet their information needs. Since, article has given suggestions to develop vegetable market information system in Sri Lanka.

1. Introduction

Agriculture has a crucial role to play in the early stage of economic development by producing food to meet the increasing need for raw materials for industries (Oluwasami 1976; cited by Irivwieri 2007). According to Adomie et al. (2003) a country dependent upon traditional agriculture is inevitably poor. But when a country develops its agriculture sector food becomes more abundant, income rises and less of the income of the country is spent on food (Irivwieri 2007). Majority of people in developing countries still live in rural areas or depend on rural activities for large parts of their livelihoods (Kizilaslan, 2006). Agriculture is their main source of economic support, especially in the case of the majority poor (Muyepa, 2002). Hence developing agriculture is essential for the rural economy of these developing countries to elevate income and social status of farmers and the employed.

Sri Lanka was an agricultural economy at the time of its political independence and since independence, governments attempted to develop the domestic agricultural sector through various development programs. Governments were also involved in collecting and stocking produce of farmers and setting prices. Currently agriculture in Sri Lanka consists of plantation sector, livestock, fisheries, paddy and vegetable. In 2007, 31.3% from total employed were employed in agriculture sector and 39.2% of them were females. Furthermore 83.6% of employment in the agriculture sector was in the informal sector. Average monthly earnings and average daily earnings in the agriculture sector were relatively low compared to industry and services sector in Sri Lanka (Department of Census & Statistics, 2007). Low earnings, increased cost of production, weak market mechanism, shift to industry and services sector for employment, ad hog policies and measures have reduce the attractiveness in the agricultural sector in Sri Lanka.

Beginning with Adam Smith, economists have recognized that information availability is a crucial component of efficient markets (Just et al. 2002). Information is an important factor in agricultural and rural development, though this sector has not received sufficient attention (Youdeowei et al., 1996). Most developing countries are faced with a crisis of efficient information resource management (Omekwu, 2003). Hann (1991) has observed that developing countries face problems in acquiring, retrieving, processing, and disseminating various types of information (Omekwu, 2003). Agricultural information is considered as an essential input to agricultural education, research and development and extension activities. Different kinds of information are required by different kinds of users for different purposes. The potential users of agricultural information include government decision-makers, policy-makers, planners, researchers, teachers and students, program managers, field workers and farmers (Zaman, 2002). Hence development of agriculture requires a mechanism to collect, process, and disseminate agricultural information to stakeholders.

1.1 Agricultural Information

Rural communities, where agriculture is commonly the main activity, require information on inter alia, the supply of agricultural inputs (seed, fertilizer), new technologies and innovations, early warning mechanisms (for pests, drought, and disease) and credit facilities, markets, and such-like (Munyua, 2000; cited by Kizilaslan, 2006). According to Kizilaslan, (2006) basic agricultural data must be available for public and private decision makers in the agricultural sector for decision-making, problem-solving or to increase their knowledge. Zaman (2002) also observed that agricultural information is an essential input to agricultural education, research and development and extension activities. Aina (1990) defines agricultural information as all published or unpublished knowledge on all aspects of agriculture is interdisciplinary in nature, and generally it has universal applicability. Moreover, Aina (1986) classifies agriculture information into four categories. They are given in table 1 below.

Table 1: Agriculture Information Classification

Category of Information	Type of Information	Information Users
Technical/ Scientific	§ Research & development in Agriculture	§ Researches § Extension officers § Agro business & Services Staff § Farmers
Commercial	§ information on credit and cooperatives § ways of obtaining loan from government § prices of export commodities	§ Farmers § Extension Officers § Agro business & Services Staff § Policy makers & Planners
Social/ Cultural	§ Agricultural practices § Background on farming communities § Modern systems of farming § Innovations in storage facilities § Labour availability	§ Policy makers & planners § Extension staff § Farmers
Legal	§ Legislation on agriculture (land tenure, production, distribution & sales of produce)	§ Farmers § Extension staff § Policy makers & planners

The key to increased agricultural production ultimately lies with nation's ability to adoption of new production techniques, application of agricultural inputs, decision making on markets, prices, and methods of conserving water, soil and vegetable resources (Kiplang et al, 1999).

1.2 Channels of Agricultural Information.

Irivwieri (2007) classifies channels to disseminate agricultural information as modern mass media and traditional mass media. Modern mass media includes print and electronic media and other audio-visual devices. Information content in mass media is non personal and is always made public. Traditional media involve a face to face exchange of ideas between two or more people. Traditional media plays an important role in persuading and considered as an authentic source of information among rural occupants.

1.3 Agricultural Information System

Roling (1988) defines an agricultural information system as a "system in which agricultural information is generated, transformed, transferred, consolidated, received and feedback in such a manner that these processes function synergistically to underpin knowledge utilization by agricultural producers (Kizilaslan, 2006).

Public and private decision makers in the agricultural sector to use agricultural information for decision making, problem solving, or to increase their knowledge, the

necessary basic agricultural data must be available (Kizilaslan 2006). Irfan et al. (2006) reveal that medium, technology or channels were appropriate to disseminate agricultural information to farmers. Such medium could include: radio, television, computer, cell phone, public campaign and the library service. According to the study conducted by Irivwieri (2007) on information needs of illiterate farmers in Delta State, the researcher suggests that information for illiterate female farmers should be channeled through community leaders/opinion leaders and the farmers' own children. The researcher also suggests that more extension staff to be recruited, credit to be provided to farmers irrespective of their literacy, loan directly be given to framers, and increase government provisions for libraries and recruit librarians.

1.4 Agricultural information in Sri Lanka.

A study conducted by Rupasena et al. (2007) on Agricultural Marketing Information Systems using the case study method in Matale district in Sri Lanka, identified that price information as the most needed information by farmers and these farmers view prices telecasted on televisions. These farmers had requested the researches to be time specific and quality specific in telecasting prices. The study identified that technical knowhow on pre and post harvest activities as the second most needed information by farmers. Information on input and information on getting new buyers were identified as third and fourth most needed information respectively. The demand for production information was the least needed information for farmers (Rupasena et al. 2007).

The study also identified that information needs of traders were dependent on types of goods the traders sold. The vegetable traders and collectors required information on production in different areas. According to the study the traders were obtaining price information through telephone and they didn't demand for price information. Furthermore the study also reveals that traders have a negative attitude towards price information since it reduces the margins and profits for traders. This finding was also confirmed by farmers according to the study (Rupasena et al. 2007). Dayananda (1993) has done a research on market information flow of the vegetable sector in Sri Lanka and his research findings can be summarized as follows. Currently, the market information system in the vegetable sector operates in a very limited capacity with private sector commission agents / wholesalers continue to provide price data to the regions in very rudimentary manner, while the public sector continues to serve only administrative needs.

Amarathunge and Yoshiharu (1999) have conducted a research under the heading "An Economical Analysis of the Marketing System of agricultural production in the Mahawali "H" Zone in Sri Lanka". It reveals that there is enough evidence to conclude that the private trader plays a vital role compared to the government institution within the Zone.

2. Problem Statement

It is well known that low awareness is among the primary reason for under-utilization of information services (Majid et al.2001).Moreover, Adomi et al. (2003)

has observed that though agricultural information is available, there is the problem of lack of access to such information. Literacy levels of farmers, inadequate number of extension officers, and general lack of infrastructure in rural communities have contributed to this problem. Further, Youdeowi et al. (1996) revealed that one of the serious barrier confining agricultural development in west Africa is limited access to agricultural information. As a example, Mokone (1999) for instance, shows that many farmers in Lesotho rely on their indigenous knowledge, in that, most families discuss and advise each other on agricultural issues because of lack of mass media in their localities. Further he argues that although 85% of farmers in Lesotho can read and write, there are no agricultural publications available in their villages and that most farmers are not aware of agricultural programs broadcast over the radio. The main users of agricultural information are farmers. Due to high level of illiteracy among farmers, it is often difficult to teach them any scientific ideas and even more difficult to get them to adopt innovations.Attitude of extension officers, who are carried away by scientific jargon, makes it impossible for farmers to comprehend what the extension officers want to put across (Irivwieri 2007). Due to the inability of extension officers to come to the level of farmers, very essential information is often misunderstood and results in waste of manpower and other resources. Farmers in rural areas do not have radio and television because of high cost. Farmers are not aware of agricultural programs aired in these mass media. The timing of programs is not known or convenient for farmers (Irivwieri 2007). Tshabalala B.V. (2003) has also observed that there is poor transfer of knowledge about modern crop and animal production, and that most farmers were not even aware of the existing subsidies.

Agricultural sector is essential for the Sri Lankan economy and development activities are necessary to uplift the agriculture sector and the rural economy. Hence collecting and disseminating agricultural market information is essential for the development of agriculture in Sri Lanka. Since main research problems is Identify whether farmers are satisfied with the agricultural information provided by various agencies/personnel?

2.1 Methodology

This section of the study explains the methodology applied for the selection of farmers and tools used to collect information.

Kandy district in central province of Sri Lanka was selected for the purpose of this study. Central province is the largest cultivator of the vegetables in Sri Lanka. Furthermore, the Dambulla Dedicated Economic Centre in Matale district is also situated in the central province. Since a previous study has been conducted in Matale district, Kandy district was the most appropriate district to collect data required for this study. In order to obtain a representative sample of farmers from the Kandy district three secretariat divisions namely; Pathahewaheta; Ududumbara ; and Pathadumbara were selected.

A questionnaire was developed and distributed randomly in the selected three secretariat divisions. The researches were assisted by personnel involved in agriculture in these areas to collect information. The study focused on collecting information from 100 vegetable farmers in the selected areas at grass root level. Due to reasons such as

insufficient information given by respondents, delay in receiving responses and large terrain required to be covered to meet 100 farmers which was physically difficult, the researchers had to abandon several questionnaires which provided few information. In addition to collecting information from farmers, interviews with personnel involved in collecting agricultural information in various organizations in Sri Lanka is to be utilized to gain insight into the process of collection and dissemination of information.

3. Data Analysis

This section discusses the findings of the survey. Hundred (100) questionnaires were collected with responses. Table 2 illustrates number of farmers who responded to the questionnaire from 3 secretariat divisions in Kandy district.

Table 2: Secretariat Divisions of Farmers

Area	No of Respondents	Percentage
Pathahewaheta S.D.	40	40%
Ududumbara S.D.	26	26%
Pathadumbara S.D.	34	34%

Source: Survey data 2008/2009

Among the 100 respondents 93 were male respondents and 07 were female respondents. Due to unavailability of males when collecting responses for questionnaires, information was obtained from females whom were at home. Some of these females were also involved in vegetable cultivation. See table 3.

Table 3: Gender of Respondents

Gender	No of Respondents	Percentage
Male	93	93%
Female	07	7%

Source: Survey data 2008/2009

The following table illustrates age categories of farmers responded to the questionnaire.

Table 4: Age of Farmers

Age	No of Respondents	Percentage
29 or Less	11	11%
30 – 39	46	46%
40 – 49	20	20%
Above 49	23	23%

Source: Survey data 2008/2009

According to the table 4, 11% of the farmers' age belongs to the category of 29 or less. 46% of the farmers' age category was 30 – 39. 20% of the farmers' age category was 40 – 49 and 23% of the farmers' age was above 49.

Table 5 shows the education level of farmers. 43% of the farmers had an education up to General Certificate of Education-Ordinary Level (G.C.E-O/L); where as 39% of the farmers had an education up to General Certificate of Education- Advance Level (G.C.E. -A/L). 14% of the farmers responded to the questionnaire didn't mention their level of education. Further 04 farmers had obtained degrees.

Table 5: Education Level of Farmers

Education Level	No of Respondents	Percentage
Not Mentioned	14	14%
G.C.E. (O/L)	43	43%
G.C.E. (A/L)	39	39%
Degree	04	04%

Source: Survey data 2008/2009

Table 6 shown below, indicates the number of years farmers have been in cultivating vegetables. None of the farmers responded to the questionnaire were involved cultivating vegetable for a period of 3 years or less than 3 years. All the farmers have been cultivating vegetables for 4 years or above. Among them 61% of the farmers have been cultivating vegetables for more than 9 years.

Table 6: No of Years in Vegetable Cultivation

No of Years in Cultivation	No of Respondents	Percentage
3 or Less	0	0%
4 – 9	39	39%
Above 9	61	61%

Source: Survey data 2008/2009

The following table, illustrates the size of families of farmers responded to the questionnaire.

Table 7: Family Size

No of Members in the Family	No of Respondents	Percentage
3 or less	38	38%
4 and 5	38	38%
Above 5	24	24%

Source: Survey data 2008/2009

38% of the farmers had 3 or less than 3 members in their families. Further 38% of the farmers had 4 or 5 members in their families and 24% of the farmers had more than 5 members in their families. The table given below shows how many members in the responding farmers' families was involved in fulltime cultivation of vegetables.

Table 8: No of Family Members involved in Fulltime Cultivation

No of Members in the Family in Full time Cultivation	No of Respondents	Percentage
1	40	40%
2	24	24%
3	36	36%

Source: Survey data 2008/2009

40% of the farmers had only one member in their families involved in fulltime vegetable cultivation. 24% of the famers had 2 members in their families involved in fulltime vegetable cultivation and 36% of the farmers had 3 members in their families involved in fulltime vegetable cultivation. The table 9 indicates the size of the land used to cultivate vegetables among the farmers responded to the questionnaire.

Table 9: Acreage of Vegetable Cultivation

Acreage	No of Respondents	Percentage
½ acre or less	63	63%
½ - 1 acre	21	21%
Above 1 acre	16	16%

Source: Survey data 2008/2009

63% of the farmer's vegetable cultivated land size was either half an acre or less. 21% of the farmers vegetable cultivated land size was between half an acre to one acre. 16% of the farmers had vegetable cultivated land sizes larger than one acre.

Table 10 given below indicates the type of information required by vegetable farmers. The geometric mean method was used to identify the importance of information. Information related to price was the most expected information, while information on fertilizer and pesticides were the second most expected information. Information on techniques/methods for cultivation and how to reduce threats from creatures and animals were ranked third and fourth respectively. Information on vegetable seeds was the fifth most important information and information on demand and supply in market and sales related information were identified as the next most important information.

Table 10: Type of Information Required by Farmers

Type of Information Required by Farmers	No of Respondents	Geometric Mean
Prices	75	23.20
Vegetable Seeds	15	6.00
Fertilizer & Pesticides (Type, prices & Sellers)	40	13.20
Techniques/Methods for Cultivation	51	12.4
Sales related information	12	4.8
Reduce threat from creatures & Animal	25	8.80
Demand & Supply in Market	23	5.8

Source: Survey data 2008/2009

The table 11 given below identifies the type information that has been received by farmers. Again the geometric mean method was used to establish a rank to identify the most likely information to be received by farmers. Information on techniques/methods for cultivation is the most likely information to be received by farmers since it has the highest geometric mean. Information on price was second most likely type of information to be received by farmers. 24% of the farmers have not received any kind of information.

Table 11: Type of Information Received by Farmers

Type of Information Received by Farmers	No of Respondents	Geometric Mean
Non	24	-
Prices	23	15.33
Prevention of Diseases (Govijana Seva Centres)	13	4.33
Techniques/Methods for Cultivation	27	18.00
Agriculture Technology	24	8.00
How to cultivate Cabbage (Dept. of Agriculture)	13	8.67

Source: Survey data 2008/2009

In the questionnaire in respond to the above question 12% farmers mentioned that they receive information from peer farmers and fertilizer and pesticide sellers and these farmers had mentioned that this source of information was reliable and information is readily available. The following table shows the common weaknesses identified by farmers in receiving information.

Table 12: Weaknesses in Information Received

Weaknesses in Information Received	No of Respondents
Out-of-date (Prices)	39
Wrong/Ambiguous Information	40
No channel to receive information directly on a daily basis	13
Don't Receive information	37

Source: Survey data 2008/2009

As shown in the table either the information received by farmers is very likely to be outdated or else if they are to receive any information, that information is either out of date or wrong/ambiguous. Furthermore farmers also identified that there is no proper channel that provides information and some farmers also mentioned that they don't receive any information. Table 13 shows the recommendations given by farmers for them receive information.

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Table 132: Recommendations to Provide Information

Recommendations to Provide Information	No of Respondents
Information Services (Prices, Cultivation methods, Seeds)	11
A government organization should provide daily market information responsibly	12
Implementing Advisory Services	15
Distribute Information Papers	15
Provide Summary of Prices for past few years for farmers	13
Telecast Prices during News telecast on a daily basis	13
Provide right information at the right time	12
Agriculture Officers in villagers should be used to provide information	13
Use digital boards in trade/economic centre and in towns to show prices and market information	12

Source: Survey data 2008/2009

As shown above farmers have suggested many alternative methods to provide information. Based on interviews with personnel of organizations involved in agriculture and other related organizations it should be said that most of these organizations are involved in systematic collection of various information and some of these organizations have employed personnel at grass root level to collect data as well as to disseminate various information to farmers.

63% of the farmers indicated that they were willing to pay an amount in order to receive information. 37% of the farmers were not willing to pay to receive information. This is shown in table 14 below.

Table 14: Willingness to Pay for Information

Willingness to Pay Money for Information?	No of Respondents	Percentage
Yes	63	63%
No	37	37%

Source: Survey data 2008/2009

The following table indicates the preferred methods identified by farmers to receive information.

Table 15: Method/Channel to Receive Information

Method/Channel to Receive Information	No of Respondents	Geometric Mean
Radio	24	8.00
Television	49	20.67
Mobile/ Telephone	52	20.33
Peer Farmers/Farmer Groups	13	6.50
Newspaper/Print Media	35	7.33
Post	27	11.50
Training Programs	23	11.50

Source: Survey data 2008/2009

Based on the geometric mean values it could be said that farmers prefer if television and mobile or telephones are used to disseminate agricultural information. In the questionnaire certain farmers mentioned that they obtain information from trader (mudalali) through the telephone. Farmers have also identified that Radio is also an alternative source of providing such information.Table 16 indicates the period/time preferred by farmers to receive information.

Table 16: Period/Time Preferred to Receive Information

Preferred Time/Period to Receive Information	No of Respondents	Percentage
Beginning of the Cultivation Season	47	47%
During the cultivation season	13	13%
Throughout the year	40	40%

Source: Survey data 2008/2009

According to the table 47% of the farmers prefer to receive information prior to the cultivation season and 40% of the farmers prefer to receive information throughout the year.

4. Conclusion

In the point of view of the farmers, information on prices is the most expected information. This strengthen the findings of the study conducted by Rupasena et al. (2007), in which they identified that price information was the most important information for farmers. Information on fertilizer and pesticides, new cultivation methods and reducing the threat of creatures and animals were also considered significantly important by farmers. But the information that farmers most likely received are price and new cultivation methods. Significant number of farmers clearly states that they don't receive any kind of information. Further evidences in the survey

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indicate that there is a very high demand for information among vegetable farmers though information they receive doesn't meet their information needs. Therefore, it will be fair to assume that farmers, if given access, will over time take advantage of available information in making decisions that will improve their productivity and profit margins.

Farmers identify the following weaknesses in the existing mechanism in receiving information. According to them information they receive is out of date and wrong or ambiguous. They also mention that there is no proper channel to provide information for vegetable farmers. Findings of the study indicate that vegetable farmers tend to obtain information from traders and fertilizer and Pesticide sellers. Farmers consider this source of information as reliable and reachable.

Various government institutes are involved in collecting agricultural information for different purposes. Department of Agriculture, Department of Census and Statistics, and Hector Kobbekaduwa Agrarian Research and Training Institute are some of them. These organizations and institutes have a systematic and a formal system to collect information and they are very experienced in collecting information. Further they also have officers at grass root level to collect information. Most of this information is collected to make informed decisions at higher level. In certain instance these organizations tend to interdependent on each other on type of information they collect. Lack of a collective purpose to collect information, lack of an integrated system or mechanism to collect information, lack of a formal mechanism to provide information for farmers has resulted in the weaknesses identified by farmers in receiving information.

Based on identified solutions to provide information in literature and the suggestions given by vegetable farmers, the following methods has the potential to increase the sources of information and frequency of information provided to vegetable farmers.

A system need to provide essential information such as price of vegetables, price, type and sellers of fertilizer and pesticides, threats from creatures and animals through television, mobile/telephone or radio. Strengthen, restructure or build capacity of extension service providers and peer farmer groups to provide information on cultivation methods and agriculture related technology. The above mentioned method is implementable in the short and medium term. In the long term, with the initiation and support of government agencies a system is required to be established to provide essential information for vegetable farmers. A public private partnership is a potential alternative to develop such a system.

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ON THE FIBONACCI NUMBERS AND F-POLYNOMIAL OF GRAPHS

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Abstract: The theory of graph polynomials and their applications in several branches of science was developed by many authors. Some of these polynomials are related to the matching polynomial. The Fibonacci polynomial, shortly F-polynomial, is also an analogy the matching polynomial. We show the basic properties and methods of calculation of the F-polynomial. Furthermore, the Fibonacci number of a graph, including its determination for certain types of graphs, is mentioned.

Keywords: Simple Graph, Matching Polynomial, F-polynomial, Fibonacci Number

1. Introduction

The characteristic polynomial and the matching polynomial have the basic position among the graph polynomials which are used not only in the graph theory but are also applied in various science branches including physics, chemistry or economics (see [6]). The study of spectral graph theory is concerned with the relationships with a graph and the topological properties of that graph. The spectrum of its adjacency matrix is called the spectrum of the graph. In some cases this spectrum determines the graph up to isomorphism. We can find more details in [1].

The graphs considered here are without loops and multiple edges. Let $G = (V, E)$ be a simple graph with the vertex set $V = \{v_1, v_2, ..., v_p\}$ and the edge set E. A matching in G is a spanning subgraph of G whose components are isolated vertices and edges only. It means that a k-matching of G is a subset containing k edges of E such that no two edges have a vertex in common. Let $p(G; k) = p_k$ be the number of k – matchings of G with $p_0 = 1$. The matching polynomial of a graph G can be defined by the relation (see e.g. [2])

$$M(G; w_1, w_2) = \sum_{k=0}^{[p/2]} p_k w_1^{p-2k} w_2^k.$$

Some authors use the special case when $w_1 = x$ and $w_2 = -1$ as the acyclic polynomial. Certain interesting properties of the polynomial

$$M(G; x) = \sum_{k=0}^{[p/2]} (-1)^k p_k x^{p-2k}$$

were also given by Gutman and Harary in [3].

The matching polynomials of several classes of graphs are identical to typical orthogonal polynomials encountered in combinatorics. More concretely, the matching polynomial for a cycle corresponds to the Chebyshev polynomial of the first kind, for a path to the Chebyshev polynomial of the second kind, for a complete graph to the

Hermite polynomial and for a complete bipartite graph to the Laguerre polynomial (see e.g. [5]).

Sometimes it is more convenient to consider the positive matching polynomial

$$M^+(G;x) = \sum_{k=0}^{[p/2]} p_k x^k .$$

This is precisely the generating function for k – matching of a graph G.

It is a well-known fact that the total number of subsets of the set $\{1, 2,...,n\}$ such that no two elements are adjacent is F_{n+2}, where F_n is the n-th Fibonacci number given by the recurrence $F_{n+2} = F_{n+1} + F_n$, $F_0 = 0, F_1 = 1$. Therefore Prodinger and Tichy introduced in [7] the Fibonacci number f(G) of a graph G = (V; E) as the number of all subsets S of V such that no two vertices in S are adjacent in G. Several authors studied the Fibonacci numbers of various types of graphs (also [9]).

Now, denote s(G; k) = sk the number of selections of k independent vertices in G and define $s_0 = 1$. Then the F-polynomial (Fibonacci polynomial) of a graph G is defined in [4] by the relation

$$F(G;x) = \sum_{k=0}^{t} s_k x^k ,$$

where l is the cardinality of the largest independent vertex set. It is easy to realize that the equality F(G; 1) = f(G) is true for every graph G.

The definitions of the polynomials M + (G; x) and F(G; x) have the following immediate consequence.

Theorem 1. *For every graph G the relation*

$$M^+(G; x) = F(L(G); x)$$

holds, where L(G) denotes as usual the line graph of G, which has a vertex of L(G) associated with each edge of G and an edge of L(G) exists if and only if the two edges of G share a common vertex.

Then, it is easy to see that F(Cp; x) = M +(Cp; x) and F(Pp; x) = M +(Pp+1; x), where Cp and Pp denote the cycle and the path with p vertices. Thus the F-polynomial is a generalization of the positive matching polynomial of a graph.

2. Basic properties of the F-polynomial

Questions about the number of independent (not adjacent) vertices of a graph are among the classic problems of the graph theory. Simple combinatorial arguments yield the next statements (see e.g. [3]).

Theorem 2. *If G is a graph with p vertices, q edges, t triangles (cycles of the length 3) and if it has the degree sequence $(d_1, d_2, …, d_p)$, then*

$$s(G;1) = p, \quad s(G;2) = \binom{p}{2} - q; \quad s(G;3) = \binom{p}{3} - q(p-2) + \sum_{i=1}^{p} \binom{d_i}{2} - t.$$

Theroem 3. *For two disjoint graphs G_1 and G_2 the relation*

$$F(G_1 \cup G_2; x) = F(G_1; x) \cdot F(G_2; x)$$

holds.

The following statement is very helpful if we create an algorithm for calculation of the F-polynomial.

Theorem 4. *If v is an arbitrary vertex of a graph G. Then*

$$F(G; x) = F(G - v; x) + x F(G - (v); x),$$

where $G - v$ is the subgraph of G obtained by deletion of the vertex v and $G - (v)$ is the subgraph of G obtained by deletion of the vertex v and all the vertices adjacent to v.

Proof. We construct a decomposition of the set of all selections of k independent vertices in G into two disjoint subsets with respect to the fact of whether the selection contains the given vertex v or not. Then we obtain the relation

$$s(G; k) = s(G - v; k) + s(G - (v); k - 1).$$

Now, the statement is obvious using the definition of the F-polynomial.

Theorem 5 ([3], Proposition 8). *Let $v_1, ..., v_p$ be the vertices of a graph G. Then*

$$\frac{d}{dx} F(G; x) = \sum_{i=1}^{p} F(G - (v_i); x).$$

3. Calculation of the F-polynomial of simple graphs

We can calculate the F-polynomial using its definition only for the graphs with a small number of vertices. Furthermore, this method is also suitable for some special classes of graphs.

Theorem 6. *The F-polynomials for the complete graph K_p with p vertices, its complement $\overline{K_p}$ and the complete bipartite graph K_{p_1, p_2} are the following*

$$F(K_p; x) = 1 + px,$$

$$F(\overline{K_p}; x) = (1 + x)^p,$$

$$F(K_{p_1, p_2}; x) = (1 + x)^{p_1} + (1 + x)^{p_2} - 1.$$

Proof. All vertices of the complete graph are mutually adjacent and therefore $s(K_p;1) = p$, $s(K_p;k) = 0$ for any $k :> 1$. The graph $\overline{K_p}$ has no edges and no adjacent vertices. Therefore $s(\overline{K_p};k) = \binom{p}{k}$ as the number of the subsets of V with k elements.

