# Sociálno-ekonomická revue

Fakulta sociálno-ekonomických vzťahov,
Trenčianska univerzita Alexandra Dubčeka v Trenčíne

Vedecký časopis – Scientific Journal

# Social and Economic Revue

Faculty of Social and Economic Relations
Alexander Dubček University of Trenčín

**ISSN – 1336-3727**

# Sociálno-ekonomická revue
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**Redakcia/Editorial office:**
Študentská 2,
911 50 Trenčín
Tel.: 032/7 400 470, Fax: 032/7 400 403
URL: http://fsev.tnuni.sk/revue
E-mail: revue@tnuni.sk



**Časopis Sociálno-ekonomická revue vychádza štvrťročne.**
**The Social and Economic Revue is published quarterly.**

**Vydavateľ/Publishing house:**
Fakulta sociálno-ekonomických vzťahov, Trenčianska univerzita Alexandra Dubčeka v Trenčíne.
IČO 00 31 118 259

The Social and Economic Revue journal is indexed in international scientific databases: *Index Copernicus, Central and Eastern European online Library (CEEOL), EBSCO Publishing, Inc. - Business Source Complete, EconBiz.*

**EV 3775/09**

**ISSN - 1336-3727** (tlačené vydanie/print edition)
**ISSN - 2585-9358** (online)

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Ročník 17, jún 2019, číslo 2
Volume 17, June 2019, no. 2

## Obsah Contents

**PUBLIC ECONOMICS AND PUBLIC ADMINISTRATION, REGIONAL DEVELOPMENT**

# SELECTED DIVIDEND POLICIES IN NATURAL MONOPOLY

*Alena BAŠOVÁ*

***Abstract***

*The dividend policy may affect the capital structure, too because if, for example, the enterprise determines a high level of yearly paid off dividends, subsequently the enterprise should reasonably maintain the low share of foreign capital in the capital structure to be able from the achieving an operating profit (profit from operating activities) covers not only its interest obligations, as well as the same level of dividends expected by investors. The dividend policy should not only be only a "remainder" that will be a rest after the investment and financial decisions of the company, but should be the equivalent part of them. The main advantage for applying a stable dividend policy is that the company would pay higher dividends to its owner company in this way. However, the main disadvantage of a stable dividend policy is the desire not to reduce the dividends paid; this may be a problem if the company's sales were negative.*

***Key words***

*dividend policy, tax burden, Lintner model, future investments, dividends, Public investors.*

**JEL Classification**: L25, L26, G32

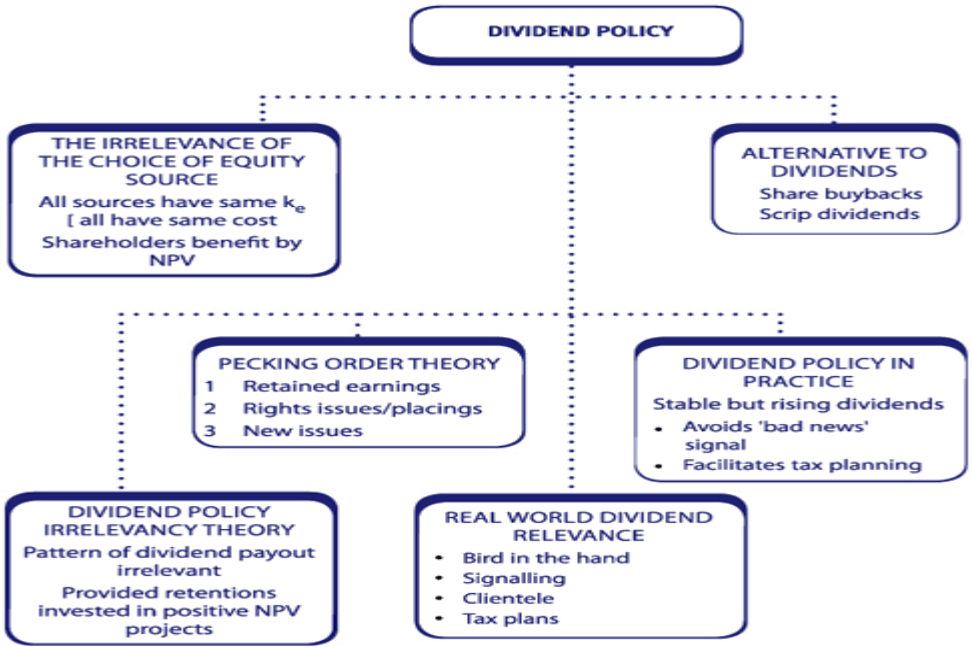
## Introduction

Enterprise decisions concerning dividends are closely related to other financial and investment decisions. The dividend policy may affect the capital structure, too because if, for example, the enterprise determines a high level of yearly paid off dividends, subsequently the enterprise should reasonably maintain the low share of foreign capital in the capital structure to be able from the achieving an operating profit (profit from operating activities) covers not only its interest obligations, as well as the same level of dividends expected by investors. Reduction or drop of dividends investors would consider as a negative signal. With higher of financing costs will be less advantageous the investment projects. As we know from the theories of weighted average cost of capital we compare internal rate of return (hereinafter IRR) of investment projects with weighted average cost of capital (hereinafter WACC) and we have chosen only such project, which IRR was higher than WACC. In addition, the method of financing of the new investments will affect the capital structure of the company. From this point of view follows that decisions about dividends are closely related to decisions about the capital structure. The dividend policy should not only be only a "remainder" that will be a rest after the investment and financial decisions of the company, but should be the equivalent part of them.

## 1. Theories approaches to dividend policy

Theoretical approaches to dividend policy issues can be divided into 3 groups. The models are divided into three groups. The first group are the models, in which the dividend policy has no effect on value of the company. This group includes: Theory about the irrelevance of dividend policy and Theory of clientele's effect. To the second group are models in which the relationship between the amount of dividends and the company's market value has direct correlation. They belong here Theory of a difference in the tax burden. Third group involves Theory of the "bird in the hand", Theory of signalling through dividends includes the Lintner model, too. There are models, according in which the relationship between the amount of dividends and the company's market value is indirectly. These approaches can be shown on next scheme.

***Fig. 1. Dividend policy***




*Source: Own processing **by** PRASANNA, Chandra. Financial Management. 8. Vyd., New Dehh: Tata McGraw-Hill Education, 2011. 1090s. ISBN 0-07-107840-1*

## 1. Irrelevant dividend policy

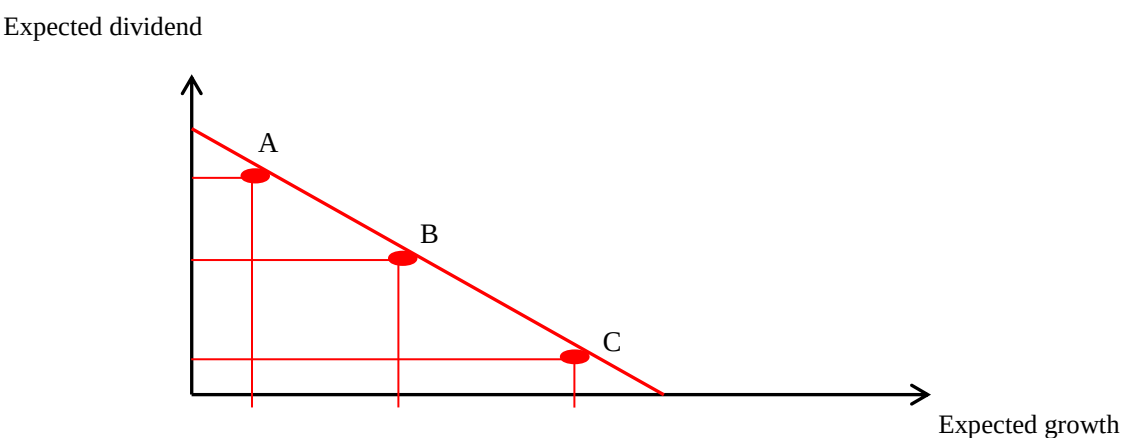
Irrelevant dividends policy is explained by M.H. Miller, F. Modigliani (1961) In their study from 1961 where they suppose perfect capital market, the dividend policy has no effect on the market price of shares of the company, neither the market value of the company and its overall cost of capital has no effect on market value of companies. That means that the optimal dividend policy does not exist.