The binomial theorem gives the equality $\sum_{k=0}^{p} \binom{p}{k} x^k = (1 + x)^p$. The vertex set of the

complete bipartite graph is divided into two subsets with p_1, p_2 vertices such that edges only exist between vertices of the different subsets. It is easy to see that $s(K_{p_1, p_2}; k) = \binom{p_1}{k} + \binom{p_2}{k}$ using for the binomial coeficients the convention $\binom{p}{k} = 0$ if $p < k$. Then $F(K_{p_1, p_2}; x) = 1 + \sum_{k=1}^{p_1} \binom{p_1}{k} x^k + \sum_{k=1}^{p_2} \binom{p_2}{k} x^k$ and the proof is over.

Corollary 7. *The F-polynomial for a star S_p with p + 1 vertices has the form*

$$F(S_p; x) = \sum_{k=0}^{p} \binom{p}{k} x^k + x = (1+x)^p + x.$$

Proof. The star S_p is a tree having one vertex of the degree p and the other vertices have the degree equal to one. It is obvious that $s(S_p; k) = \binom{p}{k}$ for $k = 0$ and $2 \le k \le p$, further $s(S_p; 1) = \binom{p}{1} + 1$. This result agrees with the before given form of the F-polynomial for the complete bipartite graphs as $S_p = K_{p,1}$.

However, a similar computation for other classes of graphs can be more complicated. In that case, it is possible to use Theorem 4. We will apply it to the path Pp and the cycle Cp with p vertices. We choose as the vertex v the vertex of the degree one for the path Pp and we choose its arbitrary vertex v in the case of the cycle Cp.

Then the following recurrences hold

$F(P_p; x) = F(P_{p-1}; x) + xF(P_{p-2}; x)$, where $p \ge 2$,

$F(C_p; x) = F(P_{p-1}; x) + xF(P_{p-3}; x)$, where $p \ge 3$,

with $F(P_0; x) = 1, F(P_1; x) = x + 1$.

By rewriting of these relations to the commands of the system Mathematica we have obtained the F-polynomials for paths Pp and cycles Cp , where p = 2, …, 10 (see Table 1, Table 2).

Table 1: F-polynomial of paths P_p for small values of p

p	$F(P_p; x)$
2	$1 + 2x$
3	$1 + 3x + x^2$
4	$1 + 4x + 3x^2$
5	$1 + 5x + 6x^2 + x^3$
6	$1 + 6x + 10x^2 + 4x^3$
7	$1 + 7x + 15x^2 + 10x^3 + x^4$
8	$1 + 8x + 21x^2 + 20x^3 + 5x^4$
9	$1 + 9x + 28x^2 + 35x^3 + 15x^4 + x^5$
10	$1 + 10x + 36x^2 + 56x^2 + 35x^4 + 6x^5$

Table 2: F-polynomial of cycles Cp for small values of p

p	$F(C_p; x)$
3	$1 + 3x$
4	$1 + 4x + 2x^2$
5	$1 + 5x + 5x^2$
6	$1 + 6x + 9x^2 + 2x^3$
7	$1 + 7x + 14x^2 + 7x^3$
8	$1 + 8x + 20x^2 + 16x^3 + 2x^4$
9	$1 + 9x + 27x^2 + 30x^3 + 9x^4$
10	$1 + 10x + 35x^2 + 50x^3 + 25x^4 + 2x^5$

Theorem 4 makes it also possible to create a general algorithm for calculation of the F-polynomial of an arbitrary simple graph G by the system Mathematica. A graph G with the vertices $v_1, v_2, ..., v_p$ can be uniquely characterized by its adjacency matrix $A = (a_{ij}), i, j = 1, ... p$. It is advantageous to choose as the vertex v in Theorem 4 the vertex vk having the highest degree. Then the adjacency matrix of the graph G – vk is obtained from the matrix A by deletion of the k-th row and the k-th column. Similarly the adjacency matrix of the graph G – (vk) is obtained from the matrix A by deletion of the k-th row, the k-th column and all the rows and columns which correspond to the vertices adjacent to vk. Further Theorem 4 is used repeatedly on the graphs G – vk , G – (vk) and the graphs obtained during the procedure. The algorithm finishes when the graphs with the smallest number of vertices are acquired. The "empty" adjacency matrix (having no row and column) corresponds to the "empty" graph with the F-polynomial equal to one. More details about this program in [10].
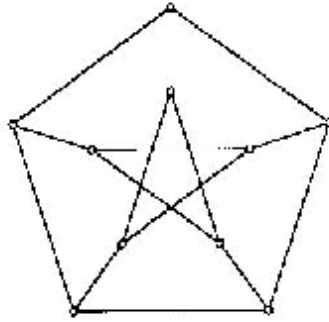
Fig. 1

The so-called the Petersen graph G1 is drawn in Fig.1 and the polycyclic graph G2 with ten vertices in Fig. 2. Their F-polynomials calculated by the given program are

F(G1; x) = 1 + 10x + 30x2 + 30x3 + 5x4, F(G2; x) = 1 +10x + 25x2 + 6x3.
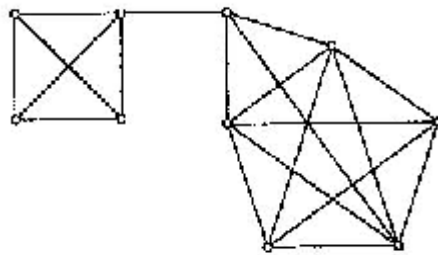
Fig. 2

4. Concluding remark

Using the equality F(G; 1) = f(G) makes it possible to calculate the Fibonacci number of a graph if the F-polynomial is given. These values are also interesting for cycles. We mentioned in the first section that $f(P_p) = F_{p+2}.$ From the recurrence $F(C_p; x) = F(P_{p-1}; x) + xF(P_{p-3}; x),$ $p \geq 3$, we have $f(C_p) = f(P_{p-1}) + f(P_{p-3}) = F_{p+1} + F_{p-1} = L_p,$ where L_p is the p-th Lucas number as the term of the integer sequence $\{1, 3, 4, 7, 11, ...\}.$

A very useful task is also to find the zeros of some graph polynomials. It is known that the zeros of the matching polynomial M(G; x) are real and therefore the zeros of M + (G; x) must be negative real numbers. But the zeros of the F-polynomial can be complex numbers.. A question arises. Is it possible to find some important classes of graphs whose F-polynomial has only real zeros?

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MOVEMENT RESTRAINTS USED IN NURSING HOMES FOR SENIORS

Miloš Sládek

Domov u fontány

Abstract: *Care services focused on seniors, namely resident services hold an important position in the system of contemporary social services in the Czech Republic. Admission to a Nursing Home is a major life transition for many olderadults, which influences their lives significantly and almost always permanently. Because of inherent danger of misuse associated with movement restraints together with possible infringement of fundamental human rights and freedoms, there must be strict rules regulating their using.*

Present regulations are stipulated pursuant to Social Services Act No. 108/2006 as subsequently amended. However the law gives only a general specification, often leading care service providers to very difficult situations. Therefore, a highly important thing is how care service providers observe their obligation – to setup conditions for using physical restraints by internal regulations in individual nursing homes for seniors where it is adequate.

Keywords: *Nursing Homes for Seniors, Using Movement Restraints, Social Services Act, Reporting Use of Movement Restraints, Internal Regulations*

1. Introduction

Nursing Homes for Seniors, for details see Social Service Act No. 108/2006 § 49, as subsequently amended, - "Nursing Homes for Seniors provide residential nursing care for people with reduced self-care abilities, which are most frequently linked to old age, whose situation requires regular assistance of a nurse". [10] And also see Decree No. 505/2006, § 15 carrying into effect some provisions of the Social Service Act as subsequently amended specifying e.g. basic nursing care in Nursing Homes for Seniors. [9]

Out of all the people over 65 years of age in the Czech Republic, 2,6 % live in nursing Residential Facilities, compared to 4 % in Austria, 5 % Germany, 6 % France.

In my article I present not only theoretical knowledge but also, for comparison, statistical data based on the Register of the County Council in Pardubice. These problems are presented to the readers from my perspective as an inspector for care and social services.

2. Social Services Act No. 108/2006 as subsequently amended (hereinafter Social Services Act)

In the present time the Social Services Act (effective January 1, 2007), § 89 is the only regulation on restraint use. Generally, the use of movement restraints is prohibited

by law in Nursing Facilities except in emergency circumstances (to ensure physical safety).

Before using movement restraints, all other alternatives (verbal soothing, diverting attention, consoling, etc.) have been attempted and found inadequate. Possible restraints are specified in **§ 89 art. 3.**

In case of movement restraints use, careful documentation is required, for details see **§ 89 art. 6**. Requirements for documentation of such acute situations are regulated by Social Services Act. According to the Ombudsman for Human Rights, these requirements could be considered sufficient and recommended for use. Further he suggests that a Central Registry should be kept to make it possible to trace emergency situations and evaluate most frequently used physical restraints. [7]

3. Methodology of the Ministry of Labour and Social Affairs (MPSV) for using restraints

On the basis of repetitive suggestions from Social Services providers, arising from practical experience, regarding application of law in practice (Social services Act, § 89), the **recommended guideline** has been elaborated by the Ministry (MPSV): "Method of Application for Movement Restraints, MPSV CR", [6] issued in July 2008. In my opinion this guideline did not give expected results for care service providers.

4. The Act No. 206/2009 to alter the Social services Act

In connection with the amendment to the Social Service Act, put into operation by Act No. 206/2009 (effective date August 1, 2009).[11] I should like to give notice of changes in **§ 89 art. 3**, where amended …"it is possible to use medication on the basis of prescription and orders of a physician on duty". The aim of the new regulation is to put pressure on providers to stop overusing medication.

The Ombudsman highlights in his Report on nursing homes visits, that using calming medication represents a form of power misuse and evaluates the importance of the Amendment as a possibility to reduce overuse of medication. [8]

Further I should like to give notice of changes in **§ 89 art. 7**, the full text: "*Providers of the care services who used movement restraints in last six months are obliged to document and report in writing the number, type and frequency of restrains to the Registration Authority within 15 calendar days after the lapse of the six month's period*". In the year 2010, for the first time to January 15, 2010, the Registration Authority (appropriate County Council) has an overview of used movement restraints and is able to start checking and taking appropriate steps to increase protection of clients.

In the following part of my entry I deal with comparison of Reports on Movement Restraint Use in all Nursing Homes for Seniors registered at the County Council of Pardubice Region to January 15, 2010 and July 15, 2010.

Table 1: Reports on use of physical restraints January 2010, nursing Homes for seniors in Pardubice Region

Number of Nursing Homes for Seniors	Physical Restraints YES	Physical Restraints NO	No report sent	Fixation by holding	Seclusion room	Medication	Other restraints
16	1	13	2	0	0	0	5*

5* = bed rails - 5 clients

Source: Registry records – County Council Pardubice, Department of Social Affairs [1]

Table 2: Reports on use of physical restraints July 2010, nursing Homes for seniors in Pardubice Region

Number of Nursing Homes for Seniors	Physical Restraints YES	Physical Restraints NO	No report sent	Fixation by holding	Seclusion room	Medication	Other restraints
16	2	12	2	0	0	0	25*, 1**

25* = bed side rails - 25 clients

1** = cardio-chair 1 client

Source: Registry records – County Council Pardubice, Department of Social Affairs [2]

In total, side rails were used in 6 cases and cardio-chair in 1 case (it is a mechanically positioning chair s*uitable* also for resting and *relaxation of cardiac* patients, clients with *circulatory problems*, with *varicose veins*, diabetic patients, etc.). In the second Nursing Home for Seniors were used side rails in 19 cases.

The presented information shows that it is evident that Nursing Homes for Seniors almost do not use movement restraints, or, to be precise, do not report such use of restraints.

In my opinion this can be caused partly by different views of "movement restraints" in practice, and whether it is generally required to follow provisions of Social Services Act, § 89 for long-term using of various devices (e.g. bed side rails, support people to enble them to sit up, etc.).

Theological interpretation of Social Services Act, § 89 says that devices used for other purposes than due to imminent danger to life or health to self or others do **not mean movement restraints according to the § 89**. However, this does not imply that all of them are acceptable. [4] Restraint devices cannot be used without client's prior permission and agreed rules of using.

Special attention is needed to ensure dignified care for clients with late-stage of Alzheimer's disease, which leads to increase in demands for immediate care services in Nursing Homes for Seniors. It is necessary to find the ways of communication with these people, understand their problematic behaviour and possible aggressive reactions. [5] These clients are more frequently in danger of potential misuse of

movement restraints. Individual plans including emergency plans can help eliminate these incidents in effective ways.

5. Internal regulations for using movement restraints when providing Care Services

Social service providers are, apart from other things, obliged to continuously increase quality of provided services and protect and respect clients' rights more than their well being. The law does not show clear and unambiguous guideline with steps that could be taken to avoid potential faults in all cases. According to the Social Services Act, § 88 letter d), providers are obliged to „*make internal regulations regarding care services, including rules for nursing staff in the form understandable to all*". Provider is, according to the Decree No. 505/2006, annex No. 2 Standards for Quality in Social Services, namely Standard No. 1, criteria c/ and standard No. 2, criteria a/ and b/, obliged to specify conditions under which movement restraint can be used in internal regulations.

Relevant Quality Standards bring all the important guidelines for nursing staff for the use of restrains in specific situations. [3] Structure of the Quality Standards represents one of three key component parts of the system to guarantee social service quality.

6. Conclusion

Considering the above mentioned, care providers should create internal regulations for possible use of movement restraints in particular Nursing Homes for Seniors where it is relevant and reflect specifics of particular types of care and facilities. Residential care can bring a kind of *power* over a client. Despite the qualitative shift in terms of regulations for using movement restraints in Nursing Facilities, it is possible to say that we still can find ambiguous wording in present law. I understand that it is not possible to regulate the entire field in details by law; it is necessary to offer space for individual evaluation of the situation of the client and specific measures and techniques for providers. However, to safeguard clients and providers better in terms of law and legislation, it is necessary to determine, by law, what can be considered by "movement restraints". According to the present provisions of Social Services Act, § 89, art. 1, it is not clear if this legislation regulates short-time use of restraints, calming down aggressive behaviour, or if it also includes long-term use of devices (e.g. bed side rails, etc.).

The problem, in my point of view, also lies in the fact that under the law the care givers are bound to report only the use of movement restraints. In case of no use it is up to the provider's decision if they send reports of "no incident" to the County Council or not. In the present time the care givers use movement restraints in Nursing Homes for Seniors often on the basis of their own explanation of law, which can diminish effective protection of clients' rights in Nursing Homes for Seniors.

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THE STRUCTURE AND USAGE OF MUNICIPAL PROPERTY IN THE PARDUBICE REGION

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Abstract: The paper deals with analysis of structure of municipal property and ways of it using. Every management of property should bring to owner certain positive effects, which would contribute to achievement of objectives of owner. These objectives relate to ensurance of basic function of municipalities and support of development of municipality. Hence the relations between ways of management of property and municipal development are searched.

Keywords: Development, Management of Property, Municipality, Property

1. Introduction

Property is one of the basic conditions of government and justice. Through property municipalities can influence the socio-economic development, community life, business activities and even the entire urban development. Ownership of property and its use becomes an important instrument of municipal self-governance.

All measurements and quantifications of benefits linked with management municipal property are dependent on the structure and way of its usage. We can assume that the utilization of municipal property is not primarily linked with generating a profit. The economy of municipalities keeps in touch other objectives. The trend of developing activity of representatives of municipalities is seen behind these aims. The analysis of this article is focused at the issue. Therefore the property of municipalities in the Pardubice region is surveyed in this paper.

Not only the structure of property is described by means of this analysis, but the ways of usage are analysed in the paper as well. As was stated above, municipalities pursue by usage of their property specific set objectives. Therefore the areas are analyzed in this paper. These areas represent the priorities in the development of municipalities.

2. Municipalities and their property

2.1 Evolution and structure of municipal property

The property of municipalities became a significant source of financial resources for economy of municipalities in historical context. The volume of ownership of municipalities as well as other subjects grew or decreased for various reasons. The present state of property is especially influenced by the evolution of matters and organization of public administration and self-government during the 20th century.

Financial assets, administrative assets (serve to specific needs of a given level of self-government, e.g. office buildings, public libraries etc.), public goods (roads, public areas and others) and municipal corporations (profit-making corporations and others) fell into municipal property after year 1918. The task of profit-making corporations was to ensure for a consideration services which are typical for private sector (saw-mills, brick factories, power stations and others). The other corporations managed on the basis of unprofitable principle. The task of these corporations was to serve goods satisfying the public interest (water-supply, waste disposal, public traffic services and others). These corporations mostly were loss-making and this loss was covered from a municipal budget.

It came to change in 1945 when the municipal system was cancelled and the three-degree system of peoples' committees was constituted. After 1948 the self-government was in successive steps liquidated and it came to nationalization of crucial generality of municipal property. Municipalities acted as administration of state property and they used it to ensure of fiduciary tasks.

After the political changes in 1989, municipalities re-acquired their original property, and some municipalities also obtained property that was owned or managed by a state or national committee. The decision on access to municipal property as a whole as well as its individual components, which took place at the beginning of the 1990's, significantly affected the financial situation and the development of municipalities for a long time. Given the limited experience of management of municipalities, lack of long-term conceptual approach and a lack of theoretical and methodological bases, and the lack of legislation, premature sales were made, or property was not used which lead to the property's gradual decay.

As stated by BINEK [2008], the current situation still has gaps in essential areas related to management of municipal property. There are still lots of local real estate with unresolved property rights or that are in a bad state of repair. Strategic property planning is still a popular interest area for municipalities, and their decisions in this area are not always based on the best long-term solution. Development programs are still much underrated in regards to the impact they have on the financial and property situation of the municipality. Likewise, the interactions between the different components of management and development of a municipality (i. e., interactions between long-term finance, property, and community development activities) are not sufficiently reflected. Paying strong attention to the issues indicated above is necessary particularly in situations where, due to intensive investment activities by municipalities, property levels are rising.

2.2 Ways of usage of municipal property

However, practices in the usage of property vary. Such methods are dependent on the objectives to which the municipality intends to achieve, and on the opportunities (or the amount of property) which the municipality has. LACINA et al. [1999] notes that the main mission of a municipality is to meet the needs of its inhabitants, which are often highly diversified interests of the community. Municipalities' economical activities are also related to this issue. These activities are primarily intended to obtain the necessary resources for the implementation of key social, cultural, and other

functions. LACINA et al. [1999] points to the fact that the management of municipal property should be substantially non-profit in nature. Municipalities obtain by means of municipal property, and through business activities as well, the resources needed to support municipal housing, development of basic or secondary education, cultural and other artistic activities, leisure facilities, etc.

The classification of property relates to the way of its usage. It is possible to make the classification of municipal property according to various aspects. The segmentation according to purpose of property is very important for this article. We can meet following segmentation of property in literature (e.g. ŠVANTNEROVÁ, KOŽIAK [2005]; ŽÁRSKA et al. [2007] HALÁSEK, PILNÝ, TOMÁNEK, [2002]:

- property served to public purposes,

- property served to discharge of office self-government (eventually transferred competency),

- property served to undertaking.

- Further, BINEK [2008] adds to these three groups the following:

- financial property in the form of property share,

- strategical property.

The way of utilization of the first three classifications of property it is possible to deduce from their names. The financial property includes e.g. securities, eventually fixed accounts etc. This property has neutral impact on local economy. Specific subset of property is according to BINEK [2008] strategical property. This type of property relates to property served to undertaking or to financial investments. Strategical property serves to municipality to developmental management and to protection of public interest. We can include in this category the ownership of key lands, proportionate shares in companies with great impact on the situation in municipality or region etc.

The questionnaire survey in terms of municipalities of the Pardubice region was made for assessment of above mentioned. Results of this survey are summarized in following part of this article.

3. Analysis of municipal property in Pardubice region

An analysis of data collected from questionnaires and controlled interviews with representatives of local authorities may be included among the methods used in this paper. The survey, which took place in the sample municipalities of the Pardubice Region, focused on development activities that were of priority to municipalities, on the structure of assets, methods of use, and form of governance. Data obtained from the questionnaires was analyzed according to what size group the municipality belonged to (measured by population). Multivariate statistics was used for analysis data, namely correspondence analysis, which allows us to capture the internal structure and linkages within the object under investigation.

3.1 Questionnaire survey

It was necessary to create a research survey that focused on the problems associated with development activities of a municipality. The aim of this survey is to help map the current situation in the sample communities and to obtain the information on the structure and using municipal property.

The questionnaire was distributed to municipalities of the Pardubice region, all 461 municipalities were contacted. The questionnaire was addressed to representatives of the municipalities. This would ensure the consistency of the data obtained. The questioning was held during year-end of 2008. It is possible to expect that the content of questionnaire is not subject to frequent changes. The results of the survey will be usable in long-term perspective.

A total of 127 municipalities completed and sent back questionnaires for both stages. Questionnaires that were not completely filled were not included in the data set. Of the total number of questionnaires received an error rate 10.4 % was obtained. Out of the total amount of questionnaires we sent out, we received 22.3 % of questionnaires back that we were able to use. Based on these facts, we can state that the sample is representative, and therefore it can be submitted for further analysis.

In view of the fact that the number of municipalities represented in each size category was quite uneven, especially in municipality with a population of over 5,000 inhabitants, it was necessary to create categorization. Municipalities were reorganized into different size categories, using quartiles. Four groups of municipalities were created and are as follows:

- municipalities with a population of under 245 inhabitants,
- municipalities with a population of 246 to 436 inhabitants,
- municipalities with a population of 437 to 878 inhabitants,
- municipalities with a population of over 878 inhabitants.

The advantage of this approach is the equal representation of communities in each category. "Typical" representatives for each given category will be created from the mentioned size levels. Output analysis will be used to create a model of municipal development.

Based on the questionnaires received, we can state that the largest representation is among the sample of municipalities representing 300 inhabitants. The variation margins of the population sample data ranges from 68 to 89,954 inhabitants. Given that the latter number represents the City of Pardubice, this point was dropped from the data set due to its unique position in the set.

The questionnaires were divided into three parts:

- respondents were identified in the first part of the questionnaire,
- the second part of the questionnaire included questions designed towards municipal development, questions were aimed to identify municipal development goals and identify municipal development opportunities,

- the third, and most substantial part, focused on municipal property, the structure of municipal of property, method and management, and usage.

The method of correspondence analysis was used for data evaluation. This method is based on the analysis of the structure of mutual dependence of two or more nominal and ordinal variables arranged in contingency tables. According to CLAUSEN [1998], the main purpose of correspondence analysis is to reveal the matrix structure of the data file by replacing the raw data with a more simple data matrix and without losing essential information. This means the exclusion of noise and redundant information. According to HEBÁK et al. [2007], this method is a popular tool especially in the processing of larger contingency tables, which contain multiple categories, and when the graphical methods are more transparent than numerical methods.

The graphical output of the so-called correspondence map contains two groups of points, I-row categories (objects) and J-points column categories (objects). Each row (or column) of the correspondence table, can be though as being a point in the I-dimensional (J-dimensional) space. The distances between points can be transferred to the two-dimensional Euclidean space in which the points will correspond to individual categories. The current output correspondence analysis includes the "best" two-dimensional display of data in which the coordinates of the points and the degree of "inertia" can express the amount of information contained in each dimension.

The graphical display of a category is made by the corresponding map. The closer the row and column points are in the corresponding map, the greater the correspondence (rate of similarity) between the corresponding categories.

3.2 Developmental activities of municipalities

As was stated above the second part of questionnaire was aimed at assessment of areas which can represent developmental priorities of municipalities. The following table displays possible activities, whose realization gives support to the development of the municipality.

Tab. 3: Main activities supporting development of municipality

Area of development of municipality	Code of answer
Increasing of attraction of municipality for potential immigrants	2A
Effort for prevention of emigration of inhabitants	2B
Support of local small and medium enterprises	2C
Support of big undertaking in municipal area	2D
Support of founding of industrial zones and scientific-technical parks	2E
Effort for improving of living environment in municipality	2F
Improving of social conditions of young people and families	2G

Improving of social conditions of old people	2H
Assurance of availability of health care	2I
Support of activities in education	2J
Service and reconstruction of municipal flats and houses	2K
Housing construction	2L
Ensurance of resident traffic	2M
Construction and modernization of technical infrastructure (sewerage, water-supply and other engineering nets and facilities)	2N
Reconstruction of local roads, pavements, public lighting and others	2O
Care for concourses – village and urban squares, mobiliary, plant space etc.	2P
Support of cultural activities	2Q
Care for cultural relicts	2R
Support of sport	2S
Ensuring of order and safety in municipality	2T
Influence of urban outside	2U
Support of activities in area of recreation and tourism	2V
Cooperation with other municipalities	2W
Others	without code

Source: own construction

The intensity of impact of mentioned developmental activities in particular size group of municipalities is displayed in Fig. 1. This Fig. displays four relevant correspondence maps.
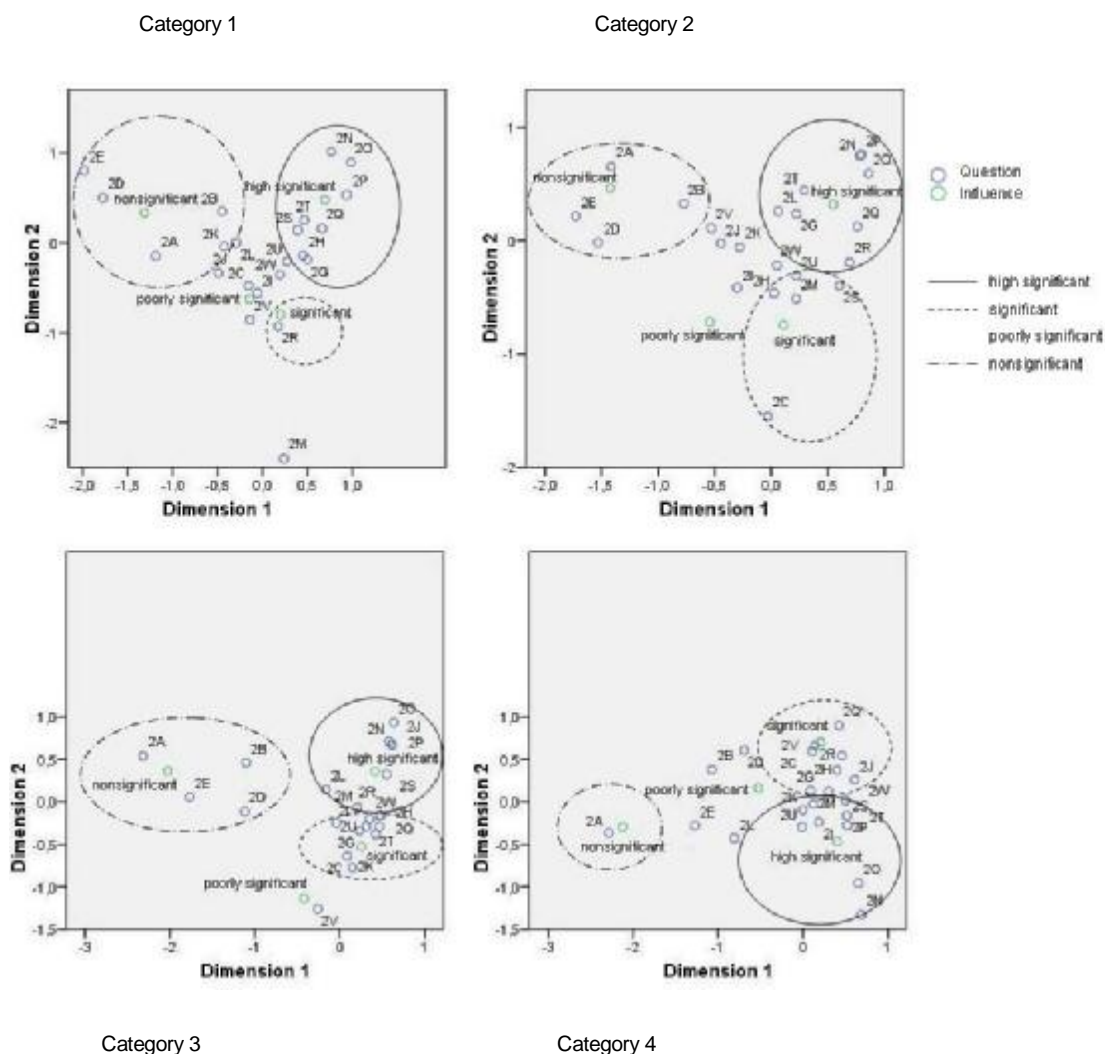
Fig. 1: The correspondence map for evaluation of areas of municipal development

Source: own construction

We can submit from the results of survey following. The most important activity supporting the development of all size categories of municipalities are considered (according to respondents) to be: care of public spaces (arrangement of village squares in small municipalities and the arrangement of town squares in large municipalities), reconstruction of local roads, sidewalks (this may also include public lighting), ensuring order and security in the municipality, the construction and modernization of technical infrastructure (sewers, water supply, other utility networks and facilities), support for cultural activities, and the maintenance and protection of cultural monuments in larger municipalities.

Very small municipalities refer to importance of fixing social conditions not only of young people and families but also of seniors. We can mention from the group of poorly significant activities following: support of activities in area of scholarship, building of new flats, an interest in localization of small and medium enterprises, influence of urban view of municipality, support of tourism or ensuring availability of health care.

The municipalities belonging to the second size group consider as important element of their development especially high level of resident traffic, support of small and medium enterprises generating high potential of job opportunities and support of activities in scholarship. These municipalities prefer fixing social conditions of young people and families from the group of high dominating activities. They place a big emphasis on their urban view. These municipalities pay a small interest in founding of industrial zones and scientific and technical parks.

It is necessary to ensure for inhabitants the citizen amenities at high level according to the municipalities of the third size category. This high level of citizen amenities especially means to take into consideration the urban view of municipality, build up the sport facilities and facilities for health care. The good resident traffic and support of cultural activities is linked with previous developmental activities as well. The representatives of these municipalities insist on localization of small and medium enterprises which ensure sufficiency of job opportunities for local inhabitants. The municipalities often mention the development of tourism as a priority with weak importance.

The municipalities of the fourth group should represent attraction zones in the region. We can mention whole citizen amenities as very important element of development of these municipalities. We can include here e.g. sport facilities, cultural amenities, facilities for health care and educational facilities. Because a lot of inhabitants live in these municipalities, it is important to create the conditions for life of these inhabitants. The high importance is placed on urban view, resident traffic and also the connection with surrounding municipalities. The next objective relates to creating conditions for development of tourism. It results from the survey that these municipalities have poor interest in founding industrial zones and building up the new flats and houses.

In the case of barriers that hinder the development of the municipality, all municipalities agree that scarcity in the amount of sites suitable for development, sites which can be used for construction or business purposes, as being the biggest barrier in municipal development. Another gap in development is the lack of technical infrastructure. This problem is alarming, especially in smaller municipalities. All municipal representatives stated that another barrier in municipal development is an imbalance in the demographic structure. Small municipalities with a predominately senior population face this problem. Therefore, it is again the responsibility of the representatives of municipalities to establish adequate communication facilities and to attract a younger population to their municipalities. The survey also showed that all local authorities face the problem of crime, isolation from other villages, or untidy public areas.

All of categories of municipalities find the largest problem, which is linked with their development, in absence of available developmental areas which could henceforth be used for building and entrepreneurial purposes. Next barrier in development consists in insufficient technical infrastructure. This problem is alarming especially for small municipalities. All of representatives of municipalities decide for unequal or unsuitable composition of demographic structure. Especially small municipalities meet this problem because seniors especially live in these villages.

Hence the representatives of municipalities have to create sufficient citizen amenities to attract young people. It results from the survey that all of municipalities manage the problems with criminality, eventually with separation from other municipalities and with untidy public areas.

Before posing questions on the structure and usage of municipal property, questions regarding ways a municipality provide public goods were asked in the survey. The way of providing public goods and services essentially influences the structure of municipal property. The investigation revealed (see Fig. 2) that smaller municipalities prefer to supply these goods in-house. In municipalities with a growing population, this option is used less and less. Greater use of municipal facilities in the set-up of allowance organizations, or opting to use the services of private companies in order to provide public goods is established under civil regulations.
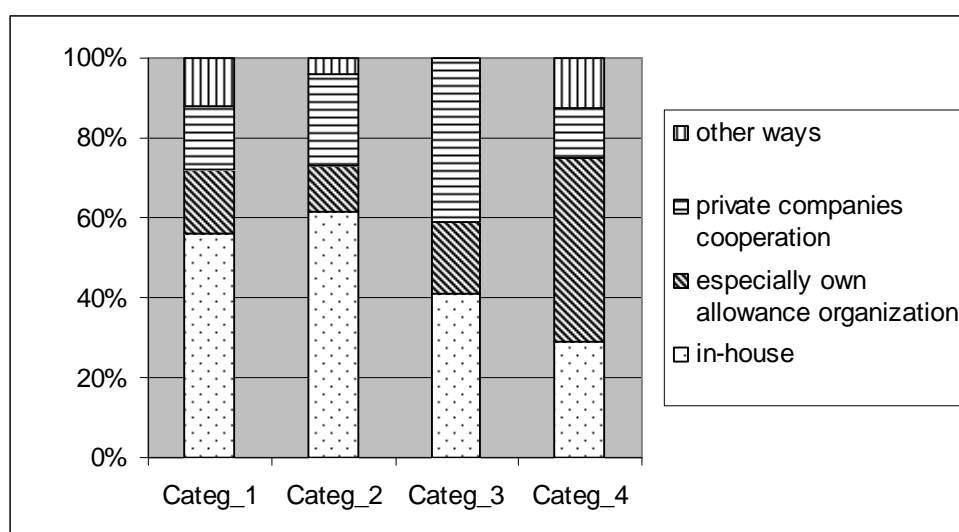
Fig. 2: Ways of ensuring production of public goods and services to inhabitants

Source: own calculations

In evaluating the structure and administration of property it was discovered that the ownership of forest and agricultural land is not dependent on the size of the municipality. A similar situation can be seen in the ownership of water bodies and streams. These types of assets, in particular, are owned by larger municipalities. In small municipalities, the ownership of these types of land, in most cases, has been transferred to private individuals or organizations.

A similar situation, as seen with the ownership of water bodies and streams, can also occur in the ownership of land used for development. In particular, large municipalities are trying to create long-term plans for the use of their land. Small municipalities usually have already sold their land which could have been used for development purposes. The construction of utility networks for land development is also related to the creation of long-term plans. This activity is carried out by larger municipalities. The connection of municipal building lands to nets of technical infrastructure relates to this issue. Especially bigger municipalities invested in engineering nets associated with free building lands. We can state that large municipalities already have connected to engineering nets most of their building lands. Small municipalities prepare to make this step or they do not plan to make this step

during several years. Further it was found that municipalities especially sell their free lands to local inhabitants. They rent the lands only in several cases (see Fig. 3). The combination of previous ways of usage of land was chosen as the other way in questionnaire (see Fig. 3 as well).
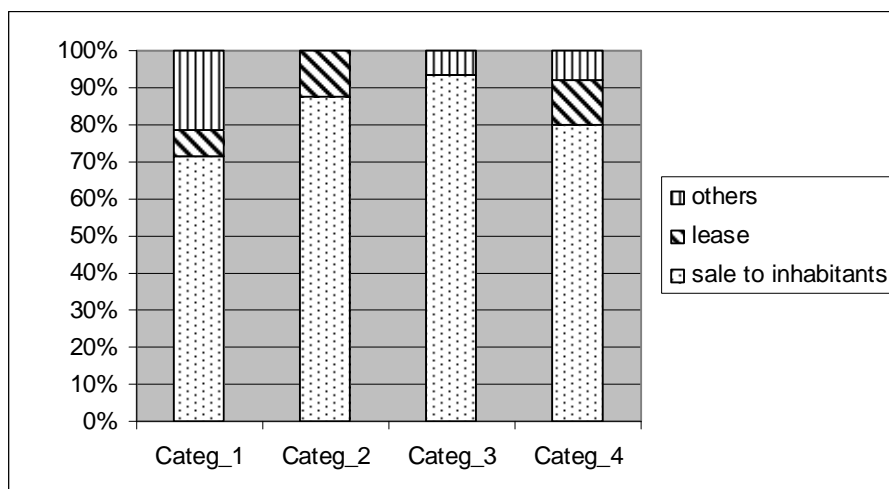
Fig. 3: Ways of usage of municipal lands

The respondents answered that municipal buildings are not usually used for the production of: agriculture and forestry, trade, transport, water management, communications and cultural facilities. Small municipalities primarily use municipal buildings for the administration of government functions. Larger municipalities also own buildings intended for housing. It is possible to sale municipal flats to inhabitants of the municipality; this also applies to small municipalities.

The questionnaire survey showed that with the growth of size of municipality (measured by population) relates to the number of owned flats. Small municipalities mostly sold in the past their flats. The purpose of usage of municipal flats it is possible to see in Fig. 4.
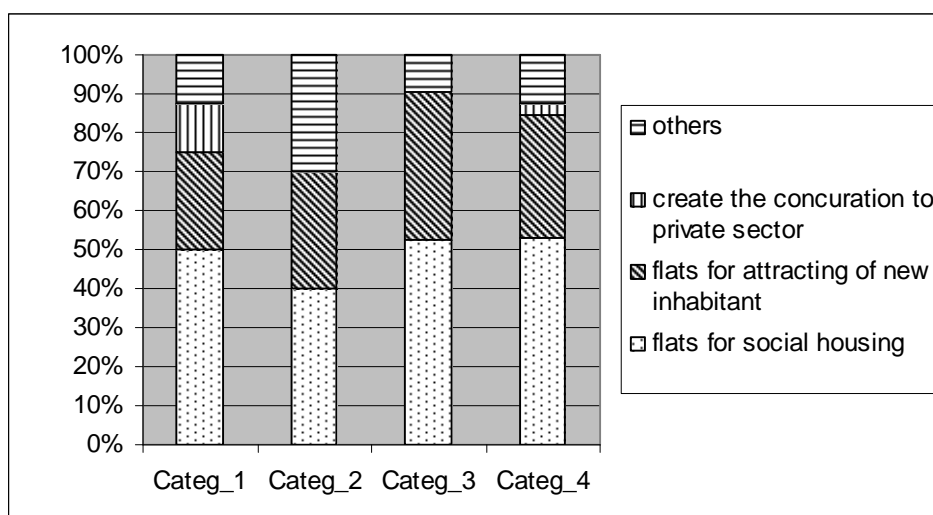
Fig. 4: Ways of usage of municipal flats

Source: own construction

In data item "others" are mostly included the sells of municipal flats to local inhabitants. Nevertheless we can claim that greater part of flats is in ownership of municipalities and these municipalities do not think of their sales. Further the questionnaire survey showed that especially small municipalities did not invest into building of flats in the last five years. Only in 50 % of cases the large municipalities built a majority of their current flats in the last five years.

When asked whether the municipality sells its assets, the majority of respondents said that they couldn't sale their assets. In particular, small municipalities own property that is mainly designed to provide public goods. The sale of these assets is basically impossible.

The last question of the questionnaire was devoted to the possibility of using property as a security for investments. The investigation showed that as the population of a municipality increased so did the use of property as a security in obtaining loans and other financial instruments.

4. Conclusion

Meeting the public needs in a certain area by means of production of local public goods predeterminates the municipality to be their provider. The property of municipality is one of the instruments which allows to municipality to administer its task. The municipal property is indispensable by providing public goods and last but not the least the property makes basic conditions for life of inhabitants and enterprises as well. Any analysis dealing with economy of municipality or realization of various policies of municipality does not be done without knowledge of structure and ways of usage of property.

The questionnaire survey was made in terms of the Pardubice Region and was focused on above mentioned problems. The correspondence analysis was used for evaluation. This analysis enables to recognize the structure of surveyed objects (we

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mean the areas of development of municipalities in this paper). The correspondence analysis was completed by researching the counts of ways of usage of municipal property. This survey confirmed that most of municipalities own such a structure of property, arising from main function of municipalities to meet the needs of local inhabitants through production of public goods. The areas linked with the largest developmental potential essentially conform to this finding. The smaller part of property already serves (especially in case of small municipalities) to profit-making purposes. The objectives of developmental policy of municipality essentially correspond with the purposes of property usage. It is possible to claim that management of municipal property especially focuses on growth of quality of life of local inhabitants, increasing attractiveness of municipalities for potential new arrival inhabitants or support of local entrepreneurial sector and others.

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THE USAGE OF MULTIVARIATE STATISTICAL METHODS FOR CREATION OF TYPOLOGY OF REGIONS

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Abstract: The article deals with searching basic factors of competitiveness of regions whose knowledge enables to increase an efficiency of instruments of regional policy. The finding itself and assessment of mentioned factors of competitiveness is unsophisticated process. Thereby it is suggested a methodics in this article which uses knowledge of factor and cluster analysis. The successful application of these methods makes possible to create a typology of regions. Hereby we can get generalized current status, structure and hypothetical development of a searched region.

Keywords: Cluster Analysis, Competitiveness, Factor Analysis, Factors of Competitiveness, Region, Typology of Regions

1. Introduction

The current regional science and regional policy more and more deals with question of competitiveness of regions. Reaching and continuous increasing of this competitiveness is not only an instrument but also an objective of regional policy of the European Union (and thanks to this effort to coordinate this policy is a content of regional policy of the Czech Republic). Although is conception of regional competitiveness noticed variously among authors, the European Union utilizes it as an instrument for maintenance of cohesion among European regions as well. The both of objectives take effect on one hand to the contrary, they can however support each other as well. The effort of the EU to help to less developed regions supports the economic performance of regions. These regions become a new partner for developed regions and growing competition among regions can support socioeconomic development of all regions concerned.

Evaluating the level of competitiveness of regions and determining of the main determinants of regional competitiveness, it is necessary to deal with methodics of its measurement. Therefore, this article is focused on a given matter thereby it is suggested to use of multivariate statistical methods for evaluation of regional competitiveness. The determination of typology of basic regions is then the output. Through the medium of stated typology it is possible to e. g. determine in which areas it is important to support a region to increase its competitive advantage. The suggested methodics does not only assess economic aspect of regional competitiveness, but also involves in assessment other development conditions of regions.

2. The competitiveness of regions

The conception of regional competitiveness evokes among authors discussions related to its assumption and using. At this point it is possible to remember e. g. the critical approach of KRUGMAN [1994] to using notion "competitiveness" in case of regions. On the other side we can mention supporters of this approach as well (cf. PORTER [2000], MARTIN [2003], VITURKA [2007] etc). This conception is one of basic instruments of regional policy as well. It is necessary to draw the attention that the approaches of supporters of regional competitiveness differentiate. Many authors, who deal with regional competitiveness, agree that this notion it is necessary to catch in a wider context. Regional competitiveness can be often considered as an aggregate of microeconomic competitiveness and the derivation of national competitiveness according to BOROZAN [2008]. On the other hand e. g. CELLINI and SOCI [2002] understand this notion in more complex conception.

Ignoring the question related to competition of regions, we have to explain the meaning of the notion "regional competitiveness". E. g. PORTER [2000] mentions a big relation between competitiveness and productivity. The growth of competitive advantage is the basis of course. The competitive advantage is however influenced by other factors connected with localization of firms in a certain area or e. g. the possibility of knowledge spillovers [cf. PORTER, 1998]. By contrast BUDD and HIRMIS [2004] call attention to fact that productivity is not ideal measure or indicator of regional competitiveness. The relationship is complex and proceeds via indirect effects. Increasing returns, external economies and endogenous growth effects have greater influence on regional success.

3. Factors of regional competitiveness

Factors of regional competitiveness are in literature defined from the various points of view. It always depends on that fact how authors try to catch this notion. E. g. GARDINER at al. [2004] represents the regional competitiveness in form of pyramidal model. The basis of this pyramid creates sources of competitiveness: economic structure, environment, innovative activity, decision centres, regional accessibility, social structure, skills of workforce, regional culture, research and technical development, SME development, FDI activity, infrastructure and human capital, institutions and human capital. The other three factors, regional performance (measured via GDP), labour productivity, employment rate, connect with the previous ones. The top of this pyramid is created by two target outcomes, which are basically closely interconnected - quality of life, standard of living.

For comparison it is possible to mention factors of regional competitiveness according to KITSON et al. [2004], who displays given factors in form of hexagon: productive capital, human capital, social-institutional capital, culture capital, infrastructure capital, knowledge/creative capital.

Some of above mentioned factors are known as being "soft" factors that have a more indirect competitive impact. Due to this fact, it makes it difficult to measure regional competitiveness. Further we can state other authors dealing with factors of

regional competitiveness, e. g. PORTER [1990], SKOKAN [2004] and institutions e. g. BERMANGROUP [2006], ECORYS NEI (see MARTIN, [2003]) etc.

It is evident from given overviews that regional competitiveness is multiconditional (cf. BERMANGROUP [2006]). Great importance is placed on mutual combination of factors that together create "a favourable local environment".

4. Statistical analysis of indicators of competitiveness

4.1 Factor analysis for determination of regional competitiveness

The determination of factors of competitiveness of regions is not possible to do without analysis of statistical data at regional level. The regression analysis is the suitable method for determining main factors of competitiveness. Its successful application is conditioned by mutual uncorrelation of input data. In addition we can often suppose the multi co-linearity in case of using statistical indicators.

As stated by STANKOVIČOVÁ and VOJTKOVÁ [2007], multi co-linearity can cause high standard errors in the estimated parameters, leading to an unstable regression model. It also complicates the interpretation of results. PACÁKOVÁ et al. [2009] states that duplicity in the analyzed information, that is contained in input indicators, can be a consequence not being able to fulfil assumption. This can lead to significant distortion of results. The stated problems can be solved, e.g. by using multivariate statistical methods, specifically, using factor analysis methods.

Factor analysis is one method of multivariate statistics. The basic aim of factor analysis is to: assess the structure of the relations between the monitored variables, and determine whether the variables can be divided into groups that would significantly eliminate correlation between the variables. This theory is based on the presumption that the interdependences among observed variables are the consequence of the effect of smaller amount of underlying immeasurable variables (so called common factors). This method allows for the recognition and usage (on the basis of interdependences of common factors) of the structure (directly non-observable and immeasurable) of common factors. According to HEBÁK et al. [2007], the factor analysis seeks to derive, create, and understand the common factors (defined as a linear combination of original variables) such as to interpret and clarify the observed dependence. This means that in the final solution, each variable should correlate with a minimum amount of factors.

Here it is important to call attention to frequent critique of this method which concerns to ambiguity of solution, usage of subjectivity and vague interpretation of results [cf. HEBÁK et al., 2007]. The character of factor analysis is rather based on heuristics than on verification of basic data. Its successful usage requires good knowledge of this method and experience with its using. The knowledge of relations among input indicators is very important for analysis as well.

This method results from the set of observable variables (stochastic magnitude) X_j, $j = 1, 2, …, p$, which have multidimensional distribution with p-termed vector of mean values μX and with covariance matrix Σp with rank p. According to

STANKOVIČOVÁ and VOJTKOVÁ [2007] the general model of factor analysis supposes the existence of q understanding common factors F_1, F_2, ..., F_q, of which is less than p. These factors enable j-observable stochastic magnitude X_j to express in following equation:

$$X_j = \mu_{Xj} + a_{j1}F_1 + a_{j2}F_2 + ... + a_{jq}F_q + e_j$$

where:

a_{jk} – factor masses (costs, saturations) which express the influence of k-common factor on variable X_j,

e_j, $j = 1, 2, ..., p$ – stochastic (error) components indicate as specific factors.

The model of factor analysis can be written in following matrix note:

$$\mathbf{X} = \mathbf{\mu_X} + \mathbf{AF} + \mathbf{e}, \text{ or } \mathbf{X} - \mathbf{\mu_X} = \mathbf{AF} + \mathbf{e}.$$

where:

$\mathbf{A}$ – matrix of factor masses in form of p x q,

$\mathbf{F}$ – q-termed vector of common factors,

$\mathbf{e}$ – p-termed vector of specific factors,

$\mathbf{X}$ – vector of origin measurable variables which are called as indicators.

Factor masses (saturations) a_{jk} represent the regression coefficients between observable variables and insensible factors.

The previous description of factor analysis was illustrated by solution for which the covariance matrix S_p was initial matrix. The factor analysis can be used for solutions which will result from correlation matrix. Moreover according to HEBÁK et al. [2007] the interpretation is often according to correlation matrix the only one possibility because all of the used variables are seldom by analysis in the same measuring units. It is important to use these same units by usage of covariance matrix.

Before the own application of factor analysis it is necessary to evaluate the input data and exclude so called "trivial" factors. According to HEBÁK et al. [2007] we understand those factors which only correlate with one from p pursued variables. If some variable correlates only with one factor and any other variable does not correlate with this factor, this variable is not suitable for factor analysis.

In case of determination of factors in method of factor analysis it is important to set such a number of factors which would mostly interpret the total variance and at the same time would decrease the count of indicators to simplify the interpretation. STANKOVIČOVÁ and VOJTKOVÁ [2007] state that the explained variance should be 90 – 95 % in case of exact sciences and in case of social sciences bigger than 60 – 70 %. Beside this criterion so called "scree plot" can be used which displays number of factors on x-axis and the percent of interpreted variability, i. e. eigenvalues (variance of principal components) of reduced correlation matrix, on y-axis. It is possible to consider as optimal number of factors the value on x-axis; behind it happens to "break" at curve of eigenvalues.

The result of factor analysis is the matrix of factorial masses. This matrix helps to identify the relationship between common factors and identifiers. The first estimate of the factorial masses may not provide a sufficiently clear interpretation of individual factors. STANKOVIČOVÁ and VOJTKOVÁ [2007] indicate that the first solution is not suitable for interpretation. For ease of interpretation, it is necessary to rotate the common factors. The essence of the rotation method is to get as many factorial masses close to zero, as well as a full blast of other masses close to one.

The methods of rotation of factors can be divided into following methods:

- orthogonal (rectangular),
- oblique.

The difference between mentioned methods of rotation consists in solution of matrix of factor masses. The orthogonal transformations lead to solution with un-correlated factors. The elements of matrix of factor masses can be interpreted as regression coefficients of dependence of indicators from factors and also as correlation coefficients among them. The advantage of orthogonal rotations is the fact that these methods change masses of factors but do not change the cumulative percentage of interpreted variability of common factors. On the other hand the methods of oblique rotations lead to obtaining dependent factors.

The best known orthogonal methods are following:

- varimax method,
- quarimax method,
- orthomax method (biquartimax and equamax are modifications of this method).

It is necessary to apply more methods of rotation by usage of factor analysis. The choice decision of appropriate methods of rotation depends on the ability to interpret the resulting factors. The method of varimax is the most widely used method for rotation of factors [cf. HEBÁK et al., 2007].

The next step in case of application of factor analysis consists in denomination of found factors. The procedure mostly consists in that for each of factors is chosen that variable which has the highest value in set of factor masses. If several variables with high, approximately the same masses, exist, then STANKOVIČOVÁ and VOJTKOVÁ [2007] recommend the following:

- for the factor is chosen that variable which is the most considerable representative of the dimension; it can happen that the chosen variable has lower factor mass than is the highest factor mass,
- the next possibility is the using the average among of all of variables which have high and similar identical mass.

The advantage of factor analysis consists in that it is possible to determinate the rank of competitiveness of particular regions. The estimated values of common factors, called factor scores, were used for this procedure. The values of factor scores can be further used as input into other statistical analyses (see e.g. below described cluster analysis). The factor scores represent the estimates of values of insensible values. Methods for their determination relate to regression. The most widely used method for their finding is Bartlett's method (weighted method of least squares) [cf. HEBÁK et

al., 2007]. We can obtain the factor scores for each of factor during the application of factor analysis. In case of research of regional competitiveness can be compared regions e.g. according to factors rather of economic character, factors concerning the demography, factors describing the quality of life etc. If we count up the all of factor scores, we can obtain integral factor score. This score expresses the total rate of regional competitiveness.

4.2 The usage of cluster analysis for evaluation of competitiveness of regions

The cluster analysis can be used for decrease of count of surveyed objects (in case of evaluation of competitiveness are directly thought the regions). This method enables to seek regions with similar level of competitiveness thereby the count of surveyed objects is reduced. This fact causes the simplification of whole analysis. Moreover we can explore the main characters of clustered region. This way can be found out the main factors of their competitiveness.

The cluster analysis also enables to classify the input set of objects into several relatively homogeneous clusters. The structure of data set is disclosed in this way, as was indicated above, the particular objects can be classified. After that it is important to find the convenient interpretation as the characteristics of given category. We can successfully apply this method in connection with above mentioned cluster analysis. The cluster analysis namely finds the rate of similarity and dissimilarity of surveyed objects. The similarity of objects is expressed as distance among magnitudes. The following distances are most frequently used:

- the Euclidean distance,
- the squared Euclidean distance,
- the Hamming distance (also the Manhattan distance or the City-block distance),
- the Minkowski distance,
- the Chebyshev distance,
- the Mahalanobis distance.

The other rates of distance except the Mahalanobis distance are dependent on used measuring units. The strong correlation of input data is problematic as well. KUBANOVÁ [2003] states that the existence of strong correlation among input variables influences the size of distances among objects. This correlation influences the result of clustering. The usage of factor scores as input data then enables to solve such a problem.

The basic techniques of clustering can be divided according to system of using classification in following:

- hierarchical clustering approaches,
- non-hierarchical clustering approaches.

We can meet various clustering methods in case of hierarchical approaches. The most widely used methods are: single-linkage clustering, complete-linkage clustering, average linkage clustering, unweighted pair-group centroid, weighted pair-group centroid, Ward's method. We can mention the method of typical points and k-means method from non-hierarchical method.

STANKOVIČOVÁ and VOJTKOVÁ [2007] state that the most common method currently used is Ward's method. HEBÁK et al. [2007], adds that the Ward's method tends to remove small clusters, and to create roughly identical sizes, which is often an acceptable features.

The graphical representation of the hierarchical structure of groups is found in the graph called dendrogram. One dimension of this graph is the examined objects. The second dimension is the distance between objects and clusters.

When applying cluster analysis it is necessary to determine the number of groups of clusters. Dendrogram shows a large variety of groups that are more or less homogeneous. According to STANKOVIČOVÁ and VOJTKOVÁ [2007], the question remains, where to "serve" the tree to obtain the optimal number of clusters. Frequently used heuristic approach determines the number of clusters on the basis of subjective opinion of resolver. In general we can search the biggest "gap" among the separately branches of the tree of clusters (called dendrogram).