Assumption of this model is perfect capital market:

1. The investment policy of the company is given and does not depend on the dividend policy,
2. The company's dividend policy has no effect on cost of equity,
3. The absence of taxes, emission and other transaction costs, that means: no taxes, no emission and no other transaction costs
4. Investors and managers have the same information about future investment opportunities of the company.

Reasoning, the firm‘s value depends only on its investment policy rather than on how profits equals earnings are split between dividends and retained earnings.

***Fig. 2. Explaining theories of M&M***




*Source: Own processing by BESNIK, Livoreka a kol. Theories on Dividend Policy*

Figure 2 shows the relationship between the expected dividends and the expected growth of the company. In this case, the business entity decides whether or not the profit is used to pay dividends or retains it as retained earnings. Alternatively, it may use a combination of dividends and retained profits. Point A shows a situation where a company uses a larger portion for dividends and leaves less for future investments (does not expect the company to grow). In point B, it divides dividends and retained earnings of 50:50, in this case it expects possible growth. Point C shows a situation, where the company pays a small part of the reached profit for dividends and leaves a larger part for investment as it expects high growth in the future. Assuming perfect capital market, M&M excluded a number of factors that in practice (on imperfect capital market) can influence dividend policy, so the conclusions of this theory may not be valid in real economic world.

## 2. Tax differential dividend policy

This theory was created in the USA even under the tax legislation applicable in 1986, under which the dividends were ultimately taxed by higher rates than capital gains from the reinvestment retained profits. The capital gains has an another tax advantage, because there were taxed only in their implementation, in the moment capital gains delay to a later date. Longer the investor waits it is lower the present value of paid taxes, which must be from the corresponding capital gains pay.

Conclusions of this model is that**,** investors prefer low dividends, a firm should reinvest its earnings to achieve capital gains. Than the lower dividends than the higher is the firm‘s value, that means optimal dividend policy, which maximizing the firm’s value is paying minimal or zero dividends.

Next group of dividend models is the „Bird-in-the-hand“ theory and Signalling hypothesis. The „Bird-in-the-hand“ theory was defined by Gordon and Lintner in 1963. Assumption of this model is contention, that dividends are more valuable and are less risky than expected capital gains. Investors can be more sure about receiving dividends payments than the incomes from capital gains which should result from retained profits. Investors valuated expected dividends more highly rates than expected capital gains. This theory of the "Bird in the hand", whose authors are Gordon and Lintner (see Gordon, 1963), suppose, that cash dividends are more certain than uncertain future capital gains and therefore investors discount them at a higher rate than certain dividends. On the contrary the Signalling model indicated by means of dividends based on the assumption of asymmetry of information’s, which means, that managers have about the company and its financial situation more

information than investors. Public investors have less information about the future prospects and future amount of dividends than managers. They even cannot credibly give positive information to investors, and investors would not believe them. High dividends or dividends increase is a credible signal to investors that the firm's management expects a good future financial situation (firms with low earnings or even with losses could not afford it). A way in which "good" firms can differentiate themselves from "bad" firms, it is the more costly a signal and the more credible, too. A simple newspaper article telling that a firm is "good" would not be credible enough to the investors of a "bad" firms would have no problem to duplicate it. So high dividends are the signal, that is enough costly, because a firm must have enough cash to be able to regularly pay high dividends. This relation is called "informational or signalling content of dividend". According to this theory the high dividends are credible signal of good future earnings, what is the „information content of dividends" There is a risk that the company due to the high dividend payout will not have enough cash to be able to realize the benefits of investment opportunities. Importance of information content of dividends may be different for different companies. These differences are mainly a given by the rate of participation of shareholders in corporate governance. In general can be expected that in the case of complete separation of ownership and control over the activities of enterprise is an information gap between managers and shareholders is the largest, for example if there are a large number of small shareholders. Second factor is the general availability and reliability of information about the company. If the company publishes less information, respectively the less reliable the information is published, the greater is the need to have profitable businesses send out signals to investors in the form of higher dividends.

## 3. Selecting a suitable dividend policy

At the same time, when choosing a dividend policy, the company must have its future plans in mind. As mentioned above, three primary schools of dividend policy and their view of profit distribution. The anti-dividend school prefers the idea of no pay off dividends, especially because of dividend taxation. The main reason for applying anti-dividend policy is that the potential projects of the company will want to implement in the future. A company that wants to realize all intended projects in the future should not use the entire profit for paying dividends, as it would not have the sources to implement advantageous projects itself. This situation would mean an increase costs and indebtedness of the company.

The application of anti-dividend policy is appropriate for the following companies:

1. The companies are new on the market and need to profit from the potential development of society;
2. The companies have shareholders willing to keep their shares despite the fact that the company does not pay dividends
3. For businesses wishing to avoid paying taxes.

The school of dividend neutrality states that dividends do not affect the company's market value. As we have already mentioned, the assumptions of this theory do not reflect the real market situation. Dividends fulfil a signalling significance for a company that is neutral to dividends. Increase dividend paid out may be a positive signal for shareholders, as may believe that the company prospers.

Companies applying a pro-dividend policy try to keep the same level of dividends, respectively, annually increase dividends. An enterprise that pays high dividends, or a high share of net profit paid to shareholders may be a problem if a crisis period occurs. Any reductions or cancellations of dividends in such an undertaking could cause discontent among shareholders, or they could try to sell their share in the company.

## 4. Application of dividend policy in natural monopoly

Eustream was established in 1970 under the name Transitive Gas Pipeline, Prague. The company was closely associated with the construction of a gas pipeline that transported gas to Western Europe. This project was put into operation on 28.12.1972. Since then, the company and its facilities have been constantly modernizing and improving. The first major change in the company occurred after the split of the Czechoslovak Federal Republic and the

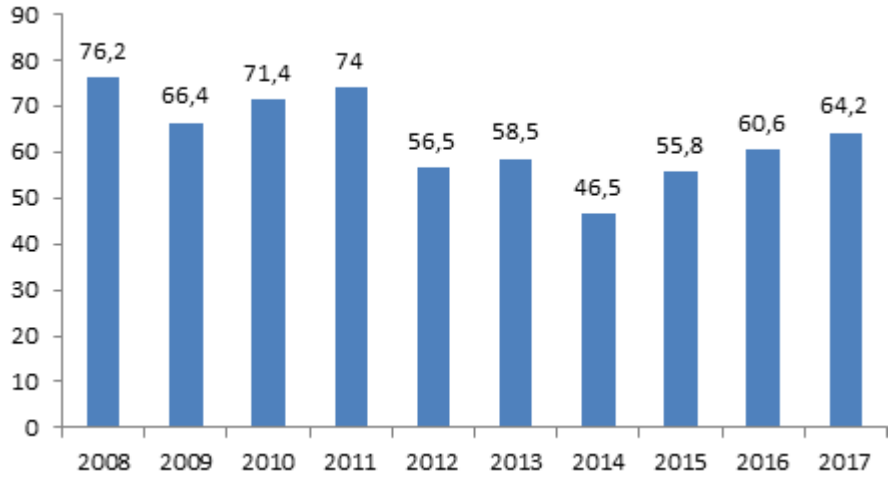
subsequent establishment of the Slovak Republic in 1993. The Slovak part of the Transit Gas Pipeline Prague was transformed into a joint-stock company under the name of Slovtransgaz, Slovenský plynárenský priemysel, a.s. . Another change came in 2006 and the result was the creation of an independent transmission network operator called SPP - preprava a.s. In 2008, unbundling was implemented in accordance with European Union policy, and Eustream, a.s. was established.

Eustream is a company that deals with the transport of natural gas through the territory of Slovakia to other European countries. It represents an important link between the countries of the European Union and the Russian Federation. Their transport routes are connecting with lines in Ukraine, Hungary, Austria and the Czech Republic.