The application of cluster analysis, as was mentioned above, enables to create typology of regions. The creating typology of regions becomes a very significant "spring board" for more successful application of regional policy [cf. DOČKAL, 2004]. The typology of regions is used e.g. by executive and decisive organs of states or the European Union. These typologies target the denotation of so called "troubled" regions which require because of their underdevelopment the direct subvention. It is possible to create the typology according to significant factors of competitiveness of regions. E.g. MARTIN [2003] created the typology of regions that describes developing regions and predicted main factors which stand behind the successfully development of these regions. Regions are divided according to this typology into:

- regions as site of export specialization,
- regions as source of increasing returns,
- regions as hub of knowledge.

The usage of single statistic analysis is not sufficient for creating analogical typology of competitiveness. On the basis of multivariate statistical methods is in this paper suggested the methodics of creation of typology. In terms of statistical theory appears as most suitable instrument the usage of combination of factor and cluster analysis. The combination of these methods is necessary in every time. At the moment the combination of factor and cluster analysis appears as suitable instrument.

The described methodics, in this article, for determination of typology of regions can be schematically represented in following Fig. 1.
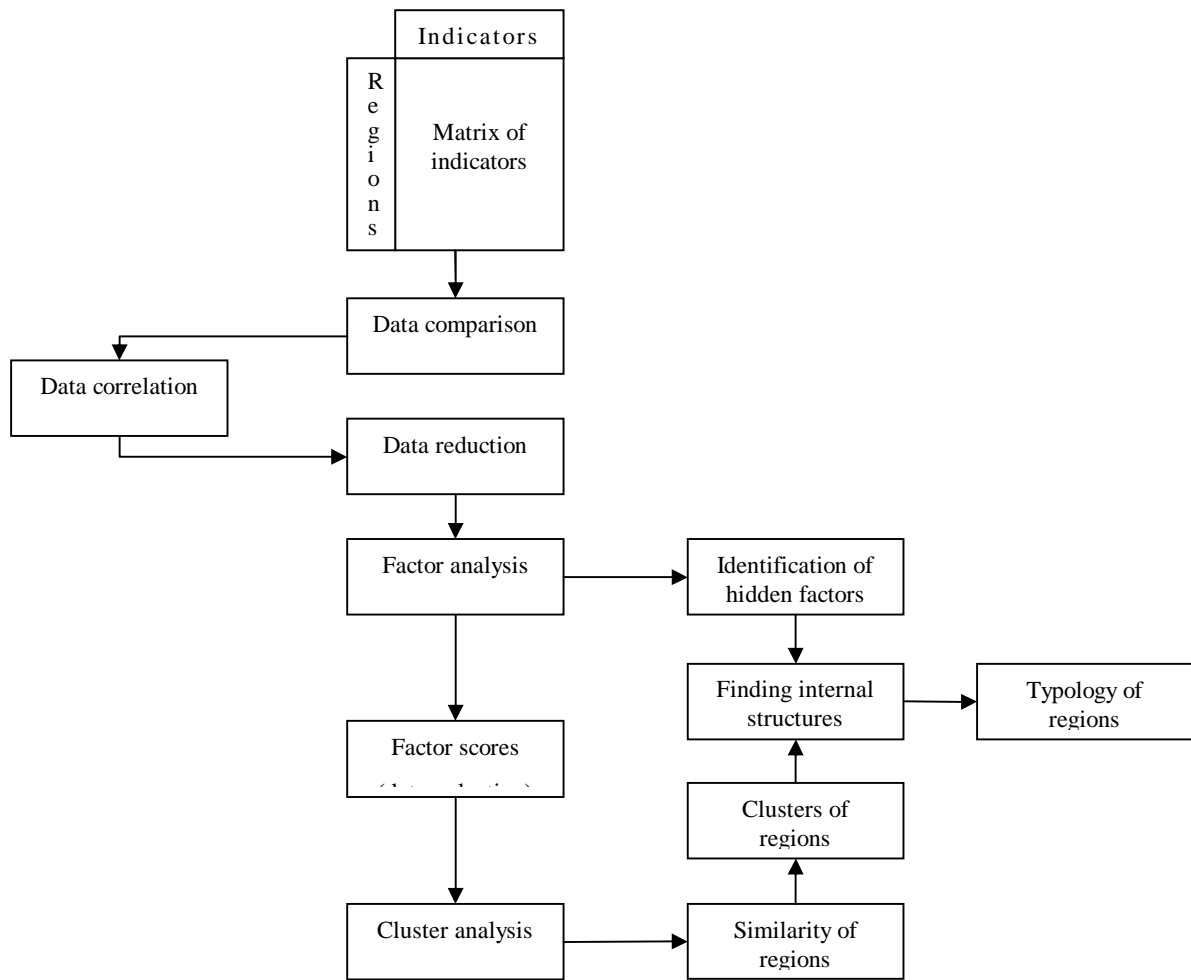
Fig. 3: The scheme of used methodics

The input data are tested by means of correlation analysis. As a result of this fact the input variables were reduced. Further was applied factor and cluster analysis. The factor analysis helps, as was stated above, to find so called "hidden" factors which have the fundamental impact on competitiveness of region. The other output of factor analysis, so called "factor score", serves as the basis for cluster analysis which enables to identify similar regions. The created clusters of regions are further searched in connection with found hidden factors. This way is revealed the internal structure of regions. The creation of typology of regions, which can be used in terms of regional analysis, is the output of the whole analysis.

5. Conclusion

The question of competitiveness is still popular and actual concept of current regional policy at the level of the whole European Union. The quantity of conferences and specialized publications focused on regional competitiveness is evidence of this statement. Beside the question of holding this notion and its right definition is here solving the question of increasing regional competitiveness. It is not however possible without knowledge its determinants.

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Because the regions are considerably varied entities, recognition of main factors of competitiveness is not a simple task. Therefore is in this article proposed a methodics which uses of factor and cluster analysis. On one hand the application of stated methods makes possible to set and generalize basic determinants of regional competitiveness. On the other side it enables to create typology of similar regions. The knowledge of these two outputs of proposed methodics can be used in case of regional policy. That way the efficiency of instruments of regional policy can be increasing.

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THE IMPACT OF CORPORATE SOCIAL RESPONSIBILITY ON BUSINESS COMPETITIVENESS

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Abstract: One of the most widespread debates is the issue whether it is advantageous for companies to pay attention to corporate social responsibility initiatives. The answer to the questions has apparently not been found yet. The purpose of the paper is to investigate the potential impacts of corporate social responsibility on business competitiveness on the basis of key research studies comparison.

Keywords: Corporate Social Responsibility, Competitiveness, Financial Performance, Reputation, Innovation

1. Introduction

Corporate social responsibility (hereafter CSR) is an umbrella term for a variety of activities ranging from environmental protection, social work through employment law, business ethics, anti-discrimination to socially responsible investment policy. The common feature of these activities is general social usefulness as well as the fact that their main initiator and executor is enterprise. As one of the most widely known definition of CSR can be regarded the definition of European Commission (2001) that CSR is "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis". Business Leaders Forum (cit. 2010), which deals with the CSR issue already long time in the Czech Republic defined the concept as: „a voluntary commitment of businesses to behave in its functioning responsibly to the environment and the society in which they operate". Carol (1979) described the social responsibility of company as going beyond economic and legal concerns, and identified this additional responsibility as an aspect of corporate social performance. We can find a wide range of similar definitions. With regard to their not very unified terminology, most of them discover a similar summary of responsible entrepreneurship principles.

In recent years, an increasing number of companies worldwide established and integrated the CSR policy. Together with this growth has raised a question: how CSR shape or influence the corporate competitiveness? Lot of researchers have already stated that CSR can contribute to a number of social, environmental and economic policy objectives. However, what are the actual proven findings of CSR benefits on individual determinants of business competitiveness? And are confirmed the arguments suggesting that CSR is cost with no evident benefits on competitiveness? The comparison of already carried out research studies can help us at least partially answer these questions.

The main aim of the paper is to throw light on the nature of relationship between CSR and competitiveness of business. The fundamental structure of the paper results from European Competitiveness Report (2008), whose key findings are confronted with other relevant research studies.

2. CSR effects on competitiveness: the comparison of key studies

Currently an enormous number of research studies have emerged regarding the relationship between CSR and organisational performance. (Rettab et al., 2008) In this paper, we focus specifically on examination of CSR impacts on selected determinants of company-level competitiveness.

2.1 CSR and Cost Structure

Here we can find two currents of opinion in the debate on cost savings resulting from CSR. Critics state that CSR is expensive and that the positive effects can occur often only in the distant future, if they come at all. These statements resulted from Friedman (1970) that argues that there is only one social responsibility in the firm, and it is the most efficient use of available resources and involvement in activities to increase profit as much as possible. According to this view CSR has no substantive role in the organization. Contrary to this, Freeman (1994) argued that social performance is needed to attain business legitimacy. On the basis of this fact much of the present research on the question regarding whether social responsibility has any benefit refers to the views of Friedman or Freeman.

Supporters of CSR argue that expenditures on environmentally and socially responsible behaviour will return to the company over time. (Porter, Krammer, 2006) Especially the positive relation can be found in the context of environmental performance and economic performance. (Russo, Fouts, 1997) Porter and van der Linde (1995) reported that properly designed environmental standards may induce innovations that lower the total cost of the product or improve its value. From this perspective the cost reduction can be seen in improving opportunities for lower energy consumption, lower insurance or expenditures for possible conflicts. (Miles, Covin, 2000) On the other hand, some other studies also show evidence of negative relationship between environmental dimension of CSR and cost structure. (European Competitiveness Report, 2008) Apparently, it could be stated that there is a little consensus and the general findings related to cost structure are mixed. CSR could contribute to the reduction of costs only in certain conditions.

2.2 CSR and Human Resources

According to conclusions of European Competitiveness Report (2008) on the basis of empirical studies the positive impacts of CSR on human resource management can be found. Companies with well-developed strategy of human resources management based on CSR initiatives can reduce the total number of fluctuating staff and have employees with higher motivation and work performance. Another important aspect is employee diversity policy.

These statements confirm also a number of other studies that have explored the link between CSR and employee or organizational commitment. (Albinger, Freeman, 2000, Peterson, 2004) Branco and Rodrigues (2006) presented that companies with strong social responsibility image often have a better ability to attract preferable job applicants, retain them once hired, and keep employee morale. Therefore according to Aguiliera et al. (2007) it is reasonable to state that firms that implement CSR initiatives will tend to a positive relationship with their employees, and follow they are more probably to acquire employees´ commitment than companies that do not take care about CSR activities.

2.3 CSR and Corporate Reputation

Lot of companies see their commitment to CSR primarily as a means of enhancing their reputation in the eyes of stakeholders. The relationship between CSR and reducing the potential business risks was introduced by Bowman (1980). Afterwards a number of literature offers the evidence that corporate reputation is crucial issue of competitiveness. According to Rettab et al. (2008) is corporate reputation enhanced or destroyed by firms' decisions to engage or disengage in CSR activities. Heal (2005) argues that the presence of CSR minimizes conflicts between different organizations, companies, surroundings of the company, and sees this in fact as the greatest advantage of CSR. Hond et al (2007) found out by their survey that eco-labelling to a large or some extent has made a positive contribution to the corporate image.

Branco and Rodrigues (2006) reported that when firms are able effectively demonstrate to the wide range of stakeholders that they manage their activities in compliance with CSR policies, they can create a positive reputation, whereas failing to do so can be a source of risk. This is strengthened by the fact that enterprises are more exposed to public control and criticism thanks to power of communication technology. Rettab et al. (2008) identify two pre-conditions for CSR to have an impact on reputation. Firstly, it is ability to communicate the strategy to key stakeholders and media. Secondly, the media have to give enterprises engaged in CSR initiatives the required space to help them generate public goodwill. However, we can conclude that success of the company is highly dependent on the relationship with its key stakeholders and its reputation (Fan, 2005). The problem here is that sometimes the companies understand the CSR concept only as a profitable public relation tools.

2.4 CSR and Innovations

Wide number of studies has disputed whether CSR can be a way for many innovations through the use of social and environmental approaches. The European competitiveness report (2008) identify three principal ways in which CSR can contribute to innovation capacity and performance: innovation resulting from stakeholders engagement, defining business opportunities through addressing societal challenges; and creating work places that support the innovation.

In the long term, it is technological innovation capability that forms a major source of competitive advantage. (Freeman, 1994) Innovation capability is a special asset of an organisation, which comprises different key areas, such as technology, production,

process, strategy, organization, knowledge and experiences. As confirm Guan et al. (2006) innovation capability is closely correlated with internal experiences and experimental acquisition. Thanks to this fact, CSR could become a rich source of ideas and innovation. Vilanova and Lozano (2009) argued that CSR and competitiveness concern through a learning and innovation cycle, where corporate values, policies and practices are permanently defined and re-defined.

2.5 CSR and Financial Performance

The relationship between corporate social performance and financial performance is one of the most studied topics. (Chand, Fraser, 2006, McWilliams, Siegel, 2001) Beurden and Gossling (2008) present research focuses on the relationship between corporate social performance and corporate financial performance based on the meta-analysis of the data consists of literature. From the included studies 68% found a significant positive relationship, 26% of studies reported no significant relationship and 6% found significant negative relationship. The results reveal that there is indeed clear empirical evidence for a positive correlation between corporate social and financial performance.

Margolis and Walsh (2001) come to the similar results when by the help of meta-analysis examined 160 empirical studies and found that 55% of them identified a positive relation between CSR and financial performance, 22% detected no relationship, 18% revealed mixed relationship and 4% found a negative relationship. Their conclusion is supported by Rettab et al. (2009) that found the positive association between CSR and financial performance in emerging economy.

A number of studies also try to examine why CSR has a positive effects on financial performance. One of the frequent arguments is that if the company has a positive influence on their stakeholders then can have a positive impact on its financial page. (Allouche, Laroche, 2006)

Contrary Brammer et al. (2006) investigated the negative relationship between corporate social performance and financial performance using stock returns. Mellahi and Wood (2002) maintain that the stakeholders are often not interested in CSR activities, therefore their effect is irrelevant and overall impact on the financial side then will be negative.

3. Conclusion

One of the key problems of current research is the absence of understanding about the impact CSR has on competitiveness. (Porter, Kramer, 2006). The scholars have not yet reached a consensus on how CSR affects business competitiveness. This lack could be partly due to problems associated with measuring the costs and benefits of CSR.

The review of selected key studies on the links between CSR and corporate performance investigates positive, negative, mixed as well as non-significant results. In the field of cost perspective and CSR a consensus among scholars has not been achieved so far. Positive impacts of CSR on the costs structure can be determined only if certain conditions are met. Companies which have successfully implemented CSR

initiales in the HR management show provable improvement in relationships between employees and general atmosphere. CSR can also positively influence corporate image in society and therefore raise competitiveness of a company. A problem which still remains is the conception of CSR as a tool used purely for public relation profit. In the field of innovation perspective, certain contribution of CSR is more likely positive, but in general hard to measure. Many of complex studies present clear empirical evidence about positive relationships between performance in financial and social sphere.

The key benefit of the paper is a literature review which creates a research framework that could be used for subsequent analysis of links between CSR and competitiveness in the conditions of Czech Republic. CSR is still relatively new direction of long-term management of the organization. Most probably, we will be able to appreciate the impacts of CSR in a longer time period, therefore further research is needed.

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HOW TO INTEGRATE SUSTAINABILITY WITH THE GENERAL MANAGEMENT SYSTEM OF AN ORGANISATION?

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Abstract: The integration of sustainability within general management system remains an important challenge for businesses as well as public administration. The purpose of the paper is to investigate how environmental and social aspects can be embedded in strategic performance management process.

Keywords: Sustainability Performance Management and Measurement, Sustainable Development, Balanced Scorecard, Strategy

1. Introduction

In recent years, an increasing number of managers and companies worldwide have been engaging in serious efforts to integrate sustainability into their business practices. [Jones, 2003] The fields of sustainability and sustainable development have grown exponentially. This growth has raised questions – how to understand the concept, how to manage and measure it and how to aligns daily decision making on all levels with sustainability strategy.

Despite the explosion of interest in and concern with social responsibility and sustainability, their effective implementation faces serious obstacles. [Petrini et al., 2008] In this context the environmental and social aspects are only partially reflected in business operations and are managed by means of specific management systems. Bieker [2003] identifies two reasons why it is so. Firstly, many environmental and social management systems are not linked with the strategy and run only on the operational level. Secondly, they are mostly executed separately from the general management systems by which top and middle management control and run organisation.

For sustainability efforts to succeed, organizations need to capture relevant information and make it part of a larger performance management process. [Global trends in sustainability performance management, 2010] Could be the Balanced Scorecard framework (hereafter BSC) a solution? According to Fidge et al. [2002] just BSC helps to overcome the shortcomings of contemporary approaches to environmental and social management systems by incorporating the three pillars of sustainability into a single and overarching strategic management tool.

The main aim of the paper is to provide suggestions for integration of sustainability into main management system of an organisation. In the first place the paper presents the contemporary approaches to sustainability performance management and measurement. Afterwards outlines the forms of social and environmental aspects integration through Balanced Scorecard and investigates the current state of issue.

2. Sustainability, performance management and measurement

2.1 Sustainable development

Currently, the sustainable development is widely discussed topic not only in the world and the EU, but now also within the Czech Republic. This can be confirmed by following: „According to Corporate Register.com, an independent reference source, fewer than 500 companies issued sustainability reports in 1999. That number is now close to 3,500, reflecting the growing trend among companies worldwide to issue reports demonstrating their commitment to environmental and social targets along with traditional financial ones." [Handford, 2010]

The notion of sustainable development is often heard both from the mouths of politicians as well as from leading managers and as the case may be, from the media. In the 20th century, this notion was defined. „The EU has adopted a Strategy for Sustainable Development that seeks to embed the principle of sustainability into all areas of policy development and implementation. All policies must have sustainable development as their core concern". [Agyeman, Evan, 2004] The notion of sustainable development was first defined in 1991 in the Czech Republic. Then the first Environment Act No. 17/1992 Coll. has been approved, containing the definition" According to Art. 6, sustainable development of the society is such development that maintains the possibility to satisfy the basic living needs while not reducing the natural diversity and maintains natural functions of eco-systems for the current and future generations." [Law No.17/1992 Environment Act]

Sustainable development is no longer a notion that would be only dealt with by the legislation, but in a greater extent penetrates both the management of public administration and corporate practice. Many enterprises start to realise that without orientation towards sustainable development they cannot succeed in the global world and under hyper-competitive relationships. „Many factors are driving the current momentum for sustainable corporate performance. Companies themselves understand the many benefits of sustainable operations, and now respond to a wider, more complex range of stakeholders who demand new forms of accountability". [Handford, 2010]

2.2 Sustainability Performance Management

The methodical guideline dealing with Building Sustainable Development into the Performance Management Process emphasises the importance of collaboration between corporates and community. Corporates and community have to unify their priorities and set common objectives in the field of sustainable development. „Objectives are cascaded down through departments, services and teams to an individual level. This is often called the golden thread. Following the golden thread from community or corporate objectives should show how your day-to-day activities are changing people's lives for the better." [Forum for the Future Performance Management Network, 2005/2006]

Let's ask the question of who is responsible for Sustainability Performance Management, then? Corporate or communities? Today, the primary responsibility for

sustainability performance management falls to Heads of Sustainable Development and not to Chief Financial Officers, who are generally better positioned to link sustainability performance management results to business performance, says study: [Optimizing Sustainability Performance Management, 2009]

Who executes the management that reflects Sustainability Development? The ultimate responsibility for the sustainability report for corporate sustainability-reporting rests in different places in the US and Europe. In Europe, the set-up is different because of the distinction between management and supervizory boards. The management board is responsible for day-to-day operations, while the supervisory board is more concerned with long-term strategy. Responsibility for sustainability reporting in European companies may reside with the CEO or COO but is more likely to sit with a board member responsible for strategy, communications and sustainability. [Global trends in sustainability performance management, 2010]

Management using Sustainability Performance Management (SPM) is a long-term matter. It is a long run, the first successes will be visible only after several years of our orientation towards sustainable development. It is a long-term and strategic objective, which is fulfilled step-by-step in a long-term outlook, which represents tens of years as a minimum. „Whoever is handling the brief, it will expand dramatically over the next few years". [Global trends in sustainability performance management, 2010]

SPM is a process that integrates three basic pillars of sustainable development: social, environmental and economical. It develops endeavours that all three pillars be reflected within the framework of decision-making processes. SPM can be identified as multi-dimensional management, precisely thanks to orientation to three main pillars of sustainable development. Using the multidimensional performance management approach (MPM) can improve the management of diverse stakeholders' interests in an organisation. [The Influence of Sustainability Performance Management Practices on Organisational Performance]

There are two aspects of integration [Forum for the Future Performance Management Network 2005/2006]:

1. opening up opportunities for, and actively promoting and supporting, synergies between the environmental, social and economic aspects of wellbeing; and

2. avoiding harmful 'silo' impacts in which apparent improvements in one aspect of wellbeing have a detrimental effect in another

„Building sustainable development principles into performance management processes is not rocket science; it can easily be done if there is political and senior management commitment to doing it". [Forum for the Future Performance Management Network 2005/2006]

PLAN

Planning performance

Community Strategy

Corporate Plan / Performance Plan

Value for Money

REVISE

Revising plans to further improve performance

Making effective use of monitoring information

Value for money

DO

Improving performance

Service Reviews

Public service agreements

Service Plans

Operational Plans

Personal Development Plans/appraisals

Value for money

REVIEW

Monitoring performance

Developing performance information,

Indicators and reporting

Audit and inspection Learning

from good practice

Value for money

Fig. 6: Circulation Sustainability Performance Management

Figure 1 shows the cycle of key activity as Plan, Do, Review, Revise. This activity can be used in various combinations and in various time intervals. „It is critical that sustainable development principles are built in at the community and corporate planning stage. If it is not built in at this strategic level there is little chance that it will be consistently reflected at other phases of the performance management process." [Forum for the Future Performance Management Network 2005/2006]

The Performance Management Measurement and Information (PMMI) team research has highlighted that developing the right environment for performance management to flourish requires:

• clear leadership – both political and managerial – that champions improvement and the use of performance management to achieve it

• a shared sense of purpose that is evident both in what people say and through their actions

• a willingness to pull together and stick with plans – even when progress seems slow

• a genuine desire to learn – both from what's working well and from what's not – and to celebrate achievements along the way. [PMMI project, 2006]

For sustainability efforts to succeed, organizations need to capture relevant information and make it part of a larger performance management process. Doing this requires two key steps: understanding sustainability efforts as drivers for the business, and effectively implementing systems for sustainability reporting. [Sprenger, 2008] Results from these efforts are expected to be both achieved quickly as well as have a lasting impact. „Companies themselves understand the need to move sustainability reporting beyond a simple statement in their annual reports to a more detailed assessment of their operations, management practices, workforce issues and development strategies." [Global trends in sustainability performance management, 2010]

How can companies capture the data and understand the long-term value of sustainability initiatives? Nowadays, SPM finds itself in a stage, when orientation to Sustainability development ceases to be a voluntary initiative and becomes obligatory. Therefore, how to improve corporate performance management? On one hand by orientation to sustainable development and on the other hand we suggest as a suitable solution the use of BSC method modified to Sustainability Balanced Scorecard (SBSC). SBSC is further described in the following chapters.

2.3 Sustainability Performance Measurement

The environment is now regarded as one of the pillars of sustainable development, this means so-called environmental pillar. With this pillar the environmental protection is connected with the further two pillars (economic and social) and on this basis the sustainable development is established. The sustainable development concept highlights the need of indicators that can express the interconnection of environmental, economic and social dimensions. It means the indicators that express the degree of the curves disseverance between environmental load (e.g. emissions of pollutants) and economic performance (as illustrated by the gross domestic product). [Moldan, 2005]

The sustainability measurements distinguish in many aspects from measurement of others types of company performance. Schaltegger a Wagner [2006] defined „Sustainability performance as the performance of a company in all dimensions and for all drivers of corporate sustainability".

Sustainability Performance Measurement is a systematic process within the company that deals with economic, environmental and social aspects. The key conditions of successful performance measurement are considered: relevant performance measures need to be simple, quick to measure, visually presentable and easily understood. Ferguson [2009] recommends that "the measures themselves should be based on an explicit purpose and have an accurate formula that is both comparable and consistent, that can measure trends, encourages improvement and incorporates target setting".

 Many experts in this field have developed a large number of systems for management and measurement. Most of the methods are relatively young, because they were developed mainly in the last 20-30 years. These performance measurement methods, that contained sustainability measurement principle, can be applied in various businesses and organizations.

„Over the last twenty years, not least from the development of the Balanced Scorecard, non-financial performance (NFP) measures have gained more relevance and importance as leading indicators, with many NFPs being adopted alongside traditional financial metrics to provide a more informed measure of a company's performance" [Ferguson, 2009].

3. Sustainability Balanced Scorecard

Balanced Scorecard is widely spread and accepted method. Latest surveys by Bain & Co. have shown that this method is being used by about fifty percent of Fortune 1000 companies. [Belodeau, Rigby, 2009] The Balanced Scorecard was introduced in the early 1990's by Kaplan and Norton as respond for growing critique of standard indicators systems in a company that were based exclusively on the financial data. [Kaplan, Norton, 1992] The BSC model has since been modified to become a performance management system designed to manage and realize strategy.

The BSC method is defined as a special kind of concretization, illustration and monitoring of the strategy that should help to heighten the probability of the implementation of intended strategy. [Horvath & Partners, 2004] The benefit of the model lies in establishing a framework in which the culture and direction of an organization can be translated into strategies that are actionable, specific and measurable. [Rohm, 2002] In other words the BSC enables individuals to make decision daily based upon values and metrics that can be designed to support corporate strategy.

The traditional BSC is looking at organizations from four strategic perspectives: *the financial, the customer, the internal processes, and the learning and growth,* all of them need to be balanced. The balance means the equability between the short-term and the long-term goals; required inputs and outputs; internal and external performance factors; and financial and non-financial indicators. According to the authors of concept perspectives are a template, not a straitjacket. [Kaplan, Norton, 2005] Therefore the concept remains open for integrating further relevant environmental or social perspectives.

Several scholars have already indicated the opportunity to develop Sustainability or Responsive Balanced Scorecard [Bieker, Waxenberger, 2002, Epstein, Wisner, 2001, Woerd, Brink, 2004]. On one hand we can find the discussions about the issue namely on theoretical level [Johnson 1996, Radcliffe, 1999], on the other hand we can discover the particular examples of environmental and social issues integration in the BSC [Epstein and Wisner, 2001, Zingales et al., 2002]. Not only for this reason the BSC can be seen as a promising starting-point or possible implementation mechanism for incorporation of environmental and social aspects into the management system. [Fidge et al., 2002, Zingales et al. 2002]

The Fidge et al. [2002] presented three different potential forms of integrating Sustainability into the Balanced Scorecard:

1. The Sustainability is *reflected in the traditional fours BSC perspectives* – the strategically relevant environmental and social aspects are identified and through strategic core elements or performance drives for which lagging and leading

indicators as well as targets and measures are formulated. [Kaplan, Norton, 2001] The traditional BSC was focused on customers and shareholders, without having other stakeholders in mind. Therefore sometimes to highlight the sustainability initiatives one of the perspectives is renamed (e.g. customer perspective to stakeholder perspective). [KPMG, 2000]

2. *Introduction of an additional perspective* – "the reasoning behind this approach is that environmental and social aspects are still not integrated into the market coordination mechanisms and often represents external factors". [Figge et al, 2002] The Fidge prefers this approach and proposes to add Non-Market perspective in order to integrate strategically relevant but not market-integrated environmental and social aspects. Some other scholars also favour this approach. For example Brink and Woerd [2004] presented a five perspectives format for a Responsive Business Scorecard that creates a space for People and Planet topics. Bieker [2003] sees integration of Society perspective as sensible.