The main task of the company is to care for safe and efficient transport of natural gas. This requires constant monitoring and modernization of transit systems. Modernization involves increasing the safety, reliability and efficiency of natural gas transport. At the same time, it is necessary to reduce negative impacts on the environment; therefore it is necessary to adopt new environmental technologies. In 2017, Eustream transported 64.2 billion m3, respectively 678.66 TWh. The company employed 647 employees as of 31.12.2017 (Annual report of Eustream, a.s. in year 2017).

The main enterprises' activity of eustream a.s. is gas transportation at international level. The company's revenues are almost exclusively from the sale of transportation services. Interest expense is the most significant of the financial costs.

***Fig. 3. Volume of exchanged gas drafted by Eustream a.s.***




*Source: own processing according to annual reports of Eustream*

From Figure 3 we can see that the maximum amount of gas transported by the company was between 2008 and 2011, the averaged 72 billion cubic meters, representing 678.66 TWh. Between 2012 and 2014, the company recorded a relatively significant drop in transport, which was stopped until 2014 and since that year the volume transported has been growing.

An important factors that affect shipping volume include:

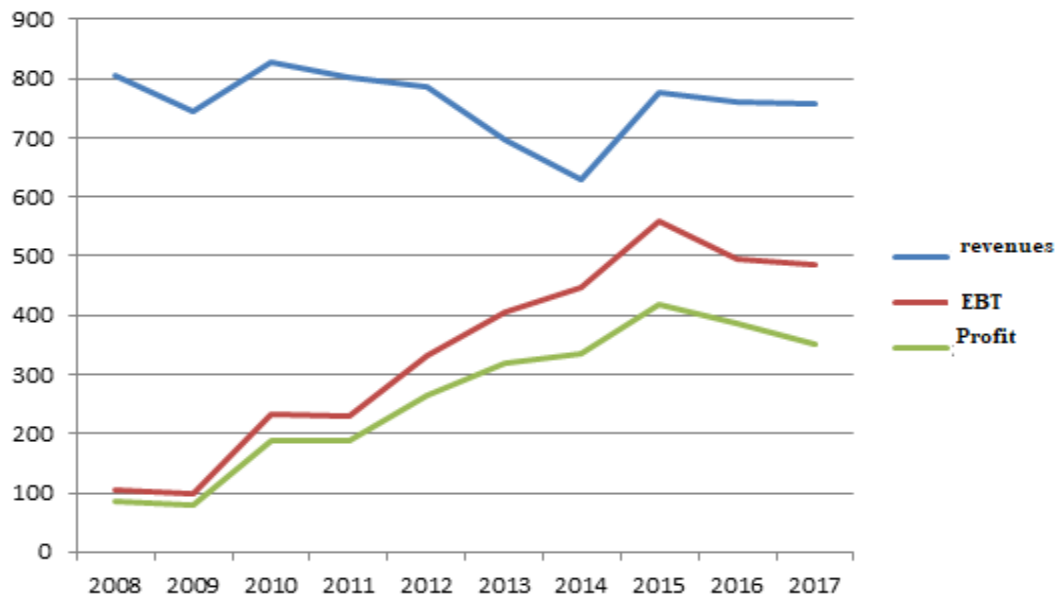
1) The market price of natural gas,

2) Demand for natural gas in target countries,

3) The geographic and political conditions of Central and Eastern Europe,

4) The need for natural gas in both industrial and domestic areas.

*Fig. 4. Development of Revenue, EBIT and Profit (EUR millions)*




*Source: Own processing according to annual reports of Eustream*

From Figure 4 we can see that Eustream a.s., earn approximately 800 million Euros a year. The exception is the period between 2012 and 2014, when the company recorded a significant drop in the volume of gas transported. We can also see from the chart that both EBT and net profit were not affected by the slump between 2012 and 2014, but until 2015 there was a growing trend again (Annual reports of Eustream).

Dividend policy of Eustream, a..s.

As we mentioned in the historical development of the company, from March 11, 2019, Eustream had only one shareholder who owned a 100% share. It is SPP Infrastructure in a common nominal value of EUR 282 928 727.09. The following table shows the share structure as of 31/12/2017.( Newer data was not available)

***Table 1. Structure of the Company's Shares, as of 31.12.2017***

| | | | | **Sum** |
|---|---|---|---|---|
| Nominal Value | 3 319 | 82 895 533 | 200000000 | 282 928 727 |
| Number of shares | 10 | 1 | 1 | 12 |
| Share on basic capital | 0,001% | 29,302% | 70,697% | 100% |

*Source: Own processing by Obchodný register SR*

As we mentioned above, Eustream, a.s. is 100% owned by SPP Infrastructure Eustream is a subsidiary. This fact has to be taken into account when evaluating the dividend policy, because Eustream management is subject to SPP Infrastructure decisions.

***Table 2. Net profit and paid dividends (million EUR)***

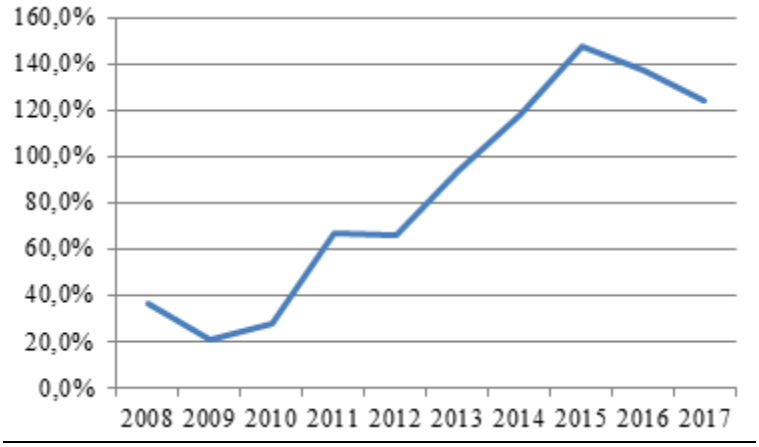
| Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| Net profit | 85,25 | 78,67 | 188,29 | 187,06 | 265,94 | 319,36 | 334,00 | 418,27 | 387,43 | 352,39 |
| Payed Dividends | 102,08 | 58,25 | 78,67 | 188,29 | 187,06 | 265,94 | 334,00 | 418,27 | 387,43 | 351,00 |

*Source: Own processing by annual reports Eustream, a.s..*

From this table we can „say", that Eustream since year 2014 payed off 100% of net profit on dividends. During 2008 to 2013 the company paid the dividends are always 100% of net income from the previous calendar year. An exception is 2009 when the company paid out dividends of 58.25 mil. EUR, which represents 68.33% of net profit for 2008.

From these results, we can state that Eustream, a.s. prefers a pro-dividend policy because it pays almost 100% of its net profit on dividends. This is confirmed by the following chart, which shows how the dividend yield has been developing since 2008. At the same time, we can say that this is a permanent dividend policy. The Company does not pay extraordinary dividends. Until 2013, the company paid dividends in the amount of net profit from the previous accounting year.

***Fig. 5. Company's dividend yield for 2008 to 2017***




*Source: Own processing by annual reports Eustream, a.s..*

As we can see from Figure 5 the dividend yield in 2017 was more than 120%, peaked in 2015 when it reached 147%. We can say that with such dividend yields, it is very advantageous to be the shareholder of that entity. The dividend yield calculation was based on the nominal value of the share and the dividends paid. In the case of Eustream, all shares are registered and are not publicly traded. Therefore, we used a revised formula to calculate the dividend yield in which we replaced the market value with the nominal value.

Dividend yield = (dividend per share / nominal value of share) x 100 (1)

Stable dividend policy is the easiest and most used in business practice. It is mainly used by companies with a high number of shareholders; the basic rule is to pay dividends equally and regularly. The amount of dividend paid is the same, even if it achieves low profits. In particular, the benefit for shareholders is stable income paid on a regular basis (mostly every year). A fixed dividend policy is sometimes called a constant dividend because it pays a certain portion of the profits to shareholders in the form of dividends. Thus, the amount of the dividend is directly proportional to the profit achieved.

In calculating a stable dividend policy, we have taken into account the rate of revenue growth. The arithmetic average of the year-on-year increase in revenues for the period 2008 to 2017 was 11.36% per annum. We calculated the amount of dividend paid as follows:

Dt = Net income * (1-.1136) (2)

If the net profit was lower than the net profit of the previous period, we did not reduce the dividend paid, but we kept it at the current level, as we can see in the chart Nr. 8 in 2016 and 2017.

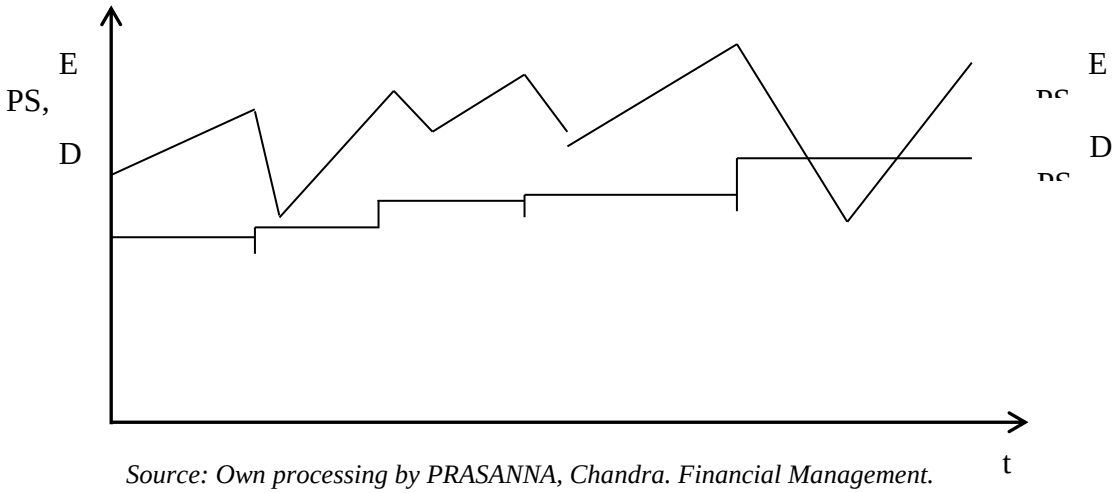
***Table 3. Permanent and stable dividend policy (mil. Eur)***

| Rok | Zisk | Stabilná DP | Stála DP |
|---|---|---|---|
| **2008** | 85,25 | 75,57 | 102,076 |
| **2009** | 78,67 | 75,57 | 58,248 |
| **2010** | 188,29 | 166,91 | 78,669 |
| **2011** | 187,06 | 166,91 | 188,285 |
| **2012** | 265,94 | 235,74 | 187,059 |
| **2013** | 319,36 | 283,09 | 265,94 |
| **2014** | 334 | 296,07 | 334,004 |
| **2015** | 418,27 | 370,77 | 418,27 |
| **2016** | 387,43 | 370,77 | 387,428 |
| **2017** | 352,39 | 370,77 | 351 |
| **Spolu** | **2616,66** | **2412,15** | **2370,98** |

*Source: Own processing by annual reports Eustream, a.s..*

In the case of our proposed stable dividend policy, the company would pay a total of 2,412 mil. EUR for dividends of 41.17 mil. More than in the case of a permanent dividend policy. The chart shows the relationship between profit per share (EPS) and dividend paid per share (DPS).

***Fig. 6. The relationship between EPS and DPS***

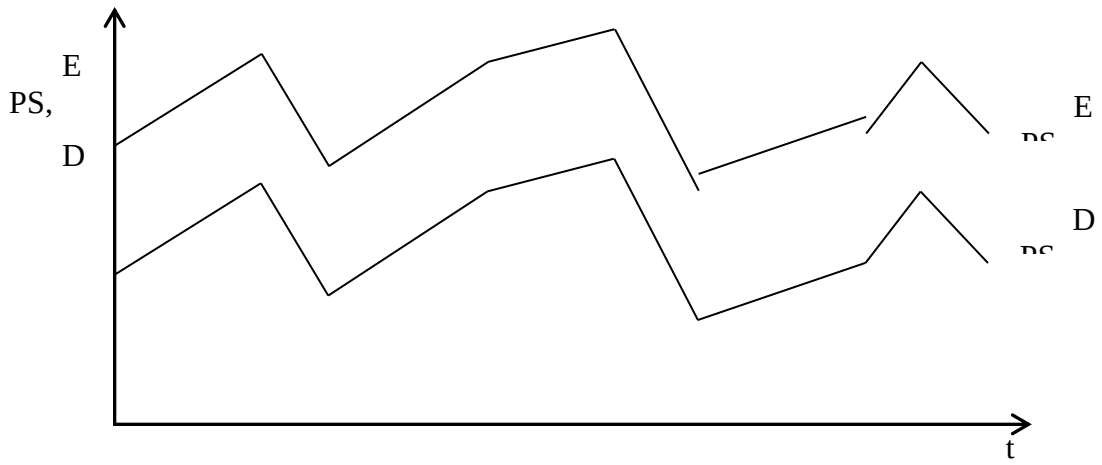



*Source: Own processing by PRASANNA, Chandra. Financial Management.*

The chart shows that the DPS will only increase if EPS increases and the business considers this increase to be long-term. If it considers the increase to be extraordinary, it will not apply an increase in the payment of dividends. Also, we can see on the chart that the DPCS will not decrease if the business entity achieves extremely lower profits.

A permanent dividend policy is appropriate for companies whose shareholders are willing to adapt to the company's volatility. The following graph shows the payout of dividends per share (DPS) depending on the amount of earnings per share (EPS) at time t.

***Fig. 7. The relationship between EPS and DPS in a stabile dividend policy***




*Source: Own processing by PRASANNA, Chandra. Financial Management.*

From chart Nr. 7 we can see how the EPS and DPS curves are copying with each other. In other words, in the case of higher profit (EPS) dividends (DPS) will grow directly. The dividend payment in this case is based on a certain ratio that is retained in any profit achieved. The amount paid dividends we could write using the following formula:

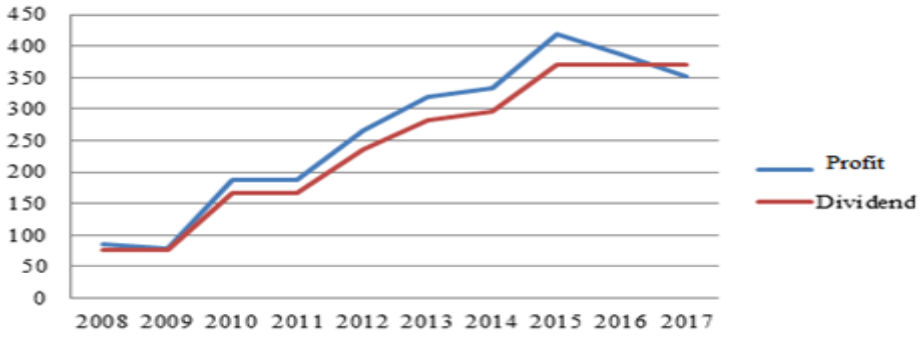
Dt = (EATt x Payout Ratio) / Number of Shares (3)

After editing, we could write the relationship as follows:

Dt = EPS x payout ratio (4)

Where Dt represents the amount dividend at the end of the period to be paid per share. The amount of the dividend paid depends on the profit after tax, respectively earnings after taxes (herein after EAT) and a defined payout ratio.

***Fig. 8. Profit and dividends by applying a stable dividend policy***




*Source: Own processing according annual reports*

In calculating a stable dividend policy, we have taken into account the rate of revenue growth. The arithmetic average of the year-on-year growth in revenues for the period 2008 to 2017 was 11.36% year-on-year. We calculated the amount of dividend paid as follows:

Dt = Net income x (1- 0.1136) (5)

If the net profit was lower than the net profit of the previous period, we did not reduce the dividend paid, but we kept it at the current level, as we can see in chart Nr. 8 in 2016 and 2017. By common comparing both ways of dividend policy together, we can state that the differences between them are minimal. In the case of our proposed stable dividend policy, the company would pay a total of 2.412 mil. Eur for dividends of 41.17 mil. It means more than in the case of a permanent dividend policy. The main advantage for applying a stable dividend policy is that the company would pay higher dividends to its owner company in this way. The main disadvantage of a stable dividend policy is the effort not to reduce the dividends paid, this may be a problem if the company's sales were negative. In this case, it would not be possible in the long term to keep dividends at one level, as they would have to be paid out of sources other than net profit. These sources could be mainly company reserves and retained profits of previous periods.