3. *A derived* environmental and social *scorecard is developed* – is an extension of the variants discussed above. "Specific scorecard draws its content from an existing BSC system and is predominantly used in order to coordinate, organise and further differentiate the sustainability aspects". [Figge et al., 2002]

From the papers dealing with this issue we can also identify the fourth way of integrating environmental and social concerns into the Balanced Scorecard.

4. *The new framework* based on the main ideas of BSC *is developed* - Beiman [2008] developed a global framework consisting of five perspectives sustainability outcomes, stakeholders outcomes, sustainability drivers, learning and growth enablers and financial and governmental adjustments, that named Balanced Scorecard for Humanity (BSC4H). Soriano et al. [2010] suggest a model of SBSC made up of three perspectives called structure, stakeholders and sustainability interlinked by causal links.

Based from the above we can conclude that there has not been reached universal agreement yet how to integrate sustainability. Nevertheless, all proposals result from the original BSC and are modified according to specific needs that they should serve. Therefore it could be stated that the way of sustainability integration depends on the nature of the strategically relevant environmental and social issues that are identify during the process of building SBSC. Each organisation has to develop its own approach of SBSC based on its unique conditions and characteristic. As a general guideline, it is advisable that all stakeholders that are strategically relevant have been considered. [Bieker, 2003]

4. An Examination of Current State

To understand the current state of issue, the analysis of five case studies of organisations that had already implemented BSC method in the conditions of Czech Republic was carried out. Two of them were from public administration and three from business sphere. The analysis as well as brief evaluation was conducted on the basis of available strategic documents from their web sites and supplemented by several short questions that we asked the management of companies using e-mails. The main

attention was paid to the integration of environmental and social concerns into the vision, strategic themes, strategic objectives and strategic maps of selected organisations.

The BSC method as a tool of strategic management has not been widely spread yet in the Czech public administration. We can find only a two examples in our country and moreover they could be considered as pilot studies than a fully-fledged implementation. There is only one city Vsetin where the method was so far fully introduced and implemented. In the second case were created top level BSC of Vysocina region.

In the case of Vsetin the sustainable development is explicitly mentioned already in the vision of the city. The sustainability is reflected in the traditional fours BSC perspectives and is integrated through strategic performance measures. Vsetin use for example ecological footprint measure or citizen satisfaction index to monitor the fulfilment of the vision and priorities. From the further analysis of scorecard measures results considerable effort to reach a balance among all three pillars of sustainable development: social, environmental and economical. Because the BSC is cascaded to the level of individuals we can also assumed that sustainability is reflected within the framework of decision-making processes. Thanks to BSC cascading is the strategy that respected sustainable development spread in to the entire organisation and the goals of the municipality, municipal office, departments and individuals are interconnected.

The top level BSC of Vysocina region pays little less attention to sustainable development. However, also here we can identify the tendency to sustainable development by the help of defining strategic themes that highlight the sustainability initiatives. Such strategic theme is for example Future equitable use of resources or Full-value region. To the strategic themes are defined financial as well as non-financial measures that namely reflect the principles of sustainability. Unfortunately here is not possible to carry out detailed analysis because the information about the BSC in Vysocina region is only on the corporate level.

The BSC method as a tool of strategic management has not been widely spread yet in the Czech companies. Only 20% of companies use the BSC to manage the corporate strategy. [Horová, Hrdý, 2007] The questionnaire examination provided "interesting findings regarding Balanced Scorecard tool because this instrument is not too used by companies in their Strategic Management. On the other hand most companies believe that using of this instrument would be useful for them and consider its application". [Horová, Hrdý, 2007] The advantage of this method is comprehensive approach to implementation and coordination of the strategy. However this advantage has not sufficiently appreciated by the companies so far.

We addressed three randomly chosen companies for examination of current status. The first addressed firm was Metorostav, a. s., as the second Tepelne hospodarstvi Hradec Kralove, a. s. and as the third Jihoceska energetika, a. s..

Metrostav, a. s. is oriented towards the sustainable development. The company deals with environmental protection significantly. The company has implemented this approach into their corporate culture and into their controlled documents. Metrostav a. s. owns the EMAS Certificate and the ISO Certificate in accordance with ISO 14 001.

This is quoted from their website: "The company has been trying on a long-term basis to employ such people who are aware needs of the responsible approach to nature and they will require such behavior from their subordinates and contractors". On the base of queries which were put to Company Management we can state that principles applied at the setting of strategic goals, their quantification, monitoring and periodic review and the method of interconnection with operating indicators are in accordance with the principles of the BSC. The company deals with all of three sustainability development dimensions. This implies that strategy includes the goals of the sustainability and the responsible society. The dimensions stated above are monitored but the special perspective or Scorcard are not set up for them. This confirms the fact in the introduction that a large number of companies deal with this issues but they report these records separately from others reports and statements. If we assess which of the four ways of sustainability integration is used by Metrostav a. s., we tend to the way No. 1 as described above in the chapter 3.

Tepelne hospodarstvi Hradec Kralove, a. s. emphasises the environmental protection and the social responsibility too. The company accepts voluntarily the obligations of social responsibility which includes social, economic and environmental responsibility. The company uses the BSC method as a tool of fulfilment of the company strategy. It includes four perspectives: (stockholders, relationships, processes, learning and growth). Each of these perspectives is divided into the several sub-goals. Each target contains several indicators or procedures to describe how to achieve the target. Finally, each target contains the metrics or assessment that is used for review of target fulfilment. The company vision shows the environmental and social responsibility. Their strategic targets are clearly defined. As well sustainability of Tepelne hospodarstvi Hradec Kralove is integrated in the manner described in ad 1 chapter 3 as in the case study Metrostav.

In the Annual Report 2004 the company Jihoceska energetika, a. s. disclosed using of the Balanced Scorecard Method. The method was used for transformation of the vision and strategies into strategic goals and specific implementation projects within the framework of strategic management. In the 2005 the company was taken over by the company E.ON Czech Republic, s. r. o. and so we contacted this company. On the base of the short questionnaire we have find out that this company never used the BSC method in their Strategy Management. Here, we unfortunately could not determine whether the sustainability was integrated into Balance Scorecard. The website of the company E.ON Czech Republic, s. r. o. shows using of the social responsibility principle and also efforts to protect the environment.

The Four cases of the five have integrated the social and environmental concerns into the strategy and general management system on the basis of BSC and by the help of first Fidge [2002] approach mentioned above. This brief analysis confirms the statement of Zingales et al. [2002] that if organisation had already "digested" the importance of environmental and social issues for their development the BSC seemed to provide a good implementation mechanism to corporate-relevant issues through to the various layers of the organisation.

5. Conclusion

The issue of sustainable development of organizations is now very actual matter. Strategic management in relation to sustainable development acts as a relatively new trend. The topic is frequently discussed, the literature offers much theoretical knowledge, but the actual implementation of this strategy in practice is lagging. The sustainable development is perceived as an approach to looking only to protect the environment. Only a less fraction of the organization recognizes the social aspect as part of sustainable development.

The principle of Sustainability Balanced Scorecard describes one of the possible ways to implement sustainable development strategies for the organization. All proposed measures dealing with sustainable development enterprise must be assessed with regard to the three fundamental pillars of sustainable development. Approaches for sustainable development should integrate the strategic, tactical and operational management. After implementing a strategy in practice, the sustainable development is becoming an indispensable tool of the organization.

The term as sustainable development and sustainability are the task for further examination. Different users used different ways to explain these concepts, the general consensus of their significance is lacking, so it is very difficult to implement these processes into practice.

In the Czech Republic we are on the begining of managing and measuring sustainability performance which confirms the assessment above. Sustainability Development in our country is not the new or unfamiliar concept, but its approaches are not yet sufficiently integrated into standard business reporting, indicators, used methods and general management systems. In practise environmental issues or issues of sustainable development are monitored and reported for separately and simultaneously in addition to regular reports. The orientation to the stated areas can be traced to a large extent on the website of companies or organizations. However, standardized procedures in terms of our businesses and organizations are missing, but it may be caused by the fact that it is very difficult to apply them.

"Recent Accenture research 1 confirms that there is no single formula for sustainability success. Each organization embeds sustainability in the way that best addresses the needs of its various stakeholders and helps the entire organization achieve common, strategic business objectives". [Accenture, 2009] Consequently, it is necessary to carry more research works in this area.

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EVALUATION OF SUSTAINABLE REGIONAL LAND USE

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Abstract: The novelty in urban planning system in many Europeans countries is implementation of sustainable development principles implementation into urban planning process. The integral part of master plans and other urban planning materials nowadays is sustainable land use assessment. The question is – how is possible measure if the land use in predefined area heads towards or out of sustainability? The methodology for such assessment is not common yet. The following paper describes one possible methodological approach how to evaluate sustainable land use assessment. This methodological approach was created in our research team and with success used for sustainable land use evaluation in two very different territories in the Czech Republic – in metropolitan area of the city of Hradec Kralove and in peripheral agriculture territory (Polička).

Our methodology of sustainable land use assessment is based on the thesis that there is impossible to evaluate separately each pillar of sustainability (economical, environmental and social). The sustainability is necessary understand as one entity. Therefore the methodology is based on evaluation of interaction between pillars of sustainability:

Environmental x social (Env x S);

Environmental x economical (Env x Ek);

Social x environmental (S x Ek).

The basements for such evaluation are separate expert's SWOT analysis of territory, whose search and describe "main themes" in area. As a result of such experts SWOT analysis is Complex SWOT analysis with mathematical evaluation of interactions between pillars of sustainability. From the complex SWOT analysis is possible to deduce the global matrix of evaluation, which describes the results of interactions between pillars of sustainability. As a result from this global

Keywords: Land Use, Sustainability, Urban Planning, Urban Analytical Materials

1. Introduction

New approaches in regional planning directed at a greater interconnection of regional planning processes with principles of sustainable development also bring the need to evaluate sustainable regional land use. It is clearly a fundamental theme; however, in terms of broader application in practice it still lacks a methodological foundation. In the following text we present one of the methods on how to approach evaluating sustainable use and how to monitor it over time. The advantage of the described method is primarily noted in its simplicity, and that it is easy to implement

and comprehend. We present the method on examples from the Czech Republic, more specifically of the region of the town Polička.

2. Comprehensive expert SWOT analysis

Evaluation of sustainable regional development is an inseparable part of processing regional planning documents. According to existing legislative conditions, the foundation of these documents should be to conduct an expert SWOT analysis, or rather an analysis of weaknesses and strengths, opportunities and threats. Our presented method perceives a comprehensive expert SWOT analysis processed according to individual pillars of sustainable development, as the very foundation of evaluating sustainable regional development. Basically, what is important is that the processor of the "evaluation" assembles a micro-team of experts comprising of: an environmentalist (ecologist), social geographer, (regional) economist, regional planner (urbanist), and local environment expert. Each of these experts creates their very own SWOT analysis from the aspect of their own profession. Thereby, five specialised SWOTS are created which are further aggregated by a cluster analysis – combined into one analysis, where the frequency of themes, i.e., how many times what theme is repeated in the analysis, is evaluated.

To evaluate the SWOT analysis, the anticipated effects of individual themes on sustainable development are further methodically elaborated, not only in a traditional assessment according to individual pillars, but also implementing the method of interaction between individual pillars. As an ideal foundation you can use the DHV SAM methodology for this interactive methodology, modified and completed for the field of regional planning. DHV SAM methodology was developed for the field of strategic planning and is used here for evaluating the sustainability of Strategies for Brno – the strategic plan for the city of Brno. By applying this method, you can then take the individual areas from the SWOT analysis and classify them into the field of interaction between pillars of RP as follows:

Environmental x social (Env x S);

Environmental x economic (Env x Ec);

Social x environmental (S x Ec).

Apart from classifying the SWOT analysis areas (questions) into interactive relationships between pillars (what areas are mutually affected), the degree of impact is also assessed within the scope of this evaluation. With consideration to the complexity of assessing the region within the Analysis of Sustainable Regional Development, it is a good idea to implement the five-level scale of -2 to 2, thus including a negative scale as well. Classification of interactive relationships between pillars of RP and evaluation of the significance of areas in RP should once again be conducted using an expert method, one pillar at a time, and then aggregated.

Tab. 1: Example of a work version of a comprehensive SWOT analysis – expert evaluation of interaction between pillars of sustainable development

Strengths	Type of interaction Soc x Eco					
SWOT analysis theme	1. exp.	2. exp.	3. exp.	4. exp.	5. exp.	Aggregated value
High quality environment incl. preserved regional systems of ecological stability	0	0	-2	1	0	0
Good public transit transportation accessibility – (bus) – existence of stops, or their accessibility is good from the municipality, sufficient frequency of links	2	1	2	2	2	2
No greater environmental pollution is recorded in general	0	2	0	0	0	0
Existing possibility for the travel and tourism industry of natural and cultural character	2	1	1	2	1	1
Wealthy cultural life, offer of social and cultural events, and other offers for leisure time activities in the majority of municipalities of Municipalities with Extended Powers	2	1	2	2	1	2
Good natural immigration increase in 2003–2007	1	2	2	2	1	2
Low long-term unemployment and work opportunities in certain municipalities	2	2	2	2	2	2

Source: own composition

Interactive relationships of individual SWOT analysis themes between individual pillars of sustainable development assessed in such a manner are then processed into a comprehensive SWOT analysis with a total evaluation of interactions and degree of impacts on individual themes in the region – see following example in tab. 2.

Tab. 2: SWOT analysis of the overall evaluation of the interaction and the severity of the impact of individual subjects in the area

Weaknesses		Relationships between pillars		
	Frequency	Soc x Eco	Soc. x Envi	Envi x Eco
Insufficient facilities of regional technical infrastructure – water pipes, sewerage with connection to waste water treatment plant	5	-2	-2	-2
Insufficient quality of local roads and class III motorways	5	-1	-2	-1
Existence of brownfields incl. old ecological burdens	5	-1	-2	-2
Insufficient public transit transportation accessibility of certain municipalities	4	-2	-2	-1
Insufficient social facilities in certain municipalities	4	-2	-1	0

Source: own composition

SWOT analysis themes which repeat themselves more than twice are further processed into so-called main themes of the region, as they are "problems defined for solution" in the region this way.

For the model regional town Polička, it is the following 11 themes e.g.:

Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant;

Quality of class III motorways and local roads;

Disparity in the region's accessibility by public transit;

Accessibility of social facilities to all inhabitants of the region;

Preservation of landscape character;

Unsuitable conditions in the area of employment and job opportunities in the region, incl. wage development;

Gradient of development in the travel and tourism industry (development of ecotourism, agrotourism etc.);

Development in the number of inhabitants and their age structure;

Absorption capacity of the region in the area of acquiring financial sources for the development of municipalities;

Existence and other establishment of brownfields;

Quality and capacity of energy supply of municipalities.

Based on the evaluation of a comprehensive SWOT analysis and the main themes of the region it is then possible to create an overall evaluation table, which summarises the results of interactions between individual pillars and provides the degree of "sustainability" both within the scope of individual pillars and in consideration to their interactions.

Tab. 3: *Matrix of the evaluation of interactions between individual pillars of RP*

ENV	-	-	-	+	+	+	-	+
EC	-	-	+	-	+	-	+	+
SOC	-	+	-	-	-	+	+	+
	Significantly unsustainable	Unsustainable			Sustainable with reservations			Sustainable

The main themes of the region are then repeatedly evaluated in terms of relationships between pillars of sustainability and their actual state is determined in the solved model region on a scale of:

Significantly sustainable

Sustainable

Unsustainable

Significantly unsustainable

Tab. 4: *Evaluation of main themes of the region from the aspect of sustainability*

	Main themes of the region	Soc x Eco	Soc. x Envi	Envi x Eco	Evaluation
1	Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant	-2	0	-1	Slightly unsustainable
2	Quality of class III motorways and local roads	-2	-1	-2	Significantly unsustainable
3	Disparity in the region's accessibility by public transit	-2	-2	-1	Significantly unsustainable
4	Accessibility of social facilities to all inhabitants of the region	-2	0	-1	Slightly unsustainable
5	Preservation of landscape's character	1	2	2	Significantly sustainable

Using the above presented method you can repeatedly aggregate the results of the evaluation of individual main themes and, thereby, establish the overall state of the region from the aspect of sustainable development.

For example in the model region Polička it is possible to state that only one of the 11 assessed main themes of the region can be considered as significantly sustainable (the state of the landscape and quality of environment). The majority of other suggested themes of the region show an unsustainable tendency in either the social and/or economic pillars. The state in terms of transportation proves to be significantly unsustainable, and even the lack of investment in the region's technical infrastructure etc. is also significant. The evaluation also shows that, in general, the region of Polička can be viewed as a region with preserved, quality natural environment (significant positives in terms of the environment); nevertheless, with an inadvertent tendency to unsustainable development mainly in social and economic aspects. (In this regard, it is necessary to keep in mind that the principle concept of ongoing sustainable development is to have a balance between individual pillars and just preserved natural values on its own in the region cannot fulfil this concept.

3. Indicators of sustainable regional development

Another significant element which the evaluation of sustainability must obtain is the deduction of a system of indicators for sustainable development and unsustainability (within limits) for regional development, a description of the summary of indicators of sustainability, a definition of limits of sustainability with recommendation for monitoring other data, and parameters of regional development.

Therefore, in order to enable more than just the dynamics of regional development TOWARDS or FROM sustainability to be evaluated, so that even the impacts of planning procedures and other measures of public administration and local governments in the region can be evaluated, indicators of sustainable development, respectively sustainability, can be implemented. Thus, for the selected "main themes of the region" it is necessary to further determine indicators, with which the impacts of specific objectives of regional planning on sustainable development and development of the region as a whole will be evaluated.

Tab. 5: Examples of indicators for the main themes

Main themes of the region	Indicator
Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant	1.1 Number of inhabitants/homes connected to public water pipes
	1.2 Number of inhabitants/homes connected to sewerage with water treatment plant
Quality of class III motorways and local roads	2.1 Annual level of investments in repairing and constructing class III motorways and local roads in the region
	2.2 Number of kilometres and days per year when roads are not impassable (e.g. winter maintenance)
	2.3 Transit time IAD to Polička from individual municipalities

Source: own composition

A measuring unit was determined for each indicator, thereby, the source from where the monitored data can be obtained and the frequency with which the data should be monitored. When determining indicators it is recommended to base them mainly on existing data sources, e.g., the Czech Statistical Office, the Czech Hydrometeorological Institute, CENIA and others. The proposed indicators are monitored directly by the regional planning office only in cases where an adequate public source of information does not exist. The measuring frequency is aimed at a two-year interval – in relation to the update of regional analytical sources and evaluation of the analysis of sustainable regional development. And once again, only a handful of indicators should by followed annually; those indicators where the situation can change very dynamically, and where data is accessible from existing databases monitored by public administration (measuring noise, unemployment, numbers of persons accommodated overnight within the travel and tourism industry).

Tab. 6: Indicators and their technical parameters

Main themes of the region	Indicator	Unit	Source	Measuring frequency
Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant	1.1 Number of inhabitants/ homes connected to public water pipes	Number of persons/ homes	Čzech Statistical Office	2 years
	1.2 Number of inhabitants/ homes connected to sewerage	Number of persons/ homes	Čzech Statistical Office	2 years
Disparity in the region's accessibility by public transit	3.1 Transit time of PT to Polička and Pardubice from individual municipalities	Isochrone in time intervals of 20,40 and 60 min.	Calculation – regional planning office	2 years
	3.2 PT transport service (frequency of links)	Number of links/days	Calculation of municipali-ties/regional planning office	2 years

Source: own composition

Considering that the significance of indicators of sustainable development is to monitor the region's development in time, it is necessary to establish a time sequence for the indicator group and to measure and evaluate them at regular intervals of time. Only on the basis of real data and monitoring their development can real and realistic regional planning documentation be proposed, and can activities in the region be coordinated and used in the sense of sustainable development.

4. Conclusion

Evaluation of sustainable regional land use waits (not only in the Czech Republic) further lengthy development, as we are basically just at the beginning of this discipline. Practical experience is relatively limited thus far. Therefore, methodological manuals, recommendations and specifications have all the greater significance, as how principles of sustainable development in regional planning will actually be implemented depends on them. This article was also established as a contribution to the long and complex journey which is ahead of us.

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A RESEARCH STUDY CONDUCTED AMONG CZECH AND BELGIAN EXPERTS ENGAGED IN THE FIELD OF PRIMARY PREVENTION OF THE USE OF ADDICTIVE SUBSTANCES

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Abstract: This article focuses on the field of preventing risky behaviour, mostly the primary prevention of taking addictive substances by children from various minority groups. The author will explain research done, and also elaborate the opinions and experiences of some experts in drug prevention from the Czech Republic and Belgium. The article presents information gained from surveying these experts and it attempts to explain crucial elements in drug prevention, and also the form that drug prevention should take concerning minority children. Results could be a source for developing future drug prevention programs.

Keywords: Primary Prevention, Addictive Substances, Experts, Experiences, Minority Groups

1. Introduction

A lot of attention has been given to primary prevention in scientific literature. However, the end of the last century and the beginning of 21st century have brought mass dissatisfaction with research done in the field of drug prevention. One of the reasons for this dissatisfaction was in research done concerning minority groups. Most research done in various countries concerning drug prevention focused too much on groups of the majority people instead of focusing on minority groups. The result of this is little awareness of drug prevention approaches among minority groups. There is also little awareness of whether the approaches used for majority groups can still be valid for minority groups. The outcomes of research focussing on minority groups has been of little use. It could not be generalized, as it more often than not referred only to isolated groups of people [BOTVIN ET AL. 1995; BOTVIN ET AL. 2001].

There has recently been more reasearch done among minority groups. This article presents information from surveying drug prevention experts from the Czech Republic and Belgium. It attempts to explain crucial approaches and what form drug prevention should take concerning children from minority groups.

I will start by explaining the basis of drug policies for both countries and then I will explain the results of the survey I did of the experts.

2. Drug policy in the Czech Republic and Belgium

Belgium is a constitutional and a parliamentary democracy and consists of three language communities:

1. the Flemish Community (Dutch-speaking)

2. the French Community (French-speaking)
3. the German-speaking Community

The capital of Belgium is Brussels, which is officially bilingual, but mostly French-speaking.

The main goal of the Belgian drug policy is to prevent and limit risks for drug users, their social environment and for society as a whole. The national drug prevention policies are the responsibility of the so-called "Community Government" (Department of Public Health and Welfare), and thus, not under the Federal Government. The Flemish Community's most important official body to coordinate drug prevention policies is the VAD (Vereiniging voor Alkohol-en andere Drugproblemen). This cooperates very closely with the Federal and Community Governments and similar organisations in the French and German language communities [EMCDDA - Belgium, 2008].

Until the year 1989 the **Czech Republic** was known as the Czechoslovak Socialist Republic. Since 1993 the Czech Republic has been an independent state.

The emphasis of drug policies in the Czech Republic shifted from a policy of repression at the end of the 20th century, to a noticeably more tolerant approach recently. Support is given to prevent drug problems, especially problems from high risk use such as heroin and metamphetamine. These have huge health and social risks for the individual and society. The emphasis of drug prevention at Czech schools is on providing scientifically proven information to the students [MRAVČÍK ET AL. 2008; ÚŘAD VLÁDY ČR 2005].

The drug prevention policies are the responsibility of the Ministry of Education. The most important document relating to coordinating drug prevention policy is the "Methodical Guideline for the Ministry of Education". This defines basic guidelines for drug prevention policies and defines the Minimum preventive programme for integrating into the school curriculum. Schools invite various organizations such as civic associations, Pedagogic-psychological centres and the Police. These organizations implement prevention programmes. Outside school, non-profit organisation and the Police also organize drug preventive acitvities [METIDICKÝ POKYN 2007; MRAVČÍK ET AL. 2008].

Both the Czech Republic and Belgium use the new terminology based on Mrazek and Haggerty [in VAN DER KREEFT 2005]:

4. universal prevention means drug prevention for the general population who are not at special risk

5. selective prevention is focused on groups of people that are deemed to be at high risk of substance abuse (for example children of adult alcoholics)

6. indicated prevention is to prevent the onset of substance abuse in individuals who have early danger signs, such as falling grades, consumption of alcohol and other gateway drugs [VAN DER KREEFT 2005; METODICKÝ POKYN 2007; MRAVČÍK ET AL. 2008].

3. A research study conducted among Czech and Belgian experts engaged in the field of primary prevention

The theoretical part is followed by an introduction to a research conducted among Czech and Belgian experts engaged in the filed of primary prevention. The research focused on the opinions and concepts of these research workers, which are related to the field of primary prevention of the use of addictive substances designated for children coming from minority groups of inhabitants.

3.1 Description of the selected collection

Examined was a collection which consisted of 2 groups of experts, the first group being experts engaged in the field of primary prevention of drug use in Belgium. There were 14 experts altogether. The second group consisted of experts engaged in the filed of primary prevention of danger behaviour in the Czech Republic, with total number of 15 experts.

Collection of the data was realised in 2009 and at the beginning of 2010.

3.2 Method of data processing

The research questions were processed in two ways, both qualitatively and quantitatively. Qualitatively were processed those questions in which I have tried to specify particular fields in primary prevention. With the help of information which had been collected from these questions in a questionnaire were created particular categories, which were further described. The remaining empirical data necessitated, due to their character, quantitative approach. However, even in this method of data processing, the quantitatively assessed information of some questions had to be complemented, namely by certain other specifications, explanations and clarifications.

3.3 Selected topics of the research study related to primary prevention designated for minority groups of inhabitants

3.3.1 *The necessity to differentiate between prevention designated for minority groups children and prevention designated for majority groups children*

This section discusses the problem whether or not prevention designated for children coming from minority groups of inhabitants should be different from prevention designated for children coming from the majority group.

43% of respondents agreed on specific primary prevention for minority groups of children. Stated reasons for the creation of specific prevention for minority groups were the following:

- the groups differ from each other
- it is necessary to preserve cultural specificity
- the group of minority children faces different problems than the group of majority children
- in the groups, there are different values, norms, language, and dissimilar socio-cultural background

57% of respondents disagreed on specific primary prevention for minority groups of children. This opinion was supported by the following arguments:

- provided that cultural relevancy of the programme is ensured, there is no substantial difference between the groups
- it is necessary to modify the programmes culturally, to ensure cultural relevancy

Czech experts

13% of Czech experts expressed the necessity for specific prevention for minority groups of inhabitants due to the fact that there are dissimilar cultural particularities in different cultural groups.

The rest of the respondents (87%) disagreed with specific prevention for minority groups of inhabitants. Their views were supported with the following arguments:

- provided that cultural particularities are taken into consideration, there is not any problem
- there is no reference to the dissimilarity of children
- there is no selection
- the general programme may be supplemented with additional specifications designated for minority children, if necessary

3.3.2 *Prevention designated for minority groups children*

In this question, I have tried to reach suggestions of primary prevention designated for minority groups of inhabitants.