**Conclusion**

From the common comparison of both ways of dividend policy, we can see that the differences between them are minimal. In the case of our proposed stable dividend policy, the company would pay a total of 2.412 mil. EUR for dividends of 41.17 mil. More than in the case of a

permanent dividend policy. The main advantage for applying a stable dividend policy is that the company would pay higher dividends to its owner company in this way. However, the main disadvantage of a stable dividend policy is the desire not to reduce the dividends paid; this may be a problem if the company's sales were negative. In this case, it would not be possible in the long term to keep dividends at the same level, as they would have to be paid out of sources other than net profit. These sources could be mainly company reserves and retained earnings of previous periods.

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# VALUE GENERATORS IN METALLURGICAL INDUSTRY

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***Abstract***

*Metal industry product, especially steel, represent a key raw material in the Czech Republic for other industries (automotive, mechanical engineering, energy industry or electronics industry). Between 2008 and 2010, the financial crisis affected a number of industries, including metal industry. This caused a decrease of demand for metal industry companies, which implied the fall in their value and affected Czech economy. In today´s constantly changing economic environment, there is a high risk of a fall in the value and performance of companies. Changes in company value can be predicted based on monitoring the company value generators. The objective of the contribution is to identify value generators of companies operating in mining in the CR in 2016. For this purpose, the data of complete financial statements for the given year were used. For each company, EVA Equity value was calculated. Practical methodology for which the value generators were identified was created. For the identification of the value generators, sensitivity analysis within artificial neural networks was used. A total of 13 financial statements items were chosen that are greatly involved in creating a metal industry company value in the Czech Republic.*

***Key words:***

*company, metal industry, value generators, performance, EVA Equity*

**JEL Classification**: G32, C45, M21

## Introduction

The annual turnover of the EU metallurgical industry is EUR 200 billion, employing 400,000 people. In a year, it produced approximately 200 million tons of steel in more than 500 production plants in a total of 23 states within the EU. The products of this industry, in particular steel, are a key raw material of many industries – automotive, mechanical engineering, power engineering, and electronics (Vilamová et al., 2012). In the CR, metallurgical industry can be considered key in terms of the export base in the Moravian-Silesian region (Sucháček et al., 2017).

## Literature overview

Vilamová et al. (2013) evaluated the success and development of the companies operating in metallurgical industry in the CR by analysing individual accounting items. On the basis of this analysis, they found out that if the annual GDP increase is at least 3 %, there is a notable rise of metallurgical industry. It can thus be said that the rise of metallurgical industry is a direct indicator of the GDP growth. According to Kula et al. (2012), the financial crisis in the years 2008 - 2010 affected the majority of industries, including metallurgical industry in the CR. The reflection of this crisis was a decrease in the neighbouring countries´ demand for the metallurgical industry products, which significantly affected the CR economy. In the future, it can be assumed that the growth of the CR economy will be linked to innovations and growth of the metallurgical industry production (Vilamová et al., 2013). Innovations of the manufacturing process are the key to production innovations in all industries using the metallurgical industry products as key components for manufacturing their own products (Vilamová et al., 2012). Innovations in metallurgical industry also increase the competitiveness of such companies (Bakalarczyk et al., 2011). According to Dufek and Šarman (2005), the entry of foreign companies from the EU to the Czech market has been a great contribution for the CR since 2005.

Kafka (2010) tried to evaluate the assumed development of the metallurgical industry in the coming years. He claims that the most important thing for all employees is to be aware of the economic aspects of the company in which they work. Employees even at the least important

positions shall be aware of the fact that they do not work with materials, semi-finished products, and machinery, but that they have company money in their hands, and not only the material object to perform their work tasks.

In today´s ever-changing economic environment, there are great risks of a decrease of corporate value and performance. A change in the value of the business can be predicted on the basis of monitoring business value generators (Kazlauskiene, Christauskas, 2008). Value generators influence the success of each business (Vochozka, Machová, 2017), (Zareba, 2014). Setting value generators is a very complex issue, and it has been little addressed in scholarly literature so far. (Kazlauskiene, Christauskas, 2008). Microeconomic theory and journalistic practice is limited to maximizing the profit only, which is insufficient given the structure of income over time. It does not take the aspect of managerial decisions risks into account, either (Zareba, 2014). Value generators differ by industries, with the exception of revenues and earnings per share, which are constant in all industries (Tiwari, Kumar, 2015). In recent years, several methods of measuring a business performance have appeared: EVA, economic profit, EFQM, BSC, performance prism. Each of the methods have their strengths and weaknesses (Rylková, Bernatík, 2014). Hall (2016) focused on 5 manufacturing industries, including metallurgical industry, and tried to determine the individual value generators using statistical methods. For metallurgical industry, the following generators have been determined: earnings per share (EPS), return on assets (ROA), net operating profit after taxes (NOPAT), and economic value added (EVA).

Based on the value generators, the overall performance of a business is determined. According to Rylková and Bernatík (2014) it is necessary for companies to measure their performance sufficiently and properly; otherwise they will not be able to control their business activities adequately. This method of company management is in the literature referred to as a Value-based Management. Introducing this company management method is not easy in terms of the correct identification of value generators. After identification of these generators and focusing on their improvement, there is an increase in their value for the owner. Value generators can change over time depending on the company´s current goals. What is important is to be able to measure these goals and their comparing with the previous goals. With increasing value of these indicators, the value of the company also increase during the identification (Šalaga, 2015). Firk et al. (2016) noted the positive impact of Value-based Management on companies and the related companies´ performance increase.

Currently, there is no common approach to addressing the issue of identifying the key value generators. So far, the most widely used method for determining the company value indicators is sensitivity analysis. Sensitivity analysis, however, can assess the influence of one value generator only, without a complex involvement of other generators (Kazlauskiene, Christauskas, 2008).

## Goal and Methodology

The aim of this article is to identify value generators of the enterprise engaged in the sphere of mining in the Czech Republic in 2016.

The analyzed data are stored in Albertina database. What is going to be dealt with are enterprises engaged in metallurgical engineering such as mining and extraction that operated on the Czech market in 2016. CZ NACE classification of economic activities categorizes it in section B: Mining and extraction, paragraph 05 – mining and refinement of black coal and lignite, 06 – oil and natural gas extraction, 07 – extraction and refinement of ore, 08 – other mining and extraction, 09 – supporting activities while mining. The whole data set contains records on 135 enterprises. The data on their complete financial statements (without attachments) are available. From this information, we use the hard data on their balance sheets, profit and loss statements and cash flow statements. The data are recorded in one table; each line contains data on one enterprise. The enterprises are further classified according to the years on the market. Individual columns contain information from financial statements. Subsequently, Economic Value Added for shareholders (owners) of each enterprise in each year on the market, i.e. EVA Equity, is calculated.

At first, the weighted average cost of capital needs to be calculated. The calculation is done

according to Equation No. 1 (Neumaierová, Neumaier, 2008):

$$WACC = r_f + r_{LA} + r_{enterprise} + r_{FinStab} \quad (1)$$

Where: WACC – Weighted Average Cost of Capital, $r_f$ – risk free profit, $r_{LA}$ is a function defining the size of the enterprise, $r_{enterprise}$ is a function defining the development of production power, $r_{FinStab}$ is a function defining relationships between assets and liabilities of the enterprise.

Furthermore, costs of equity need to be calculated according to Equation No. 2 (Neumaierová, Neumaier, 2008):

$$= \frac{WACC * \frac{UZ}{A} - (1-d) * \frac{U}{BU+O} * \left(\frac{UZ}{A} * \frac{VK}{A}\right)}{\frac{VK}{A}} \quad (2)$$

Where: $r_e$ – costs of equity (rate of equity), WACC – Weighted Average Cost of capital, UZ – payable resources (equity and interest-yielding liabilities), A – assets, VK – equity, BU – bank loans, O – debentures, $\frac{U}{BU+O}$ – interest rate, also i (interest), d – income tax rate also (t - tax).

EVA Equity for shareholders is calculated according to Equation No. 3 (Neumaierová, Neumaier, 2008):

$$EVA\ Equity = (ROE - r_e) * VK \quad (3)$$

Where ROE is Return on Equity.

Enterprises in which EVA Equity calculation could not be made – as a result of unknown or zero values of entries that are necessary for the calculation to be done – were removed from the data set. The final table is subsequently uploaded to Statistica Software version 12 where the degree of dependence of EVA Equity ratio on individual entries of financial statements is examined.

Afterwards, the raw data statistics and correlation matrix is produced. In case that the correlation between two quantities is found, a close relationship of the two variables is very likely. As a result, particular entries are selected with respect to this close correlation. Regression is then used as a means of automated neural network. EVA Equity is considered as a dependent quantity and the selection of variables is subject to the economic theory of factors of production. This issue has already been dealt with by Wöhe and Kislingerová (2007). The data are subsequently divided into three subsets. The first one is training data. This subset contains 60% of input data. The second one is testing data that contain 20% of input data. The last one is a validation subset with remaining 20% of input data. The purpose of the training subset is to generate neural structures; testing and validation subset assess the reliability of identified structures. It is 10,000 neural networks that were generated in total. Five of them, which showed the best results, have been preserved. The networks that do not demonstrate improvement by lowest square method and entropy when being created are considered as the best identified structures. Two types of neural structures are used: Multi-Layer Perceptron neural networks (MLP) and Radial Basic Function neural networks (RBF). In the hidden and output layer, the following distribution functions are considered: linear, logistic, atanh (hyperbolic tangents), exponential and sinus.

Selected neural structures are considered to be the research results. These structures are able to predict EVA Equity based on input data from which we are able to predict the likely value of EVA Equity. This model considers only these variables with a profound influence on the final value of EVA Equity ratio. It is a neural network whose ability to predict is the greatest based on the highest efficiency in the training, testing and validation data set that is chosen. Moreover, this network contains only a minimum error in all data sets and thereby makes a true economic interpretation. Sensitivity analysis is then carried out by means of which variables that need to be calculated and that significantly influence the result are identified. Value generators of the enterprise engaged in the sphere of mining are the results.

## Findings

After the enterprises for which EVA Equity ratio could not be calculated have been removed from the input data, figures in financial

statements of 135 enterprises engaged in the mining and extraction in the Czech Republic are to be calculated. The methodology determined independent variables that are calculated (according to the discovered correlation of the data and economic interpretation). These are as follows: total assets, fixed tangible assets, fixed financial property, inventories, long-term liabilities, short-term liabilities, business relation liabilities, registered capital, bank loans and financial aids, material and energy consumption, depreciation of fixed tangible assets, amortization of fixed intangible assets, other operating incomes, and income tax on ordinary and extraordinary activities. Table No. 1 shows the five best generated and preserved neural networks.

***Table 1. Preserved neural structures***

| | Network | Training efficiency | Testing efficiency | Validation efficiency | Training error | Testing error | Validation error | Training algorithm | Error function | Activation of hidden layer | Output activation function |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MLP 13-13-1 | 0.976236 | 0.722904 | 0.989862 | 5.544183 E+08 | 7.272184 E+10 | 1.761796E +08 | BFGS 10 | Total squares | Sinus | Exponential |
| 2 | MLP 13-5-1 | 0.870682 | 0.896288 | 0.988916 | 2.866814 E+09 | 4.711732 E+10 | 3.044458E +08 | BFGS 4 | Total squares | Exponential | Sinus |
| 3 | MLP 13-5-1 | 0.923346 | 0.551301 | 0.987651 | 1.139886 E+10 | 1.282867 E+11 | 1.344766E +09 | BFGS 2 | Total squares | Identity | Exponential |
| 4 | MLP 13-17-1 | 0.953240 | 0.902236 | 0.988849 | 1.217160 E+09 | 6.176602 E+10 | 1.727418E +08 | BFGS 4 | Total squares | Identity | Sinus |
| 5 | MLP 13-14-1 | 0.900491 | 0.078517 | 0.988693 | 1.072166 E+10 | 1.285218 E+11 | 1.088074E +09 | BFGS 2 | Total squares | Identity | Exponential |

*Sources: Authors.*

The table suggests that all preserved neural structures are multilayer perceptron networks; therefore, they demonstrate the best characteristics. Variants of Quasi-Newton (2, 4 and 10) Algorithm were used as a training algorithm. The method of the lowest squares was used as an error function for each preserved network. The hidden neural layer was activated by the identity function (sinus and exponential) in three cases. Output activation function was activated by exponential function in three cases and other two neural networks were activated by sinus function. The first layer of all preserved neural networks contains the identical number of neurons – 13. What is evident is that the structure of hidden layers is highly variable. The relevance of generated networks is depicted in Tab. No. 2.

***Table 2. The efficiency of generated networks***

| Network | Training | Testing | Validation |
|---|---|---|---|
| MLP 13-13-1 | 0.976236 | 0.722904 | 0.989862 |
| MLP 13-5-1 | 0.870682 | 0.896288 | 0.988916 |
| MLP 13-5-1 | 0.923346 | 0.551301 | 0.987651 |
| MLP 13-17-1 | 0.953240 | 0.902236 | 0.988849 |
| MLP 13-14-1 | 0.900491 | 0.078517 | 0.988693 |

*Source: Authors*

This table illustrates efficiencies of individual networks in all three data sets (training, testing and validation). Ideally it is the highest efficiency value (correlation coefficient) that is looked for;

at the same time, what is also looked for is the identical value of all data sets. As could be evident at the first glance, MLP 13-13-1 neural network achieves the highest efficiency in the training data set. At the same time, this neural network shows the best efficiency result in the validation data set. The table also suggests that all the remaining preserved neural networks demonstrate a decrease in efficiency in the training network. As far as the similarity of values of all data sets is concerned, MLP 13-5-1 neural network, i.e. the second preserved network, manifests a high and relatively constant efficiency in all data sets. Of importance might also be that the testing data set of the last preserved network (MLP 13-14-1) shows several times lower efficiency than other preserved networks.

In order to properly evaluate the result, the following table (Table No. 3) suggests parameters of predictions that have been made by individual networks.

***Table 3. Parameters of predictions***

| **Prediction parameter** | **1. MLP 13-13-1** | **2. MLP 13-5-1** | **3. MLP 13-5-1** | **4. MLP 13-17-1** | **5. MLP 13-14-1** |
|---|---|---|---|---|---|
| Minimal prediction (Training) | -332737 | -11657 | 33365 | -328448 | 18799 |
| Maximal prediction (Training) | 1139052 | 814848 | 43806 | 968213 | 58589 |
| Minimal prediction (Testing) | -2091 | -802304 | 33558 | -9437 | 18896 |
| Maximal prediction (Testing) | 2293621 | 1056179 | 42898 | 944392 | 187082 |
| Minimal prediction (Validation) | -4971 | -11424 | 33556 | -9796 | 18890 |
| Maximal prediction (Validation) | 155994 | 134345 | 35553 | 163141 | 25472 |
| Minimal residua (Training) | -110313 | -469257 | -402296 | -312916 | -387730 |
| Maximal residua (Training) | 152257 | 301099 | 1049914 | 125507 | 1035635 |
| Minimal residua (Testing) | -1953519 | -93106 | -530167 | -723386 | -674443 |
| Maximal residua (Testing) | 321264 | 1558706 | 2571987 | 1670493 | 2544035 |
| Minimal residua (Validation) | -15272 | -4406 | -48468 | -7198 | -33850 |
| Maximal residua (Validation) | 87192 | 108841 | 207633 | 80045 | 217714 |
| Minimal standard residua (Training) | -5 | -9 | -4 | -9 | -4 |
| Maximal standard residua (Training) | 6 | 6 | 10 | 4 | 10 |
| Minimal standard residua (Testing) | -7 | 0 | -1 | -3 | -2 |
| Maximal standard residua (Testing) | 1 | 7 | 7 | 7 | 7 |
| Minimal standard residua (Validation) | -1 | 0 | -1 | -1 | -1 |
| Maximal standard residua (Validation) | 7 | 6 | 6 | 6 | 7 |

*Source: Authors*

Table No. 3 strongly suggests that values of maximal and minimal predictions in the third and fifth neural structures bear remarkably similar values in all data sets. On the other hand, they have highest values in maximal and minimal standard residua. Of interest might also be that these two networks, as contrasted to the three remaining preserved networks, have positive minimal values as opposed to standard residua where these values are negative – although extremely low.