Belgian experts

When asking Belgian respondents about possible character of prevention designated for minority groups of inhabitants, I have divided their answers into the following categories:

- Cultural specificity – This category included topics related to the necessity of minority prevention being culturally specific, which means that the content should be culturally relevant. Approach of the people who put the prevention into effect should be personal and based on the knowledge of the culture.
- Language aspects - Language aspects were related to the dissimilarity of the language and to the necessity for language comprehensibility.

- Monitoring family relations – When putting the prevention into effect, it is recommended to involve parents of the children into the process.
- Not being different from the majority – Within this group occurred many codes which emphasised the necessity for identical prevention, both for the majority and minority, the necessity not to separate these persons even more from the majority, not to increase their stigmatization in this way. Furthermore, a comment was expressed that these persons live in the majority and therefore they should have certain knowledge about it.

Czech experts

After the analysis of the answers of Czech experts, I have isolated three categories related to prevention programmes designated for minorities:

- Socio-cultural specificity – Into this category were included codes emphasising the necessity for knowledge of the culture, the necessity of taking particularities of the minority within the particular programme into consideration, the necessity for adaptation of the programme to unusual features of the minority, the necessity for the programme to embrace cultural contents of the particular culture and the necessity for the particular culture and its dissimilarities to be adequately respected within the programme.
- Language aspects – The necessity for comprehensibility when intervening, or possibly also the necessity for language dissimilarity of the programme of prevention designated for the minority were emphasised.
- Living in the majority – The last category is related to the fact minority groups live in the majority. As a result, the majority should be thoroughly presented to them, minority groups inhabitants should be acquainted with the customs of the majority, and should get involved in the majority. Furthermore, typecasting of minority groups should be prevented by not isolating them from the majority. The last code was the information that prevention programmes could enable mutual enrichment of the majority and minority groups.

3.3.3 Language of prevention programme

In this section I have examined which language is preferred by prevention workers for prevention designated for minority groups of inhabitants.

Belgian experts

When choosing the preferred language, in which prevention should be realised, nearly half of the Belgian respondents (43%) decided for both the languages. Language of the minority group was preferred by 36% of respondents, language of the majority was favoured by 14% of respondents. These respondents emphasized the necessity for children to have at least basic understanding of the language used by the majority. One respondent was unable to decide which of the two languages is more appropriate.

Czech experts

47% of Czech respondents decided for the language of the majority. The experts who had been questioned made a remark that, provided that the precondition of understanding is not met, it is possible to summon an interpreter or make use of the language of the minority. 26,5% of respondents decided for the language of the

minority due to the necessity for thorough and good understanding. Equal number of respondents would choose the alternative of both the languages.

3.3.4 Separation of majority and minority children in the realization of prevention

This question was related to the possibility of organizing prevention designated for majority and minority children separately.

Belgian experts

Opinions of Belgian respondents on the possibility of separation of majority children from minority children in the realization of preventive measures differed. 64% of respondents decided for the option of not separating minority groups children from majority children due to the fact that both groups of children live together (one respondent further suggested that it is possible to add some isolated lectures to minority children, if necessary). 14,5% of respondents suggested that the children should be separated, equal number of respondents proposed that the children should be united for a part of the prevention programme, and separated for yet another part of the prevention. One respondent was unable to make a decision.

Czech experts

Czech experts agreed on the opinion that minority children should not be separated from majority children in the realization of prevention. This view was expressed by whole 100% of respondents. Their reason for expressing themselves in this way was the possibility of mutual influence, enrichment, and the effort to avoid typecasting. One of the suggestions mentioned the possibility of subsequent creation of a supportive group for minority children, if necessary.

3.3.5 Provider of prevention designated for minority children and his or her affiliation with the majority or the minority

The aim of the questions from this area was to examine who, according to the experts who had been questioned, would be the most appropriate person to realize the preventive programme among these children.

Belgian experts

The answers of Belgian experts, in which they responded to the matter of who should provide the prevention, included mostly opinions (64% of respondents) promoting the idea that the provider of the prevention should be a person from the majority. The necessary precondition is the fact that the person should be acquainted with the culture and at least rudiments of the language of the group. Furthermore, it should be a person who is trustworthy. 22% of respondents would consider a person coming from the minority a more appropriate provider, 14% of respondents would prefer if the prevention was realized by both persons, i.e. by a person from the majority and a person from the minority.

Czech experts

As far as views of the groups of Czech experts are concerned, 46,5% of respondents gave preference to a person coming from the majority, because, provided that only a

person from the minority was recommended, it would be an inclusion. The person from the majority should, according to Czech experts, be acquainted with the values and norms of the group. Equal number of respondents preferred both persons, i.e. a person from the majority together with a person from the minority, on condition that, in case of emergency if this solution was not possible, the respondents favour the member of the majority. Nevertheless, according to them both members may be useful and mutually enrich one another. One respondent considered a person from the minority as an appropriate provider of prevention designated for children coming from minority groups of inhabitants.

3.4 Concluding summary of empirical findings

In the following section, I will try to integrate particular findings into the context of identification of possible variables in primary prevention designated for minority groups of inhabitants. Another perspective of the concluding integration will be the perspective of potential dissimilar or coincident positions of Belgian and Czech experts on these questions.

Conceptions of prevention workers of how to realize **prevention designated for minority children** showed the following **basic concepts**, which the prevention programme should follow:

- *it should be culturally relevant*
- *it should take into consideration language aspects*
- *it should refer to the majority (as a matter of fact, the minority lives within the majority, it is not desirable to separate the minority any further)*

Both groups of respondents agreed on these concepts, while Belgian respondents further mentioned that parents should be involved in the prevention as well. Overall results and additional comments suggest that in the opinions of prevention workers does not occur any conception that would be completely different from the prevention designated for minority children, both groups try to bring it closer to prevention designated for majority children. Dissimilar factors should be the addition of cultural contents, and it is important to ensure comprehensibility of the message that is being conveyed and its understanding. Definition of these culturally relevant activities should be the object of further research.

Understanding of the language was also reflected in another researched area, which dealt with **the language recommended for the realization** of primary prevention for minority children. Czech respondents promoted, in accordance with the previously mentioned view, the language of the majority. Belgian respondents were inclined to the realization of preventive intervention between both languages, or were inclined merely to the language of the minority.

Another question is **appropriateness of separation of the majority children from the minority children** in the process of the realization of the prevention. Opinions of Czech respondents were again very identical – they agreed on the alternative that the children should not be separated. This alternative prevailed in the views of Belgian respondents as well. However, recorded were also opinions which supported

separation of the children, or rather that the children should be separated merely for some sections of preventive measures. The tendency not to separate the children is in accordance with recommendations of the SEARCH (2002) and SEARCH II (2004) project, which draws attention to another potential stigmatization of the children if they should be separated.

In the field of research concerning whether or not it is desirable for **prevention designated for minority children to be different from prevention designated for majority children**, in the opinions of the respondents prevailed the answer that it is not desirable. Nonetheless, some respondents decided for the alternative that it actually is desirable. This group was larger with Belgian respondents than Czech respondents, who maintained this position in isolated cases.

Ideally, **prevention** for the children coming from minority groups of inhabitants should **be provided** by a person who is an expert and comes from the majority. This view was expressed by absolute majority of Belgian respondents and nearly a half of Czech respondents, who furthermore equally often promoted the suggestion that both a person from the minority and a person from the majority should be present. This opinion occurred in the answers of Belgian respondents as well, although it was included in a noticeably smaller degree.

When Belgian and Czech respondents are compared, it seems that Belgians were less willing to adopt an identical attitude, to put their view to generalization, and give specific Fig.s concerning questions which necessitated certain generalization. As a matter of fact, greater emphasis on individual patterns of particular programmes in accordance with individual needs of the target group may possibly be inferred from this. In the Czech group the respondents were more open to generalization. However, even there occurred disapproving attitude of some respondents, who were still aware of the necessity for generalization and did not consider it fortunate. Nevertheless, in spite of their disapproving standpoint they attempted to generalize.

Moreover, views expressed by Belgian respondents further showed greater fragmentation of their opinions. On the other hand, Czech respondents agreed in a range of questions on a single expression. Furthermore, Belgian respondents manifested stronger tendency towards preventive programmes which specilized in prevention designated for minority children. Differences were apparent especially in the item examining the language, in which respondents advocated for both the languages or merely the language of the minority. Other dissimilarities were noticeable in the opinion whether or not it is necessary to distinguish primary prevention designated for minority children from prevention designated for majority children. Although most of the respondents were convinced that no distinction is required, relatively considerable group of respondents, to the contrary, supported this point of view. This phenomenon may be explained by the fact that Belgian respondents had much more experience of minority groups of inhabitants, whose culture is very dissimilar to their own and who come from various ethnic groups and socio-cultural backgrounds.

4. Conclusions

The research showed what variables occur in the opinions and experience of Czech and Belgian experts on the theme of primary prevention of the use of addictive substances designated for children coming from minority groups of inhabitants. These variables could be utilized in the construction of prevention programmes for minority children.

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ANALYSIS OF THE FORMS THE COOPERATION MICRO AND SMALL ENTERPRISES IN THE SLOVAK REPUBLIC

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Abstract: Small-sized enterprises, often attached to their day-to-day routines, become incapable to innovate their products and processes and thus to look ahead with the aim to seize new market opportunities. One of the possibilities how to reduce disadvantages coming with the limited size of enterprises, is their joining together in order to better face their competitors and to extend their life at the market as well. The cooperation strategy and creation of clusters of micro and small-sized enterprises create conditions not only for the better access to loans for their own expansion but also provide better possibility of the effective use of the market place.

Key words: Franchising, Cluster, Contract, Union, Cooperation, Micro and Small Enterprise, Co-operative

1. Introduction

The keystone of the successful cooperation consists in the mutually beneficial contract that could be in a written or oral forms. Once the business people agree among themselves to cooperate in one or several fields, usually it is very important to determinate the form of such cooperation. In the technical literature, the cooperation is often connected with the following forms: franchising, cluster, co-operative, association or union. Therefore, we have decided to characterize and analyze in more details their eventual appearance or application in Slovakia, especially within the micro and small – sized enterprises.

2. Theoretical identification of issue under review

Since from the legal point of view, individual forms of cooperation have different definitions, for example franchising is the system, the co-operative is legal form regulated by the Commercial Code, while associations and unions are, on the contrary, governed by the Civil Code and a cluster is currently defined only as a form of cooperation within the network or concentration of enterprises in the given region - in our view, it is important to differentiate the contents of single categories (there are no legislatively comparative terms or variants – for example the o co-operative could be associated in the cluster, etc.).

2.1 Theoretical identification of cooperation

In the area of economic theory, the problems of the cooperation identification were tackled by many foreign authors, for example:

Liestmann, V., Gill, C.,Reddeman, A., Sontow, K. [2], who in publication „Kooperationen industrieller Dienstleistungen" described cooperation as the achievement of the identical objectives together with the voluntary and legal independency of partners.

Czech and Slovak team of authors Hesková, M., a kol. [1], in their work „Kooperace" described the cooperation as the inter entrepreneurial cooperation that has even nine common features, i.e.: level of the cooperation within the aim accomplishment, it is linked with a number of participants, voluntariness of cooperation, definition of common targets, common ensuring of some functions, the level of economical freedom in the obtaining of legal independence, probability of partners failure, principle of arrangement of participating partners, legacy of cooperation.

Definition of the cooperation´s concrete forms:

a) Franchising

Speaking about franchising, the provider in the truest sense of the word, gives his partners some know-how in the form of non -patented practical knowledge that is a part of practiced experience and skills of provider while in general, this knowledge is /1/:

- confident (secret, closed) – that means generally it is unknown and not easily accessible to the other subjects. Each part of such know-how could be provided and used only with the approval of the franchisor;

- significant (important) – i.e. some information is inevitable from the point of view of service provision or sale of products to customers. Mainly it concerns the treatment of product designed for sale, sort and style of serving customers, administration, management, operation of the enterprise of beneficiary, etc. Know-how has to be useful to improve competitiveness, to enable increase productivity or make the penetration on new markets easier

- identifiable – that means the given know-how has to be sufficiently described and verified in details. The description of know-how could be included in the franchise agreement or in the other appropriate form.

Entrepreneur who wants to begin cooperating in the form of franchising should have matters clear as for as the qualification, age category, financial issues and other things that will be required from his partner. Although the process of building the cooperation could be adverse, i.e. the person who is interested in the franchise addresses the provider and the potential provider of franchising should prepare such kind of information in advance. In fact, it is necessary to provide the partner´s organisation with some kind of operational manual, handbook, or the „franchise bible" that should comprise following items:

1. File of marketing information about the market, its trends, entrepreneurial environment

2. Elements of the marketing mix

3. Operational handbook

4. Legal terms and supervision operations.

In the franchise of services, first of all, it is the transmission of the individual concept of service, know-how, eventually the style of service provision and therefore, in its way, it is specific. We can speak about the:

- Capital - intensive services – for example franchising of hotels or restaurants,

- Tangible services that need lower investment for the adjustment of material, reconstruction of gardens, houses etc.,

- Services of the personal nature – healthcare facilities, educational institutions, beauty salons etc.

Legislation of the SR does not explicitly regulates the franchise agreements. These are mainly some combined contracts of the business-legal nature the basis of which is the know-how license agreement, the trademark license agreement and distribution contract. They are based on the identification of the territory in which the franchisee has the right to operate within the franchising agreement. Generally, while concluding the franchise agreement, regulations stipulated in the Code of Commerce are necessary to be followed.

b) Cluster

A networking nature of entrepreneurship represents the relatively new economical concept (among the first who started to use it was Porter in the 1990s) for the description of connecting enterprises. It includes elements of cooperation, geographical concentration, specialisation and often institutionalisation since usually, in addition to the enterprises among members are universities or research institutions, too.

European Commission in its publication Regional Clusters in Europe mentioned the hierarchy of three concepts – starting with regional clusters up to regional innovation system.

Table 1: Classification of cluster/4/

Hierarchy of the cluster concept	Definition and differences
Regional cluster	Concentration of enterprises that cooperate among themselves in the same or similar areas in the small geographical area.
Regional innovation network	More organized cooperation (agreement) among enterprises promoted by the confidence, standards and conventions that actively encourages innovation activities of enterprises.
Regional innovation system	Cooperation also among enterprises and various organisations aimed at knowledge and innovation development and their differentiation.

Source: European Commission, Brussels, 2002

Cluster could be established by different interest groups, for example:

- Representatives of the individual participating companies,

- Representatives of the educational and research institutions,

- Representatives of the governmental or regional institutions,

- Representatives of the financial sector (investors, financial institutions...) and others.

Companies can find "the common language" in different areas. Among the most frequent one could mention marketing and common business policy, research and innovation, human resources or lobbying.

c) Co-operative

Co-operative is being described as a society of unclosed number of persons established with the aim of doing business or satisfy the economical, social or other needs of its members. Often, there is especially other part, that mean satisfaction of the members need, highlighted in cooperative system, to the material stimulation as the reason of creation and function. This is the reason why co-operatives are, in their nature, considered as the specific types of enterprises.

In comparison to other types of companies, that have be for the future entrepreneurs more advantages or their establishment is supported by the other different subventions or activities in general from the state or local governments, co-operatives (at least in Slovakia) have to had found their own way of creation and development and their setting up has been always more the reaction on the need of individual founder than the initiative from top-down.

In comparison with cluster, within the cooperation, the co-operative has individual status in the fact that although it is also the regional activity there is not need attendance of research institutions, universities or local authorities [3].

International Co-operative Alliance is the highest organisation that join the co-operative umbrellas from the individual countries. It regards co-operatives as [5]:

- Competitive organisations - they are market leaders in many countries and areas

- Self- help enterprises not charities, supporting not subsiding

- They create new jobs - more than 100 millions worldwide, more than international corporations, etc.

d) Union, alliance, association

The legislation of the Slovak Republic uses the term union for the description of a very extensive scale of legal subject that have so wide but not always clear determined regulation of their legal statement, process and purpose of establishment or conditions of doing business.

Together with this, the legal form „association" has the real general character. Association could be determined and characterized according to various criterion and aspects. The most important are mentioned in the following table.

Table 2: Division of associations

According to the object of joining	Association of people (personal corporation) – principle of membership	Association of property – property principle
According to the legal entity	Association of the legal entity (possibility to act independently and to deal with third parties, has the property liability, rights and responsibilities)	Association without the legal entity statement or the specific association of persons (usually with the concrete economic interest) established on the basis of agreement on partnership according to § 829 – 841 of the Civil Code. Founders of such association could deal under the common name (§ 10 part. 4 of the Civil Code)/7,8/.
According to the way of establishment	Private - legal – there is an initiative of the founders by the one or more sided operation (contract).	Public legal – they are established on the base of law that also determinates the other things as the head office, bodies, way of establishment etc./6/
According to the purpose of their establishment	With the purpose of doing business (mainly personal business companies)	With the other purpose than that of doing business

Source: Own work, Bratislava 2010

Major part of associations are of personal or property, independent (nonpolitical), nonreligious, individual unions with the full legal personality, established on the voluntary decision of their founders.

2.2 Comparison of particular cooperative forms – the Slovak Republic

As is mentioned above, each cooperative form is characterized by different symbols and specifications. In our research, we decided these according to us the most used forms of cooperation of micro and small enterprises, compare – you can see the result of comparison in the table no 3.

Table 3: Comparison of possible cooperative forms in Slovakia (according to legislation in force)

Nature of cooperation	Initial investment (costs of founding the cooperation)	Permanent costs	Independent negotiator	Possibilities and advantages of this cooperation form for small enterprise
Cluster	Single fee (e.g. registration by notary)	Cost of the administration (general expenses)	Negotiator required	Limited because of the size of companies
Franchising	Purchase of know – how	Trademark rental	Not required	Limited – depends on the provider
Co-operative	Membership fee	Membership fee, administration cists (general expenses)	There is no-one (elected bodies)	Depend on the statute (mostly from the membership fee)
Union, association	Membership fee	Membership fee	There is no-one (elected bodies)	Depend on the statute and the number of members

Source: Own work, 2010

Analysis of the possible forms of cooperation in table No 3 shows individual specifics for each form of cooperation. Even though agreement seems to be the easiest and the most cost effective at the first glance, it has some disadvantages – for example limited number of partners, necessity of amendments to the agreement in case of any slightest modification of the terms, huge demand on coordination, etc.

Other forms, be it co-operative or franchise, are guided by approved statutes or by franchise agreements, which might be limited in some cases but, on the other hand, they allow for very simple and comfortable arrangements of the business and its operations without massive „navigation toward the market" (many steps are completed by the franchisor).

While co-operative needs more adjustment among its partners, it has advantages of limited liability of its individual members and also advantages arising from a general idea of the cooperative movement based on the principle of self-help that in fact is synonymous with the mutual assistance leading to cooperation.

The last of the analyzed forms are unions, associations or alliances. All these names are related to cooperation because their common feature is to affiliate something (and this will be absurd without cooperation). Contrary to an agreement, this form of cooperation connects more than two partners, although this is not a precondition. However, entrepreneurs approached in our survey mentioned that three or more partners are an ideal number for cooperation. In comparison with the co-operative, this form has the advantage in lesser involvement of the member into the activity of

organization (union, association, alliance). Member pays the membership fee and obtains requested information and has a possibility to participate in organization's activities - conferences, exhibitions etc.

Contrary to franchise, individual member of union (association, alliance) is not required to keep uniformity imposed by the provider. According to our opinion, these facts should be considered by survey participants mentioned above.

3. Analysis of individual forms of cooperation in the Slovak Republic – selected data

Analyzing specific forms of cooperation, we have also completed research regarding entrepreneurs´ opinions on selected areas of services. Out of the total number of 93 responded questionnaires we have evaluated 71.

This research has been done on micro- and small enterprises in all regions of Slovakia in the period from September 2009 to December 2009. For our research we selected a specific area of services – providers of wellness services, mainly:

a) cosmetics services,

b) saunas,

c) solar services,

d) hairdresser and barbers services,

e) visage.

f) manicure and nail design,

g) chiropody,

h) permanent make-up,
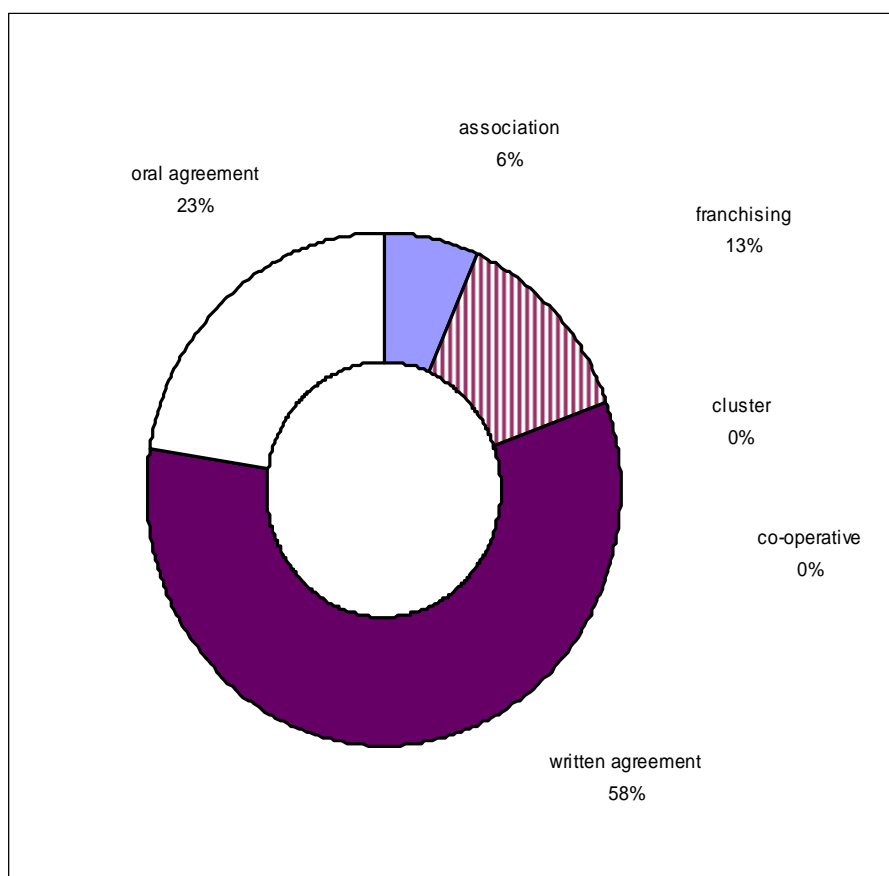
i) other (for example massage).

Fig. 1: Selected areas of services - forms of cooperation in Slovakia

Source: Own research, SR, 2009

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he graph above shows that:

- prevailing form of companies' cooperation is based upon written agreement (58%),

- followed by verbal agreement (23%),

- franchise agreement (13%) and

- some other form (6%).

No entrepreneur has mentioned co-operative or cluster as a form of cooperation used nowadays. According to our opinion, the reason is in mindset of the people and relates to past: co-operative as this word and this form of business is in Slovakia firmly connected to the previous socialist economy period (agriculture co-operatives in particular), so it is perceived very negatively. However, we are surprised of ignorance and disbelief in new and worldwide successful forms of cooperation as well as responses when clusters are concerned.
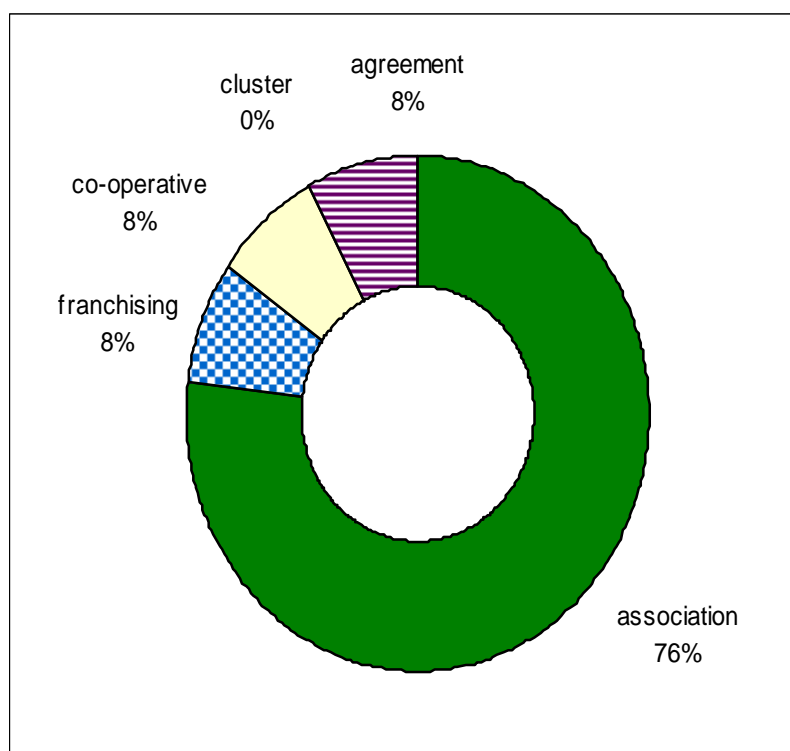
Fig. 2: Research results - forms of ideal cooperation in SR (selected area of services)

In the second question: „What will be the form of ideal cooperation for you?" (the question asked the survey participants who indicated not to have any cooperation at the moment) we can observe increased interest in cooperation in the form of association (76 % of survey participants). As we can see, written form of cooperation agreement is interesting for only 8% of survey participants. The other forms mentioned were franchising - 8% and co-operative – also 8%. Cluster did not receive any positive responses. We deduct that this situation is due to lack of information about this form of cooperation.

In the third question: "Interested forms of cooperation" were results: Only 8 per cent of respondents are interested in a written form of the contract (agreement). Concerning the other forms of cooperation, the 8 per cent of respondents has in mind the form of franchising and 8 per cent of respondents stated a co-operative society. The form of cluster has not received any percentage. In our view, lack of interest towards this form of cooperation originated rather from the absence of information about this possibility to cooperate.