Sensitivity analysis was subsequently carried out. Results of this analysis are depicted in Table No. 4.

*Table 4. Sensitivity analysis*

| Ratio | 1. MLP 13-13-1 | 2. MLP 13-5-1 | 3. MLP 13-5-1 | 4. MLP 13-17-1 | 5. MLP 13-14-1 | Average |
|---|---|---|---|---|---|---|
| **Total assets** | 3.748769 | 2.134657 | 1.005125 | 1.916584 | 1.023933 | 1.965814 |
| **Registered capital** | 5.362169 | 1.005736 | 0.999091 | 0.936063 | 0.996042 | 1.859820 |
| **Material and energy consumption** | 2.493298 | 1.148591 | 1.002088 | 1.059412 | 1.002833 | 1.341244 |
| **Depreciation of fixed tangible assets, amortization of fixed intangible assets** | 1.846339 | 1.278299 | 0.999882 | 1.212942 | 1.009398 | 1.269372 |
| **Fixed intangible assets** | 1.836384 | 1.044906 | 1.000454 | 1.022727 | 1.001631 | 1.181220 |
| **Fixed financial property** | 1.799239 | 1.009912 | 1.000900 | 1.011264 | 0.999214 | 1.164106 |
| **Bank loans and aids** | 1.345822 | 0.934230 | 1.000132 | 0.999833 | 1.000544 | 1.056112 |
| **Business relation liabilities** | 1.152275 | 1.034692 | 1.000600 | 1.027410 | 1.001798 | 1.043355 |
| **Short-term liabilities** | 1.116033 | 0.999931 | 0.999763 | 0.998747 | 1.002010 | 1.023297 |
| **Other operating incomes** | 1.012090 | 1.044928 | 1.000012 | 1.020638 | 1.000059 | 1.015545 |
| **Inventories** | 1.022545 | 0.995388 | 1.001033 | 0.996093 | 1.000649 | 1.003142 |
| **Income tax on ordinary and extraordinary activities** | 1.014457 | 0.984404 | 1.000025 | 1.014892 | 1.000074 | 1.002770 |
| **Long-term liabilities** | 0.461567 | 1.295562 | 0.999459 | 1.148378 | 0.984292 | 0.977851 |

*Source: Authors*

The table demonstrates that levels of importance of individual variables differ in each preserved network. In the first preserved network, it is registered capital that is on the first place; in the second one it is total assets of the enterprise; the same applies to the third and fifth network. Material and energy consumption, depreciation of fixed tangible assets and amortization of fixed intangible assets are other important entries. Other entries see a decrease in their importance together with a position in the imaginary table of winners.

## Discussion and Conclusion

The aim of this article was to identify value generators of the enterprise engaged in the sphere of mining in the Czech Republic in 2016. In order to achieve this, a practical methodology by means of which value generators of the enterprise were identified was devised. Thirteen quantities that participate in creating enterprise value to the largest extent were chosen in total. This value is measured by EVA Equity ratio. These most important variables were identified as generators: total assets, registered capital, material and energy consumption, depreciation of fixed tangible assets and amortization of fixed intangible assets and fixed intangible assets. Mining enterprises engaged in mining and extraction in the Czech Republic should thereby focus on these entries in their financial statements. What is strongly evident is the parallel between this type of enterprises and value generators. As a result of a large accumulation of fixed assets in which the mining enterprises accumulated probably the most financial resources, the total assets are obviously the key generator; what also plays an important role are depreciations of fixed tangible assets and amortization of fixed intangible assets. What also should not be omitted are entries from Table No. 4 that also participate in creating enterprise value. The aim of the article was thereby fulfilled. Of major importance is also the potential of results which means that a further in-depth research can be carried out. Currently, it is relevant to identify

the degree of influence of individual variables on EVA Equity and, also, the relationship between these variables and EVA Equity in regard to the growing popularity of these ratios. The next essential step is to decompose constituent ratios and integrate them into tactical and operational objectives of the enterprise. The strategic objective of all existing enterprises is generally known – the increase of its value for shareholders. All the same, the same applies to all manufacturing and non-manufacturing economic sectors.

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# ANALYSIS OF PROFITABILITY AND RISK-TAKING IN AMERICAN, EUROPEAN AND ASIAN STOCK MARKETS

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***Abstract***

*Major global stock indices for different regions are dealt in this scientific article. American, European, Asian stock indices are explored according to profitability and risk. The British and German stock indices are detailed and compared to global stock indices as the most important stock indices in the European region. The price trend, profitability, volume, and risk of these stock indices over a single day are explored in more detail from January 4, 1999 to March 22, 2018, with a total time horizon of 4460 days, using Bloomberg terminal. The main purpose of the article is to analyze the profitability and risk of stock indices, to compare these indices and to forecast the trend of stock price changes. Comparison, systematization, logical grouping, methods for calculating profitability, risk, standard deviation are used in this article. Also, moving averages (short (MA21) and long periods (MA365)) are counted. The average profitability per day was the highest for the DAX stock index and the lowest for the UKX stock index. However, the highest profitability for the all analyzed period was the SPX stock index. Interestingly, that the loss would have been obtained from the UKX index over the same analysed period from 1999 to 2018. The NKY stock index was the most risky over the analyzed period, according to the standard deviation. According to the coefficient of variation, the UKX equity index had the highest risk. Floating averages reflect the correct buying and selling signals based on historical data. According to 2018 historical data, moving averages do not show optimistic forecasts, so 2018 may be particularly risky for investors. Also after analyzing the stock index price trend in 1999-2018, it can be concluded that all stock indices (SPX, SXXP, DAX, UKX, NKY) were strongly affected by the dot com bubble and the global economic crisis. The dot com bubble was the strongest hit by the DAX index price (almost four times). The lowest price for SXXP index fell (almost twice). During the global economic crisis, the price of the SPX index fell the most. The lowest price for the NKY index fell. During the period of 1999-2018, the highest upward trend was the SPX and DAX indexes. The UKX Indesque did not have a long-run trend. The highest average daily yield was the DAX index. The highest risk was the NKY index. The 2018 stock price index does not show optimistic expectations.*

***Keywords***

*stock indices, profitability, risk, moving averages*

**JEL Classification:** G15, G17, F37

## Introduction

Stock indices best reflect the stock market. Careful monitoring and in-depth analysis can help predict the stock market trend. This prediction is very important for investors who buy, sell, and expect to earn a profit from the price difference. The Standard and Poor's 500 Index (SPX), STOXX Europe 600 Index (SXXP), German Stock Index (DAX), FTSE 100 Index (UKX) and Nikkei-225 Stock (NKY) are the most well-known stock indices among investors. Each of these indexes represents a different region and companies.