Speaking about the number of members that are involved in cooperation – meaning connection of at least two partners, which means at least two cooperative activities - was mentioned in 21 % responses. Generally smaller cooperative teams (that means less than 5 members) were mentioned in majority of the responses (totally in 73 %). It is very interesting that only 11 % could imagine cooperation with 10 and more companies (16 % of survey participants accept the possibility of cooperation with 6 to 10 partners).
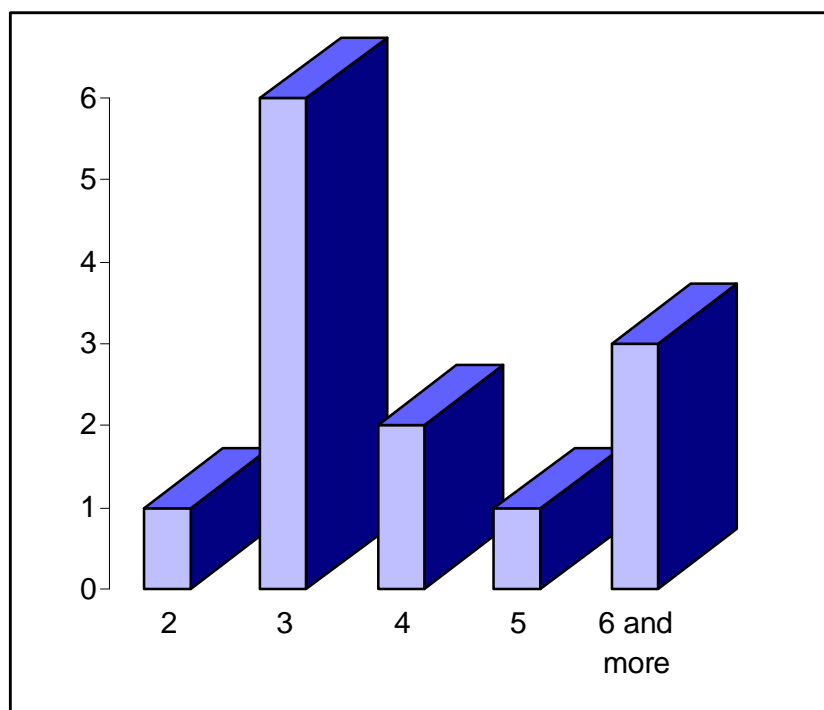
Fig. 3: Selected area of services – ideal numbers of the members of a cooperative

According to responses regarding "ideal number of cooperating participants", almost half of the survey participants selected "3" as an answer. Most propably, it arises from the fact that odd number of members could be better in voting and the not high number of members is more effective for the communication. According to the 15 % of survey participants the ideal number is 4; while 23% of interviewed entrepreneurs think that ideal number is 6. This perception is in contradiction to the reaction of survey participants who already cooperate and who, in majority (73%), think that ideal for the cooperation is a team that consists of more members.

4. Summary

Enterprises that plan to cooperate with another company or companies have a possibility to choose from various forms of cooperation nowadays. Whereas the classic agreement or contract are the most prevalent and known forms of the formal adjustment of cooperative relations, we can see also other forms, specific in their characteristics and advantages - or disadvantages - for participating parties.

According to perception of entrepreneurs, some forms of cooperation are appealing - for example co-operative, while others are to them new and unknown - e.g. cluster.

More preferred forms of cooperation are following present trends – for example franchising. In spite of everything that has been mentioned, micro- and small enterprise could select the form that will be the most suitable for their needs and requirements.

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ARE HEDGE FUNDS A POTENTIAL THREAT TO FINANCIAL STABILITY?

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Abstract *This study aims to examine whether hedge funds are a potential threat to financial stability. In the light of financial crisis and systemic risk, the studies shows that hedge funds are not responsible for financial crisis. There is no evidence that hedge funds were a cause of financial crisis. In addition, hedge funds is not related to systemic risk, directly. Therefore, hedge funds are not a main culprit of financial instability in market disruption.*

Keywords: *Hedge Funds, Financial Stability, Systemic Risk, Financial Crisis*

1. Introduction

The hedge fund industry has expanded rapidly over the past decade. The growth in this industry has provided benefits to the financial system by contributing to increased liquidity in financial markets and possibly by boosting the pace of financial innovation. [1,11] A hedge fund's goal is to remit to those investors a high rate of return on their capital contributions through sophisticated trading strategies in securities, currencies, and derivatives. [21] In addition, hedge funds play a valuable arbitrage role in reducing or eliminating mispricing in financial markets. They add depth and breadth to capital markets. By taking risks that would otherwise have remained on the balance sheets of other financial institutions, they provide an importance source of risk transfer and diversification. [14]

However, there has been increased debates over hedge fund regulation, and hedge funds have been placed to the center of financial instability. Because some hedge funds can have the potential to disrupt the functioning of financial markets. According to some observers, hedge funds are responsible for large and sometimes disruptive market movements in vulnerable economies. With the expansion of the industry has come increased concern about troubles in the hedge funds are a potential threat to financial stability.

In this regard, this paper aims to examine whether hedge funds are a potential threat to financial stability. This paper will also provide a contribution for debates related hedge funds regulation because there is not a study assessing the relationship between hedge funds and financial stability in terms of financial crisis and systemic risk as a whole. To achieve this aim, the paper is organized as follows. Section 2 provides the characteristics of hedge funds. Section 3 assesses the relationship between hedge funds and financial stability in terms of financial crisis and systemic risk. Section 4 provides a conclusion.

2. The Characteristics of Hedge Funds

2.1 The Definition and Size of Hedge Funds

Before hedge funds are discussed, they must be defined clearly. There is no legal or even generally accepted definition of a hedge fund, although the US President's Working Group on Financial Markets [24] characterised such entities as *"any pooled investment vehicle that is privately organised, administered by professional investment managers, and not widely available to the public"*.

Because of their nature, hedge funds are restricted to large-scale investors. Historically, they have attracted high-net-worth individuals and institutional investors, and the array of the latter has widened significantly in recent years to include pension funds, charities, universities, endowments, and foundations. [23] Typically, the fees of fund managers are related to the performance of the fund in question and managers often commit their own money. In addition, they are an unregulated or loosely regulated fund which can freely use various active investment strategies to achieve positive absolute returns. [13]

By the end of 2007, the global hedge fund had about $ 2 trillion in assets under management. However, because hedge funds are not required to register with any financial regulator or supervisor, these numbers can only be estimated. According to graph 1, hedge funds had less than $ 500 billion in 1999 in assets under management, and the $ 1.9 trillion mark was passed in 2007.
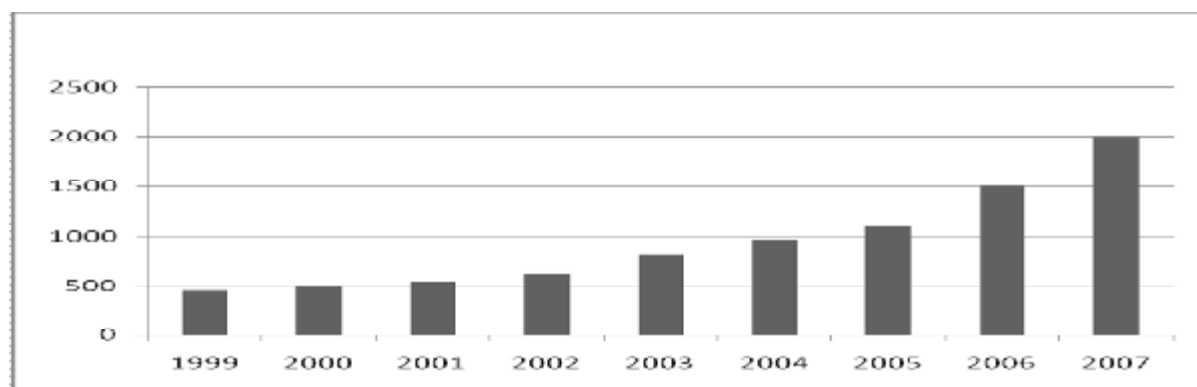

Fig. 1: The Size of Hedge Funds, 1999-2007, Billion Dollar

Source: Hedge Fund Research (HFR), 2Q 2007 Industry Report.

Hedge funds are also dominant players in several markets: in 2005, they accounted for 89 percent of U.S. trading volume in convertible bonds, 66 percent of volume in distressed debt, 33 percent of volume in emerging market bonds and in leveraged loans, 20 percent of speculative-gradebond volume, and 38 percent of credit derivatives volume. By early 2006, their estimated share of credit derivatives trading had increased to 58 percent. [19] As these Fig.s suggest, hedge funds are engaged in a broader range of activity than in the past, especially in the trading of credit instruments.

In addition, estimates of hedge fund survival rates vary between 85 percent and 95 percent per year, depending on the year and the style of fund. A study [7] reports that 30 percent of funds do not make it past three years, and 40 percent of funds do not survive past the fifth year. The average one-year attrition of hedge fund is less than 4 percent. [4] Another study [15] also reports that nearly 90 percent of dead funds in their study were adequately capitalized at the time of closure.

Hedge funds can provide value to high net worth individuals with a high absolute return and provide even more value to institutional investors as an alternative asset class with lower correlations to other asset classes. A recent research has substantiated the value enhancing benefits of hedge funds for institutional investors over high net worth individuals. Within the hedge fund industry there are many different strategies including fixed income arbitrage, equity market neutral, convertible arbitrage, merger arbitrage, distressed securities, event-driven, macro, sector, equity hedge, emerging market and short selling. Each strategy has its own risk and return profile. Additionally, each fund has its own lock-up period and minimum initial investment. [8]

2.2 Benefits and Risks of Hedge Funds

Hedge funds are generally regarded as investments which offer risk and return opportunities that are not easily obtained through traditional long-only stock and bond investment vehicles. Such opportunities are made possible primarily through the ability to participate in a wide variety of financial products and global markets not available to the traditional investor, as well as through their ability to take both long and short security positions. Hedge funds are therefore capable of providing more opportunities to profit within various economic environments. [6]

Their active role in markets makes them much more important than their size alone. The input of hedge funds is very significant, as they often take alternative market views, can leverage their positions and change their portfolio composition much more frequently than traditional funds. They thrive on perceived inefficiencies by arbitraging away price differences for the same risk across markets. In this way, hedge funds contribute to the price discovery process. As a result, hedge funds have contributed to the further integration of financial markets. [13]

Hedge funds also tend to be risk-takers in a number of markets. The credit derivatives market is just one example of such a market. According to the British Bankers' Association, hedge funds' share as sellers in the credit derivatives market has surged from 5% in 2001 to 15% in 2003, while their share as buyers rose in the same period from 12% to 16%. According to another survey by Greenwich Associates, hedge funds account for 15-30% of the trading volume in each of the high yield bond, credit derivatives, collateralised debt obligations, emerging bond, leveraged loans markets and for more than 80% of trading in distressed debt. [13]

Hedge funds have become an important source of risk capital. In the fledgling market for insurance-linked securities such as catastrophe bonds and life bonds, hedge funds have become increasingly active investors. Some funds have been launched to invest exclusively in insurance risk. Over time, hedge funds will become an

increasingly important financing source for insurers, complementing reinsurance in areas such as peak catastrophe risks, for which industry capital is insufficient. On a larger scale, hedge funds absorb credit risks from other financial institutions, notably banks, thereby distributing these exposures across a broader range of investors holding diversified portfolios. [10]

The reality is that hedge fund activity makes financial markets more efficient and more liquid, as has been widely recognized by the U.S. Federal Reserve, the Security Exchange Comission and the IMF. Not only do hedge funds contribute to the adjustments of markets when they overshoot, they also help banks and other creditors unbundle risks related to real economic activity by actively participating in the market of securitized financial instruments. And because hedge fund returns in many cases are less correlated with broader debt and equity markets, hedge funds offer more traditional investment institutions a way to reduce risk by providing portfolio diversification. [23]

Hedge funds' activity may lead to lower market volatility because they are less likely to engage in "momentum trading" (i.e. buying into a rising market and selling into a falling one) and impose longer redemption horizons on their investors. Another element that may support this argument is that they are willing to put their capital at risk in volatile market conditions so that market shocks can be absorbed. Through their ability to engage in short-selling and to take contrarian approaches, they may also act as a counter balance to market herding. [13]

The improved risk sharing that hedge funds facilitate can enhance market stability. By assuming some of the escalating volume of credit and catastrophe risks in the market place along side banks and insurers, hedge funds join other institutions in serving as shock absorbers, potentially limiting the spread of damage from recessions, credit crises and natural catastrophes. Moreover, hedge funds can help improve market stability in tumultuous times. When liquidity dries up and other market participants avoid trading a particular security, hedge funds often enter the fray, in areas such as distressed debt. Increased trading contributes to market liquidity, which causes a reduction in the risk premia associated with financial assets. This ultimately means a lower cost of capital. [10]

However, hedge funds can also carry some risks. The near-collapse of Long Term Capital Management underscores how hedge fund activities can harm financial institutions and markets. A sequence of negative events can start with losses on leveraged market positions. Liquidity shortages then come into play, which are further exacerbated by asset illiquidity in stressed markets. Thus, leveraged market risk can, if not supported by adequate liquidity reserves or borrowing capacity, force a fund to default on its obligations to prime brokers and other financial institutions. The spill-over effect on markets depends on the fund's size and the relative importance of its positions in certain markets. The sequence of negative events can also be triggered by mass exits from markets where hedge funds and proprietary trading desks of large banks have taken relatively similar positions. The concentrations, linkages and spill-over effects could therefore ultimately lead to a systemic crisis. [13]

Hedge funds could affect financial markets either by providing the impetus for a shock or by augmenting the effect of a shock originating elsewhere. Part of this

concern results from the fairly extensive use of leverage by hedge funds as well as the imprint made by the spectacular collapse of Long Term Capital Management. [18,11]

Poor returns and investment outflows are associated with increased likelihood of failure. A study [5] finds that restrictions on the ability of investors to withdraw funds and performance incentives for managers can reduce failure probabilities. In addition, hedge funds are more likely to fail in periods when U.S. stock markets are declining and the dollar is depreciating. Volatile markets are bad for some funds, while other funds appear to benefit from turbulent markets.

Another concern that often arises is whether hedge funds stabilise or destabilise financial markets. In this context, two forms of trading can be distinguished: positive and negative feedback trading. [13] The former refers to the buying of financial instruments after price increases and selling after price decreases. This practice can amplify price swings and lead to overshooting or bubbles. Positive feedback or momentum trading can be generated by dynamic hedging, stop-loss orders, similar position-taking by other market participants, forced liquidations related to margin calls or just by simple trendfollowing strategies. By contrast, negative feedback or contrarian trading can have a stabilising influence on markets.

The most tangible risk is a high degree of leverage. Although this may make it possible for a fund to make large profits, it also increases the risk that a fund will collapse if it makes the wrong investments. The high degree of leverage entails risks for the counterparties of the hedge funds and the failure of a fund may therefore have contagion effects in the financial system. The hedge funds' use of derivatives also entails certain risks. Derivatives make it possible to adopt large positions on the market for a small capital contribution, which gives the manager additional leverage. Derivatives can, however, be used for two purposes: for speculation or for risk protection. Hedge funds use derivatives for both these purposes. The use of borrowing and of derivatives can contribute to greater fluctuations in share prices as it leads to the adoption of larger positions. The more liberal investment rules for hedge funds can also be used to reinforce market movements for speculative purposes, so-called positive feedback trading. [22]

3. Hedge Funds and Financial Stability: Financial Crisis and Systemic Risk

Following section assesses the relationship between hedge fund and financial stability in terms of financial crisis and systemic risk.

3.1 Hedge Funds and Financial Crisis

One question that often arises is whether hedge funds lead to a crisis in financial markets. Several research studies have found no evidence that hedge funds were a cause of the Asian crisis or other world economic turmoil. The unwinding of "carry trades" did contribute to Europe's 1993 exchange rate mechanism crisis, the 1994–95 peso crisis, and the 1997–98 Asian crisis. Studies suggest that herding occurred during the 1992 exchange rate mechanism crisis, while studies of the 1997 Asian crisis indicate that hedge funds provided liquidity and took opposing positions in many markets, reducing volatility and mitigating the fall in asset prices. The 2006 collapse of

Amaranth shows that other hedge funds may also view distressed sales as a buying opportunity and provide liquidity when it is most needed. [20] But the key problem underlying these events was the misalignment of exchange rates with respect to their fundamentals—not the intervention of financial market participants. Eichengreen found that hedge funds, by being willing to take the risk of buying some of the assets that had already fallen significantly in price, contributed to limiting the downfall during the Asian crisis and advancing the recovery.[9]

Researchers [3] also investigated whether hedge funds were responsible for the crash in Asian currencies in late 1997 in detail. The authors estimate the changing positions of the largest 10 currency funds in one currency—the Malaysian ringgit—against a basket of Asian currencies. The authors tested the hypothesis of currency manipulation by a fund by regressing the monthly percentage change in the exchange rate on fund currency exposure. Results show that exposures vary widely, both positively and negatively. The hypothesis of zero exposure can be strongly rejected for only a few periods; nevertheless, exposure seems not to correspond to currency shock. The authors cite several instances where the aggregate exposure of funds to the ringgit was highly positive or negative, though the exchange rate did not change at all. Conversely, from June through September 1997—a period when the net hedge fund exposure was negative—the ringgit dropped by 10 percent. Regression results seem to corroborate this circumstantial evidence that hedge fund managers in no way affected the ringgit. Regressions on a basket of Asian currencies—those of the Philippines, Taiwan, Thailand, Japan, Malaysia, Singapore, China, and India—also indicate that a change in the value of the currency basket was unrelated to any unusual exposure by the funds. Moreover, the top 10 hedge funds were buying into the ringgit as it fell in late summer and early fall 1997.

Similarly, the International Monetary Fund (IMF) found no evidence of hedge funds abnormally profiting from the Brazilian (1999), Turkish (2001), and Argentine (2001) currency crises. Rather than driving these currencies downwards, funds were engaged in negative feedback trading, which might actually have improved market liquidity and stability. [10]

The discussion concerning hedge funds and financial crises has arisen once again in connection with the current turmoil. One example is from the beginning of 2007 when Bear Sterns' hedge funds collapsed. These funds had highly leveraged portfolios with credit instruments related to the US market for housing bonds. According to a research [22] the crisis has affected them more than they have affected the crisis. The main argument for this is that the hedge funds have experienced more problems in handling this crisis than previous crises. A number of factors that distinguish the current crisis from previous crises and that have contributed to the poorer return for hedge funds such as changes in regulation, broad decline in asset values. The downturn has affected most asset types and markets, which has reduced the effect of diversification. In addition, the shortselling of shares was prohibited on many markets in September 2008 with the aim of preventing an acceleration of the fall in share prices. The cost of this ban was, however, that strategies that employ shortselling, irrespective of market conditions, were affected. This was unfortunate because, in the long run, restricting the possibility to conduct arbitrage reduces the effectiveness of the financial markets. The fact that hedge funds have been hit by the latest crisis does not, however, rule out that

they have played a role in the development of the crisis together with banks and other institutional investors.

According to another research [17], hedge funds were significant as the shock spillover channel and the amplifier of the global financial crisis. However, any conclusion viewing hedge funds as the main culprit of the global financial crisis is nearsighted. The banking system represented by hedge funds was a byproduct of the U.S. Glass-Steagall Act and other efforts in developed economies to increase the transparency of and toughen regulations on the banking system based on experiences with the Great Depression in the 1930s.

The above studies shows that hedge funds are not responsible for Asian, Brazilian, Turkish and Argentine financial crisis. There is no evidence that hedge funds were a cause of these financial crisis. In addition, although hedge funds are significant as the shock spillover channel of global financial crisis, hedge funds are not major reason in global financial crisis.

3.2 Hedge Funds and Systemic Risk

Another interesting question from a financial stability perspective is whether hedge funds could potentially pose a systemic risk. Policy-makers and regulators have been examining both direct and indirect channels [20]:

A direct channel occurs when a collapse of a hedge fund holding large positions leads to forced liquidations of those positions at fire-sale prices. The impact on asset prices may be amplified through the use of leverage – whether created directly through the use of margin or indirectly through the embedded leverage of derivative positions. Such a disorderly unwinding could generate heavy losses to counterparties and ultimately contribute to severe financial distress at one or more systematically important financial institutions.[20] Commercial banks and securities firms are directly linked to hedge funds through their counterparty exposures, for example, short-run financing for leveraged positions, prime brokerage activity, and trading counterparty exposures in over the- counter and other markets. If a bank has a large exposure to a hedge fund that defaults or operates in markets where prices are falling rapidly, the bank's greater exposure to risk may reduce its ability or willingness to extend credit to worthy borrowers. [19]

During the collapse of Long Term Capital Management (LTCM) in the autumn of 1998, 17 counterparties, mostly large banks, would collectively have lost between USD 3 and 5 billion had LTCM not been bailed out by a group of its counterparties. Many of the counterparties had direct exposure to LTCM, mostly arising from over-the-counter derivatives. [10]

In the indirect channel, a forced hedge fund liquidation exacerbates market volatility and reduces liquidity in key markets. Systemic risk can occur when correlations in asset classes increase during times of stress, or when the potential for herding amplifies market movements. [20] Large commercial banks and broker-dealers provide substantial liquidity to the hedge fund sector by absorbing the counterparty credit exposure of trading positions, collateralizing financing, providing contingent credit lines, and making direct equity stakes. A hedge-fund-induced shock to a

commercial bank could have knock-on effects if that bank or other banks reduces the provision of liquidity to other hedge funds or to other banks, and thus further disrupts financial markets and credit provision. [19]

In addition, policy-makers and academics have identified the following factors that might contribute systemic risk: excessive leverage and liquidity shocks. One feature of hedge funds on which particular attention has now been focussed is that of leverage. Leverage can be defined in two ways: (i) balance sheet leverage, which is the ratio of assets to net worth; and (ii) as a form of risk, in which leverage is measured as economic risk relative to capital Leverage relates equity capital to trading exposures. When leverage is excessive, even a moderate price swing could force hedge funds to liquidate positions to meet margin calls. As hedge funds seek to sell their most liquid assets first, shocks in one market might lead to ripple effects across markets. [13]

The 1998 collapse of Long-Term Capital Management provides a striking example of the impact of excessive leverage. The report of the President's Working Group on Financial identified excessive leverage as the key factor contributing to the collapse of LTCM. [20] LTCM managed assets in excess of 30 to 50 times its capital. It employed extreme leverage in part because its reputation as an elite hedge fund resulted in generous lending terms from commercial and investment banks. [25]

Second feature of hedge funds is liquidity. Liquidity is a key concept in the debate about systemic risk. Funding liquidity refers to the ability of an investor to raise cash to meet its financial obligations. A hedge fund may have liquidity problems even though the financial markets themselves are liquid. Financial institutions go bankrupt because of funding illiquidity. Funding illiquidity occurs when an institution runs out of cash and it cannot raise additional financing, even though it may have positive equity.

LTCM and Amaranth were brought down by funding illiquidity: their positions had a positive mark-to-market value, but they were unable to meet margin calls. LTCM was the victim of a market-wide liquidity shock with systemic effects. The devaluation of the Russian rouble and Russia's default in August 1998 caused a sharp reduction in market-wide liquidity, an increase in risk aversion, and a flight to quality. Bond-trading desks and investors sold high-risk, illiquid securities and bought low-risk, liquid securities. The high degree of leverage employed by LTCM amplified its losses. Amaranth Advisors LLC was the victim of funding illiquidity that was specific to its trading strategy. An unexpected fall in the price of natural gas futures for delivery over the winter caused Amaranth to lose more than $2 billion. When Amaranth could not meet its margin requirements, its positions were sold at fire-sale prices. While volatility in the natural gas market increased, other markets were relatively unaffected. [20]

Significant experience about systemic risk is latest global financial crisis. According to a research [7] sistemic risks contained in the banking system is one of the most important aspects of the current global financial crisis. As hedge funds are the part of banking system, hedge funds have contributed to the spillover of the shock to a wide range of areas and to the amplification of losses. But main problem is attributable not to the hedge fund business model itself, but to the fast increase in the entire

banking system's exposure to risks of hedge funds that came as hedge funds expanded rapidly on inflow of money from throughout the world.

LTCM and Amaranth experiences indicate that the potential for a systemic risk from hedge funds is considered small. However, the ability of hedge fund to weather a financial shock depends on the economic conditions. The collapse of LTCM in 1998 followed a prolonged period of difficult economic and financial conditions, due to the Asian crisis and the Russian default. The collapse of Amaranth in 2006 occurred during benign economic and financial conditions. The risk of a systemic shock from the hedge fund sector is therefore greater when economic and financial conditions are worse. [20]

The potential for a systemic risk from hedge funds may have increased due to the increased spread, complexity, and tighter linkages of the global financial system. One of the most important aspects of this is current global financial crisis. Current crisis indicates that the failures in banking system pose a systemic risk. Hedge funds as a part of banking system are tighter linkages of the global financial system, and hedge funds have contributed to the spillover of the shock to a wide range of areas. Hedge funds are not main reason of systemic risk. Therefore, hedge funds is not attributable to systemic risk, directly.

4. Conclusion

This study aims to examine whether hedge funds are a potential threat to financial stability. In the light of financial crisis and systemic risk, the studies shows that hedge funds are not responsible for Asian, Brazilian, Turkish and Argentine financial crisis. There is no evidence that hedge funds were a cause of these financial crisis. In addition, although hedge funds are significant as the shock spillover channel of global financial crisis, hedge funds are not major reason in global financial crisis. In terms of systemic risk, hedge funds is not related to systemic risk, directly. Hedge funds are not main reason of a systemic risk. The potential for a systemic risk from hedge funds may increase due to the state of economy, or tighter linkages of the global financial system. Therefore, hedge funds are not a main culprit of financial instability in many cases of market disruption.

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CONSEQUENCES OF THE GLOBAL ECONOMIC CRISIS ON THE CZECH ECONOMY

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Abstract: This paper studies the ongoing economic crisis and its consequences on the Czech economy. According to most economists the cause of the contemporary crisis was the financial crisis which is triggered by a liquidity shortfall in the United States banking system. It has resulted in the collapse of large financial institutions, the "bail out" of banks by national governments and downturns in stock markets around the world. The Czech economy has been severely hit by the global economic and financial crisis. Massive drop of GDP led to increase in the unemployment rate. After a brief history of the main events and an analysis of their possible causes the paper focused on a real economy analysis. In conclusion, a reminder of the challenges is provided and also some recommendations are suggested.

Keywords: Economic Crisis, Financial Crisis, the Czech Republic, European Union

1. Introduction

Deregulation and globalisation of financial markets helped create conditions that led to the global financial crisis. According to Crotty (2009) the severity of the global financial crisis and the global economic recession that accompanied it demonstrate the utter bankruptcy of the deregulated global neoliberal financial system. As the crisis unfolded in the U.S., a number of countries' real economies suffered from a decreased U.S. consumer demand, and credit problems arising from the U.S. mortgage sector rapidly have permeated across nations, ensnaring financial institutions worldwide (Fernández – Nikolsko-Rzhevskyy 2010). This crisis is seen as a synchronized one and is often compared with the Great Depression. The financial crisis has spread to a wider range of institutions and markets, including emerging economies, which until quite recently seemed to have been relatively unscathed, and there have been huge falls in global financial wealth (OECD 2008). Now the global economy is recovering from the deepest recession in the post-World War II era.

In this paper we analyze the transmission of the global financial crisis to business cycle in the Czech Republic and its consequences on a real economy. The Czech economy is characterized as a small open economy strongly dependent on foreign demand, especially German one. It generally displays a high degree of synchronization with other EU Member States. In the pre-crisis period, the Czech economy benefited from flourishing external demand shifting real GDP above its long-term potential. This dependence on foreign markets seems to be the main cause of macroeconomic vulnerability. According to PWC (2010) a limited internal market or high taxation burdens are other weaknesses of the Czech economy. On the other hand, high productivity and industrial competitiveness, high investment attractiveness and financial reliability, low government debt and low private debt or EU membership are the main strengths of the Czech economy.

The paper is structured as follows. The next section presents a literature survey on determinants of the global financial crisis. Section 2 describes impacts of the global recession on the Czech economy. Section 3 continues with an analysis of the labour market and the last section concludes.

2. Causes and evolution of the global economic crisis

Fig. 1 illustrates development of the financial crisis - the financial crisis began in August 2007, when subprime-related turmoil in other asset classes finally spilled over into the currency market. This initial phase of the crisis was manifested in a major carry trade sell-off. Then in November 2007, credit restrictions were associated with a major deleveraging in financial markets and many investment funds were forced to liquidate positions (Melvin – Taylor 2009). The crisis fully developed after the collapse of Lehman Brothers in September 2008.
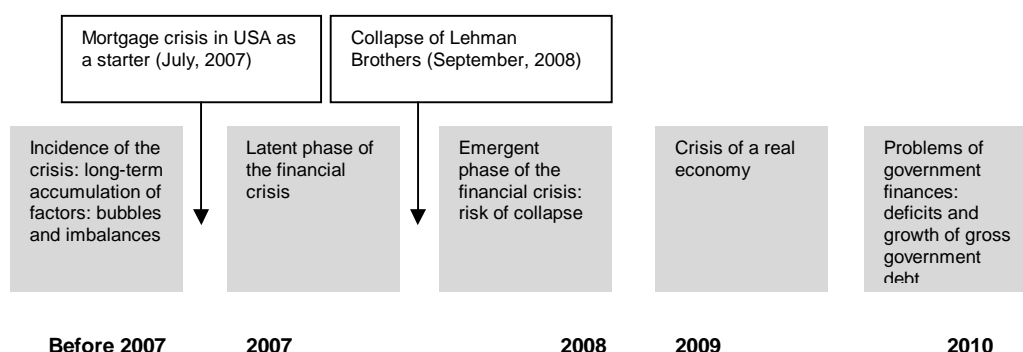
Mortgage crisis in USA as a starter (July, 2007)		Collapse of Lehman Brothers (September, 2008)			
Incidence of the crisis: long-term accumulation of factors: bubbles and imbalances	Latent phase of the financial crisis	Emergent phase of the financial crisis: risk of collapse		Crisis of a real economy	Problems of government finances: deficits and growth of gross government debt
Before 2007	**2007**		**2008**	**2009**	**2010**

Fig. 7: Phases of the crisis in advanced economies

Source: Singer 2010

The causes of overheating of the U.S. credit market and a consequent global housing bubble, which peaked in the U.S. in 2006, are (Tomšík 2010): (i) excessive risk taking by private entities; (ii) new complicated financial products (securities); (iii) poor regulation and lax supervision of financial markets; (iv) government support for ownership housing for low-income population; (v) excess liquidity and very low FED interest rates. All these factors combined with fall in prices on the real estate market have led to expansion into to other segments of the financial sector and it was followed by nationalisations and takeovers of banks and insurance companies (Northern Rock, Fannie Mae and Freddie Mac, Merrill Lynch, Washington Mutual, Wachovia, and AIG). The financial crisis then spilled over into the real economy.

Consequences of the global economic crisis would be characterized as follows (Tomšík 2010): (i) sharp deterioration in the expectations of firms and households; (ii) increase of problems related to funding of business, production or investment; (iii) fall in production and foreign trade; (iv) firing employees; (v) reduction in consumption and investment.

The global recession was triggered by a severe financial crisis in key advanced economies that coincided with the freezing of global financial markets and the collapse in global trade flows. The intensification of the financial crisis in September 2008

caused an abrupt increase in uncertainty and led to a downward reassessment of wealth and income prospects (IMF 2009). The crisis had four features in common with other crises: 1) asset price increases that turned out to be unsustainable; 2) credit booms that led to excessive debt burdens; 3) build-up of marginal loans and systemic risk; and 4) the failure of regulation and supervision to keep up with and get ahead of the crisis when it erupted (Claessens et al. 2010). Some authors have even compared the contemporary global recession with the Great Depression: Eichengreen – O´Rourke (2009) found out that the decline in world industrial production in the first nine months was at least severe as in the nine months following the 1929 peak. Moreover, global stock markets and world trade were falling even faster now than in the Great Depression. Helbling (2009) stressed the need to distinguish between setting, initial conditions, transmission, and policy responses:

- U.S. as the epicentre of both crisis;

- Both episodes were preceded by rapid credit expansion and financial innovation that led to high leverage. However, while the 1920s credit boom was largely US-specific, the 2004-07 boom was global.

- Liquidity and funding problems have played a key role in the financial sector transmission in both episodes.

- Unlike in the Great Depression, when countercyclical policy responses were virtually absent, there has been a strong, swift recourse to macroeconomic and financial sector policy support in the current crisis.

- Despite the stunning contraction of industrial production and trade across the globe in the second half of 2008, the global economy is still a far cry away from the calamities of the Great Depression.

While the crisis quickly resulted in deep recessions in a number of advanced economies, the emerging market and developing economies were also seriously affected (see Fig. 2) but the impact varied across regions and countries (Claessens – Kose – Terrones 2010). Economic development is determined both by domestic (e.g. aggregate demand shocks and budgetary policy) and international factors (external demand and international prices of traded goods). In open economies, the latter are playing an increasingly important role and often determine also domestic policies, which are aimed at insulating the economy from adverse external economic shocks (Fidrmuc – Korhonen 2009). According to World Bank´s Report (2010) governments face the challenges to secure the recovery, bring about fiscal consolidation, raise productivity, and generate jobs.

3. The global economic crisis and its influence on the Czech economy

Economic transition in the Czech Republic ran into difficulties in the late 1990s with a banking crisis, currency problems and an economic recession. However, during the years 2004-2008, the Czech economy grew steadily and rapidly, and its growth rate was more than twice higher compared with Eurozone´Member States (see Fig. 2A). Significant growth was based on increasing exports and improving labour productivity. Large foreign direct investment (FDI) inflows fostered trade integration, underpinning

an export-led expansion. All these factors created conditions for real convergence of the Czech economy or for so called the catch-up effect. Despite the good macroeconomic performance and the stable banking sector, the Czech economy has been impacted by spillover effects from the global crisis (mainly through decline in foreign demand). Heavy dependence on industry, which is most affected, caused that industry´ performance drop pulls down the whole economy. Global financial and economic crisis erupted in full force in 2008 and first signs of the coming economic crisis, we could see already later than in other western European countries, in the last quarter of 2008, where GDP growth over the same period last year, reached only 0.5%. Although the Czech Republic is not among the countries most affected by the crisis, it still faced with substantial year on year decline in real GDP in every quarter of 2009 (according to preliminary data released by the Czech Statistical Office, real GDP fell by 3.1 percent year-on-year, 4.9 percent in 4Q 2009 respectively). As it is seen from Fig. 2B, the downturn was largely driven by a sharp contraction in investment, as companies scaled down their production capacities in view of low access to financing and uncertainty about future prospects. The contribution of investment to GDP growth declined, and the year-on-year reduction reached -7.0 percent in the last quarter 2009. Private consumption held up better. It was supported by modest inflation, stable wages, and still largely robust labour markets. Large declines in domestic demand led to increasing net exports.
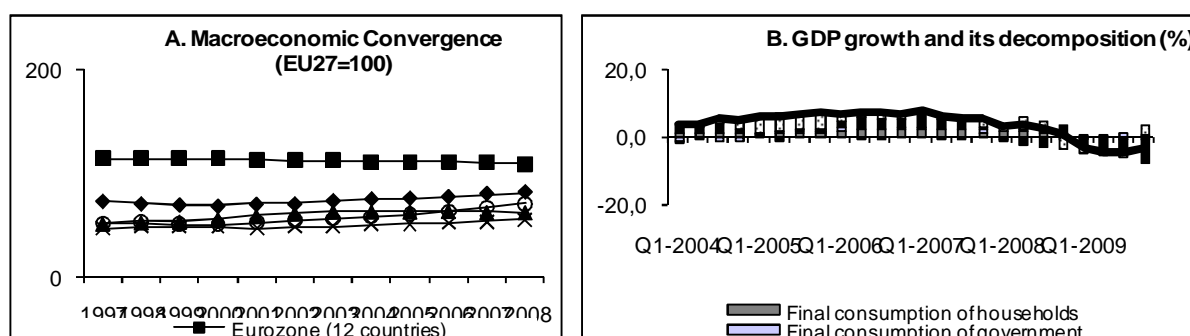

Fig. 2: GDP Development

Source: (http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home)

From a historical perspective, the drop is astonishing. After a sizable fall, real GDP growth turned positive in the second half of 2009, driven by exports while private consumption remains subdued (OECD 2010b). Automotive and manufactured metals production continues to be the main driving force of better economy´ performance. According to the macroeconomic forecasts (OECD 2009b or IMF 2010) a gradual recovery is projected for 2010 and 2011, driven by stronger investment and export demand, though weak consumption will act as a drag on growth. However, fixed capital formation and corporate credit growth are projected to remain depressed, while consumer spending will suffer from a decline in disposable income due to still raising unemployment, low wage growth, and the withdrawal of fiscal stimulus (IMF 2010).
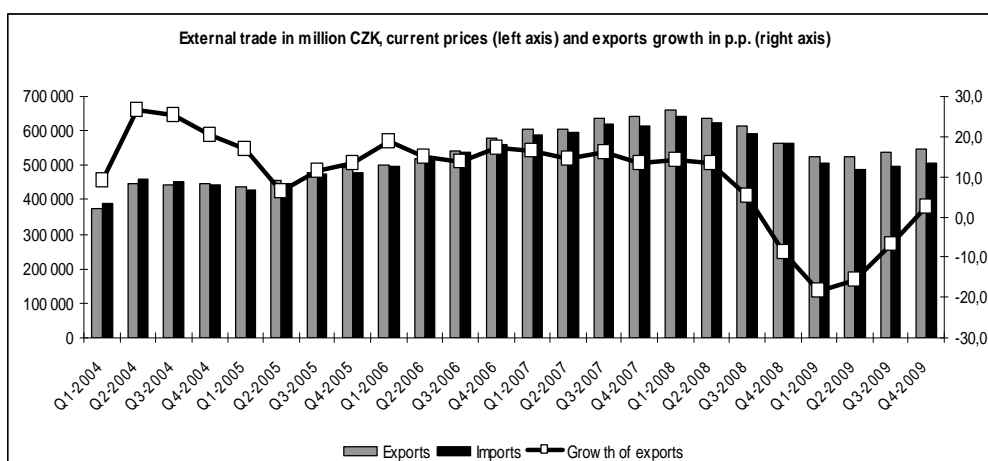
External trade in million CZK, current prices (left axis) and exports growth in p.p. (right axis)

Legend: Exports ■ Imports □ Growth of exports

Fig. 3: GDP External trade 2004-2009, quarterly data, seasonally adjusted

Source: (http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home)

The Czech economy can be characterized as a small open economy, which is export-oriented. For this reason, it was likely that the economic crisis would spill-over into the Czech economy throughout anticipated fall in exports. The Czech economy is one of those most closely integrated with "old" EU Member States and one of the main channels through which the global economic crisis has affected the Czech economy is external trade. The Czech economy is currently experiencing a period of severe difficulties and stunted growth resulting mostly from a huge slump in export sales (PWC 2010). But this development is not exception as all 104 nations on which the WTO reports data experienced a drop in both imports and exports during the second half of 2008 and the first half of 2009 (Baldwin et al. 2010). As can be seen in Fig. 3, the breakthrough year in the development of external trade was 2008 when the growth rate of exports and imports started to decrease in 3Q 2008. This decrease grew considerably in the next quarter (exports -14.1 percent, imports -9.1 percent year-on-year). The decrease in exports and namely imports in comparison with 2008 led to a year-on-year decrease of the external trade turnover by 16.0 percent (in 2008 there was an increase by 0.2 percent compared with 2007). In 4Q 2009, Czech exports achieved growth. From these Fig.s we can deduce a signal of a recovery. Moreover, external trade balance reached in 2009 the highest surplus since 2005.

If we look at the territorial structure of Czech external trade, we will find that the EU market, especially the German one, has significant share in total Czech exports (85 percent). Therefore, the Czech economy is heavily dependent on an economic situation of major trading partners (Czech Statistical Office 2010a). One of the most important Czech industries is the automobile industry which accounts for almost four percent of total output (Haugh – Mourougane – Chatal 2010). Demand for cars fell sharply during the crisis, accentuating the difficulties of excess production capacity already faced before the crisis. Moreover, because of its strong linkage with other parts of the Czech economy the final impact of a shock in the industry on the broader economy is sizable. For that reason, many representatives of manufactures tried to persuade governments to take some supporting measures. Some neighbouring countries (Germany and Slovakia) have introduced car scrapping schemes to cushion the overall downturn in

economic activity, boosting sales in the short run. This measure was primarily designed for domestic carmakers, but foreign ones also profited - for example Škoda Auto with its new Fabia was one of the best selling foreign manufactures in Germany in the first half of 2009.
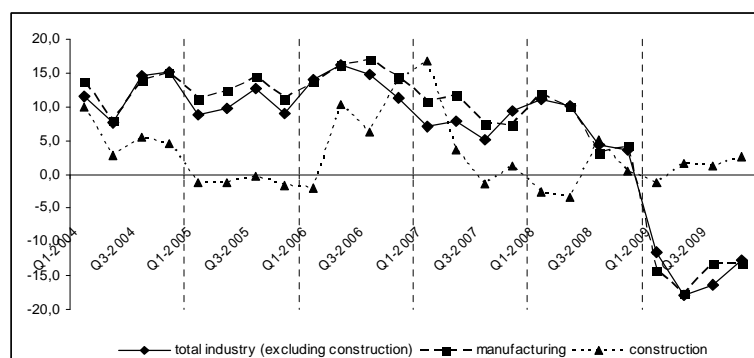

Fig. 4: Gross value addend ganges 2004-2009, in %, quarterly data

Source: (http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home)

On the supply side of the economy, year-on-year growth of real gross value added (GVA) was different in individual sectors during 2004-2009. While the development of GVA in the industry and manufacturing sectors copied the economic cycle, the development of GVA in construction seems to be volatile, and not just during the contemporary economic crisis but also in previous years. Fig. 4 shows that the construction has not yet been affected by the global economic recession in such intensity such as manufacturing (in other countries such as Ireland and Lithuania the annual decline amounted up to 45 percent).

The share of the industry sector in total GVA is higher compared with other EU Member States. Whereas this sector was hit by the global economic crisis the most, one would assume that it will have a significant impact on the Czech economy as a whole. The following Fig. 5 illustrates barriers of growth in the Czech industry sector. As is seen from the Fig., the most limiting factor of growth in the industry sector is the insufficient demand from mid-2008. That seems logical and in line with the pace of decline in orders. However, as is evident from the previous Fig., the dynamics of a loss of contracts appeared earlier than the delay on the part of managers as to their perception of barriers to growth (value of foreign orders declined annually since the beginning of 2008). On the contrary, a lack of employees was felt at the time of significant economic growth as a barrier to further growth but this problem considerably reduced due to a loss of the industry dynamics since 2008.
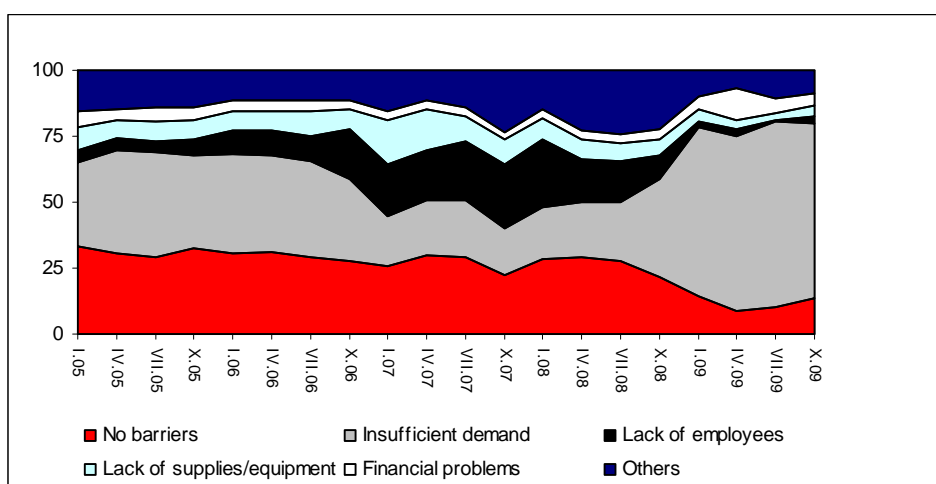
Fig. 5: Barriers of growth in the industry sector, percentage share

Insufficient fiscal discipline is among the most problematic issues of the Czech economy policy. The structure of government budget´revenues and expenditures was inadequate even before the global economic recession: government budget deficits existed since 1997 and continued even in the period of significant economic growth. In this context, we believe that this is a clear illustration of the structural deficit. The problem is more serious if take into account that government budget also provides a very important cushion for economic activity in the downturn, principally through the workings of automatic stabilisers and discretionary fiscal easing. According to OECD 2009 the government responded to the downturn with two stimulus packages and cyclical factors will further increase the general government deficit. However, there is little room for further discretionary fiscal easing and the Czech parliament has already approved a fiscal consolidation plan to reduce the government deficit. Another issue associated with the fiscal stimuli is fulfilling the convergence criteria, respectively the narrow space for massive measures of fiscal policy - the Czech Republic made a commitment to adoption of the euro in the Accession Treaty, which is a subject to compliance with convergence criteria. If look at the structure of convergence criteria we can divide them into two groups: (i) monetary criteria and (ii) fiscal criteria. Fiscal criteria consist of (i) the ratio of the annual government deficit to GDP must not exceed 3 percent at the end of the preceding financial year. If this is not the case, the ratio must have declined substantially and continuously and reached a level close to 3 percent or, alternatively, must remain close to three percent while representing only an exceptional and temporary excess; (ii) the ratio of gross government debt to GDP must not exceed 60 percent at the end of the preceding financial year. If this is not the case, the ratio must have sufficiently diminished and must be approaching 60 percent at a satisfactory pace. At the situation of the economic crisis fulfilling these fiscal criteria is threatened much more than monetary criteria, mainly because of growth-enhancing fiscal measures and long-term problems associated with the poor state of government budget. According to OECD and ECB forecasts the deficit should be held in the year 2010 to climb to 5.6 percent of GDP. This value is almost twice higher than the maximum permitted limit of three percent of GDP. And in the next three years, the

annual government deficit will remain above this level. It should be slightly reduced to 5.0 percent of GDP in 2011 (see Table 1). Moreover, the Czech Republic is at present subject to an EU Council decision on the existence of an excessive deficit. Council recommended terminating it by 2010 in a credible and sustainable reduction of government deficit to GDP ratio below three percent. We argue that the government deficit is currently the biggest obstacle to the introduction of the euro which will be postponed. On the other hand, given the relatively low initial level of general government gross debt the Czech Republic has no problem to fulfil the second fiscal criterion, although the dynamics of growth of debt from 2009 onwards, increases substantially, mainly due to problems connected with the low tax collection during the crisis and a high share of old-age pension in the budget´ expenditures. As a risk for future development is considered population ageing - we can expect further increasing in proportion of general government gross debt to GDP unless the necessary reforms of the pension and health care system are introduced. In addition, the value of these limits is also influenced by the attainment of GDP – if we compute these criteria as the share of total GDP - it means the slower economic recovery is the faster approaching is to this level (accompanied by budget deficits).

Tab. 1: Government deficit and gross domestic debt (estimates for years 2010-2011)

	2004	2005	2006	2007	2008	2009	2010	2011
General government deficit (as a percentage of GDP)	-3.0	-3.6	-2.6	-0.7	-2.7	-5.9	-5.6	-5.0
General government gross debt (as percentage of GDP)	30.1	29.7	29.4	29.0	30.0	35.4	42.2	49.0

Source: ECB;OECD

4. Labour market development

The deep recession in the Czech Republic has led to a marked deterioration of labour market performance. Unemployment generally fluctuates depending on a phase of the economic cycle - it tends to increase during the economic crisis and tends to decline during economic growth. In addition, Abraham – Shimer (2001) mentioned that there is a strong correlation between the unemployment rate and the average length of an unemployment spell. Moreover, there is an interesting fact that unemployment durations did not fall nearly as much as the decline in the unemployment rate might led one to expect. OECD (1993) even declared that long-term unemployment tends to grow for a year or two since the first decrease in the unemployment rate occurred. In the context of the global recession, Guichard – Rusticelli (2010) argued that thank to labour and product market reforms, in the majority of countries, the impact of the crisis on long-term and structural unemployment is likely to be more moderate than in past severe downturns.
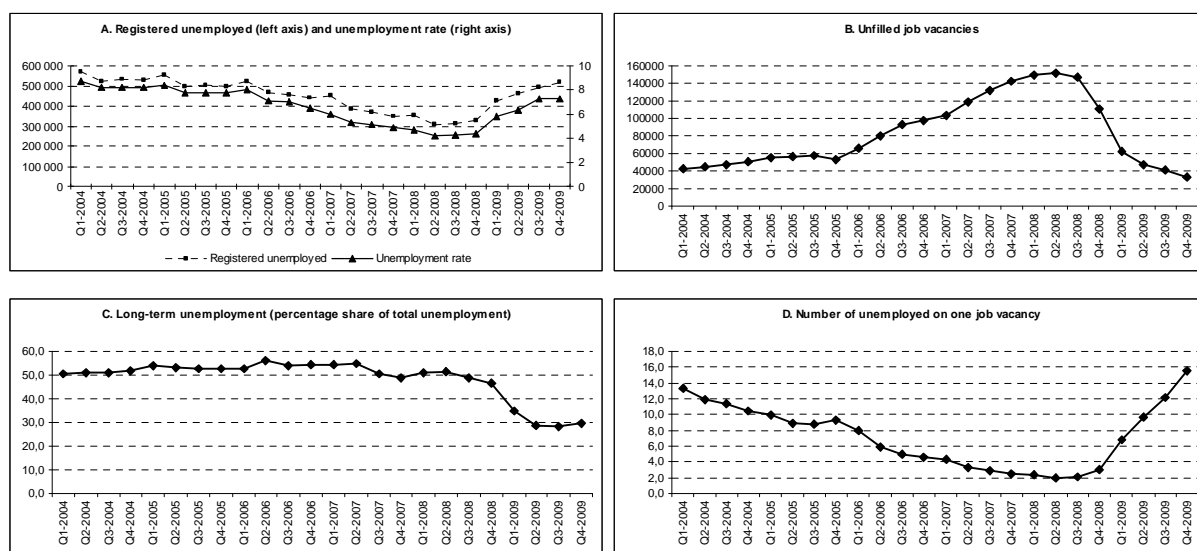
A. Registered unemployed (left axis) and unemployment rate (right axis)

B. Unfilled job vacancies

C. Long-term unemployment (percentage share of total unemployment)

D. Number of unemployed on one job vacancy

Fig. 6: Labour market indicators, 2004-2009, quarterly data

Source: (http://stats.oecd.org/index.aspx)

The increased pace of growth had a significant impact on the labour market. The employment rate has increased by over two percentage points since 2004 and the unemployment rate has fallen substantially. The main factors of labour market improvement were a massive inflow of foreign direct investment, increased household consumption as well as overall economic growth in Western Europe, especially Germany. The global recession resulted in a severe shock to the Czech labour market. Moreover, the Czech economy got even beyond its potential in the first half of 2008, which in conjunction with public finance reform caused inter alia by the rise of the inflation rate. At the consequences of the recession the number of unemployed rose, employment declined and many employees are working fewer hours than before crisis. Fig. 6A shows a gradual reduction in the number of registered unemployed persons (2004-2008), while increasing the level of the initial nearly quarter of 2004 took during the five consecutive quarters (3rd quarter of 2008 and whole year 2010).

Massive in-flows of foreign investment have created 140 thousand new jobs, significantly contributed to the manufacturing industry. Development of this indicator was similar. It means a gradual increase of unfilled job vacancies (maximum was reached in the second quarter of 2008). As the consequence of the global economic crisis, a deep slump has been followed and in the fourth quarter of 2009 the number of vacant jobs has dwindled to below the initial number of the first quarter of 2004 (see Fig. 6B)

Job vacancy statistics provide information on unmet labour demand. Information on job vacancies is used for business cycle analysis and assessing mismatches on labour markets. A job vacancy is defined as a paid post that is newly created, unoccupied, or about to become vacant: (i) for which the employer is taking active steps and is prepared to take further steps to find a suitable candidate from outside the enterprise concerned; and (ii) which the employer intends to fill either immediately or within a specific period of time.

In the second quarter of 2008 accounted for one job vacancy less than two registered unemployed - a significant improvement over four years, when this ratio was 13:1. Shortages felt most sectors of the economy, from software developers over the drivers, welders and construction workers. Strong growth of Czech industry, however, exceeded the possibilities of the educational system to give it enough workers with secondary vocational education, because due to societal trends, young people began to prefer the economic study and humanistic orientations. Growth in number of graduates of secondary schools and technical colleges was not enough demand. Moreover, the problems intensified with the real readiness of school leavers - the structure of education and actual knowledge of young people are increasingly lagging behind the demands of the labour market as employers seen.

A number of new jobs were rising until 2Q of 2008, when production has been negatively affected by the global economic recession. The gap between the number of job seekers and the number of available has started widening since 3Q 2008. In the fourth quarter of 2009, the ratio of registered unemployed and job vacancies exceeds 15:1 (see Fig. 6D). A general trend of rising unemployment was accompanied by the improvement of a further indicator – percentage share of long-term unemployed (12 months or more) in total unemployed. It has decreased year on year by 2.6 percentage points to 29.6 percent in 4Q 2009 (see Fig. 6C). Causes of this development are obvious: (i) the increased number of young people after leaving school who have not yet found their first job; (ii) firing of workers at the end of 2008 and during 2009; (iii) some long-term unemployed have moved to a group of economically inactive. But these changes, on the contrary, do not mean the improvement of a situation on the labour market. In this context, it is clear that the share of long-term unemployed in total unemployment is itself a very misleading indicator and it needs to be viewed in a broader context. However, according to CZSO 2010b, if no significant changes are introduced in the labour market than it will be expected return to long-term unemployment shares in total unemployment reached about two years ago but with the higher rate of unemployment.

5. Conclusion

The paper focused on the global financial and economic crisis and its impacts on the Czech economy. Transmission of the crisis in the Czech economy was not surprising because of a high degree of integration with EU-15. The high negative output gap in the economy is evident in the extremely low use of production capacities in industry, the significant rise in unemployment, the decrease in the number of job vacancies, and inflationary pressures. According to latest data the world economy is recovering from the global financial end economic crisis. Industrial output and exports have begun to revive in the Czech economy; however, we can assume that the recovery will be slower depending on the recovery speed in Western Europe from historical perspective. Moreover, higher unemployment can be expected over a longer period as a result of the inflexible labour market. Accompanying phenomenon of the economic crisis is a significant burden on public finances, while fulfilment both the fiscal convergence criteria will be difficult even in mid-term period. Especially when the second one - gross government debt - is predicted alarming development, since it may

affect adopting of the Czech Republic to the Euro area. These will require a combination of additional external and fiscal adjustment, particularly through structural fiscal measures, which will bring benefits not only during the crisis but also in the medium term According to OECD 2009 the growth projection is subject to significant risks stemming from uncertainties surrounding performance in major export markets, above all Germany. The koruna should continue its previous appreciating trend. On the other side, appreciation of domestic currency might be an obstacle of exports growth as the result of relatively expensive Czech merchandise. On the domestic demand side, the main downside risk lies in a possible weakening of private consumption in response to the deteriorating labour market and the 2010 fiscal consolidation package.

Acknowledgement

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