SPX index is a capitalization-weighted index of 500 stocks. The index is designed to measure performance of the broad domestic economy through changes in the aggregate market value of 500 stocks representing all major industries. Booking Holdings (BH), Amazon (AM) and Alphabet (AL) are the three largest companies in the SPX index. BH operates as an online travel company. It offers a platform that allows to make travel reservations with providers of travel services. AM is an online retailer that offers a wide range of products: books, music, videotapes, computers, electronics, home and garden, and numerous other products. AL operates as a holding company. SXXP index represents large, mid and small capitalization companies across 17 countries of the European region. Chocoladefabriken Lindt & Sprungli (CS), Lindt & Spruengli (LS), Sika (SK) are the three largest companies in the SXXP index. CS manufactures a broad range of chocolate. The Company markets

its products through its own specialty stores andboutiques, as well as through retail outlets. LS operates subsidiaries in Europe, North America and Asia and also sells its products through various distributors in other world region. SK manufactures construction materials and offers related services. The Company produces concrete and mixtures, mortar, sealants and adhesives, tooling resins, anti-static industrial flooring, acoustic materials for automobiles, and waterproof membranes. DAX index is a total return index of 30 selected German blue chip stocks traded on the Frankfurt Stock Exchange. The equities use free float shares in the index calculation. SGS, Adidas (AD) and MunichRe (MR) are the tree largest companies in the DAX index. SGS provides industrial inspection, analysis, testing, and verification services. AD manufactures sports shoes and sports equipment. MR provides financial services. UKX index is a capitalization-weighted index of the 100 most highly capitalized companies traded on the London Stock Exchange. The equities use an investibility weighting in the index calculation. Paddy Power Betfair (PPB), DCC and Reckitt Benckiser Group (RBG) are the three largest companies in the UKX index. PPB is a betting and gaming company. The Company provides online betting and gaming products. DCC is a sales, marketing, distribution, and business support services company. The Company operates in the following sectors, energy, IT, and entertainment products, healthcare, environmental services, and food and beverage. RBG manufactures and distributes a wide range of household, toiletry, health, and food products on a global basis. NKY index is a price-weighted average of 225 top-rated Japanese companies listed in the First Section of the Tokyo Stock Exchange. Fast Retailing (FA), FANUC (FN) and Tokyo Electron (TE) are the three largest companies in the NKY index. FA designs, manufactures, and retails its own line of clothing. FN manufactures factory automation systems and robots. TE manufactures and sells industrial electronics products, such as semiconductor manufacturing machines, flat panel display manufacturing machine.

Investing in stock indices is a great opportunity for investors to make a profit, therefore the main purpose of the article is to analyze the profitability and risk of stock indices, to compare these indices and to forecast the trend of stock price changes. Comparison, systematization, logical grouping, methods for calculating profitability, risk, standard deviation are used in this article. Also, moving averages (short (MA21) and long periods (MA365)) are counted.

## Theoretical background and methodology

Stock indices, purchase and sales signals, various traditional and innovative forecasting methods are analyzed in scientific articles. The empirical part and the data of the author of each scientific article are different, but the purpose of all of them is similar - more effective decision-making for investors.

According to the authors Ivanova and Wille (2002) a moving average technique can be used for analysing the stock indices dynamics. The authors say that two moving averages with different time horizons are especially important. Also it is very important to distribute the maximum and minimum in the moving average signal. The dynamics of stock prices is influenced by economic and political factors. Any economic news affects the movement of stock prices. It should be emphasized that any negative economic news affects the fall in stock indices. Especially prices fell during all global economic crises. According to the authors Vamvakaris et al. (2018) have investigated that all of the major economic crises that have taken place over the past twenty years around the world have greatly affected the behaviour of stock price indices. They say that each global economic crisis has affected stock indices differently, however can predict future trends carefully analysing the stock index market using horizontal visibility graph. Analyzing the stock index market it is important to consider systemic risk. According to the authors Li et al. (2018) in high-volatility financial environments systemic risk can be detected using network topology. The authors in their study proposed to apply the minimum spanning tree with the upper tail. Papaioannou et al. (2017) offers a ''Buy and Hold'' trading strategy for analysing price of stock indices. The strategy is based on the most liquid futures deals from the four major asset classes: equities, bonds, commodities and foreign exchanges. Authors use S&P500 stock index data

and prove that such a strategy can be one of the successful alternatives for predicting future trends. In order to predict stock index price trend can be used the density forecast. According to the authors Hua and Zhang (2008) this forecast is ,,an estimate of the probability distribution of the possible future values of a random variable'' and are increasingly being used. They propose a GARCH model with two-piece normal distribution. Authors Rivera and Arroyo (2012) use histogram time series (HTS) and interval time series (ITS) to analyse S&P500 stock index price trends. However according to the authors Aubert and Grudnitski (2014) ,,the relationship between the market mispricing of pro forma earnings announcements and the degree to which pro forma earnings are quantitatively reconciled with GAAP (Generally Accepted Accounting Principles) earnings'' are more important than other risk factors of market. They proved it using Euro Stoxx index data. Ozturk and Richard (2015) use stochastic volatility leverage models to assess stock indices price trends according S&P500 data. These authors Michaelidess et al. (2016) note that it is very important to analyze stock indices during crises, to anticipate future crises, and to try to forecast share prices through them. They suggest using innovative techniques artificial neural networks. These authors Brida et al. (2016) also examine stock price indices in pre-crisis and post-crisis periods using Euro Stoxx index data. They use ,,symbolization methods to the raw data to study the behaviour of the market structure in different, normal and critical, situations''. Liu (2009) analyzed the stock index Nikkei 225 and came to the conclusion that ,,when stocks are added to (deleted from) an index, more (less) information should be generated and incorporated into their prices, leading to higher (lower) pricing efficiency and lower (higher) return predictability for them.'' This author has applied runs test. According to the authors Danbolt et al. (2017) stock market index FTSE 100 is different from that of the Amercan or other country's stock indices as companies may fall into this index according to clear rules that are based on market capitalization. A technical analysis can be used to assess the stock index price trend (Ilalan, 2016). One of the most significant technical analysis indicators is the Elliott wave principle. According to the Ilalan (2016) it is very important to find a linkage between Elliott wave principle and fractional Brownian motion. This author used the stock index Nikkei 225 and proved that the technical analysis could predict trends of stock prices. For the evaluation of the stock index price trend, it is also possible to use the autoregressive conditional jump intensity (ARJI) model (Lee et al., 2007). These authors used CME-Nikkei 225 and SIMEX-Nikkei 225 data. It is necessary to anticipate market volatility in order to predict the prices of stock indices, and this is rather complicated. Authors Becker et al. (2006) in their study show that the VIX index can be used to assess the volatility of the stock market, but it is not the best option.

A single stock index was more analyzed in scientific articles. One or two methods have also been applied by scientists. Stock index prices and price trends were the basis. However, the global stock indexes view is composed of stock indexes less analyzed. The methods proposed by researchers can be applied to analyzing several key stock indices in order to make more effective investment decisions.

The average profitability of a market over a period is calculated as a relative change in the index over a certain period Eq. (1), where km is average market profitability over the period, I1 is index at the end of the period, I0 is index size at the beginning of the period.

$$k_m = \frac{I_1 - I_0}{I_0} \qquad (2)$$

The standard deviation reflects the range of the spread of the return on investment. The lower the standard deviation, the lower the risk. The standard deviation is a measure that is used to quantify the amount of variation or dispersion of a set of data values. A low standard deviation indicates that the data points tend to be close to the mean (also called the expected value) of the set, while a high standard deviation indicates that the data points are spread out over a wider range of values. The formula for the sample standard deviation is Eq. (2), where x1…xN are the observed values of the sample items, $\bar{x}$ is the mean value of these observations, and N is the number of observations in the sample.

$$\delta = \frac{\sum_{i=1}^{N}((x_i - \bar{x}))^2}{N-1} \quad (2)$$

In finance, standard deviation is often used as a measure of the risk associated with price-fluctuations of a given asset (stocks, bonds, property), or the risk of a portfolio of assets (actively managed mutual funds, index mutual funds or ETFs). Risk is an important factor in determining how to efficiently manage a portfolio of investments because it determines the variation in returns on the asset and/or portfolio and gives investors a mathematical basis for investment decisions (known as mean-variance optimization). The fundamental concept of risk is that as it increases, the expected return on an investment should increase as well, an increase known as the risk premium. In other words, investors should expect a higher return on an investment when that investment carries a higher level of risk or uncertainty. When evaluating investments, investors should estimate both the expected return and the uncertainty of future returns. Standard deviation provides a quantified estimate of the uncertainty of future returns.

$$CV_i = \frac{\sigma_i}{\bar{r}_i} \quad (3)$$

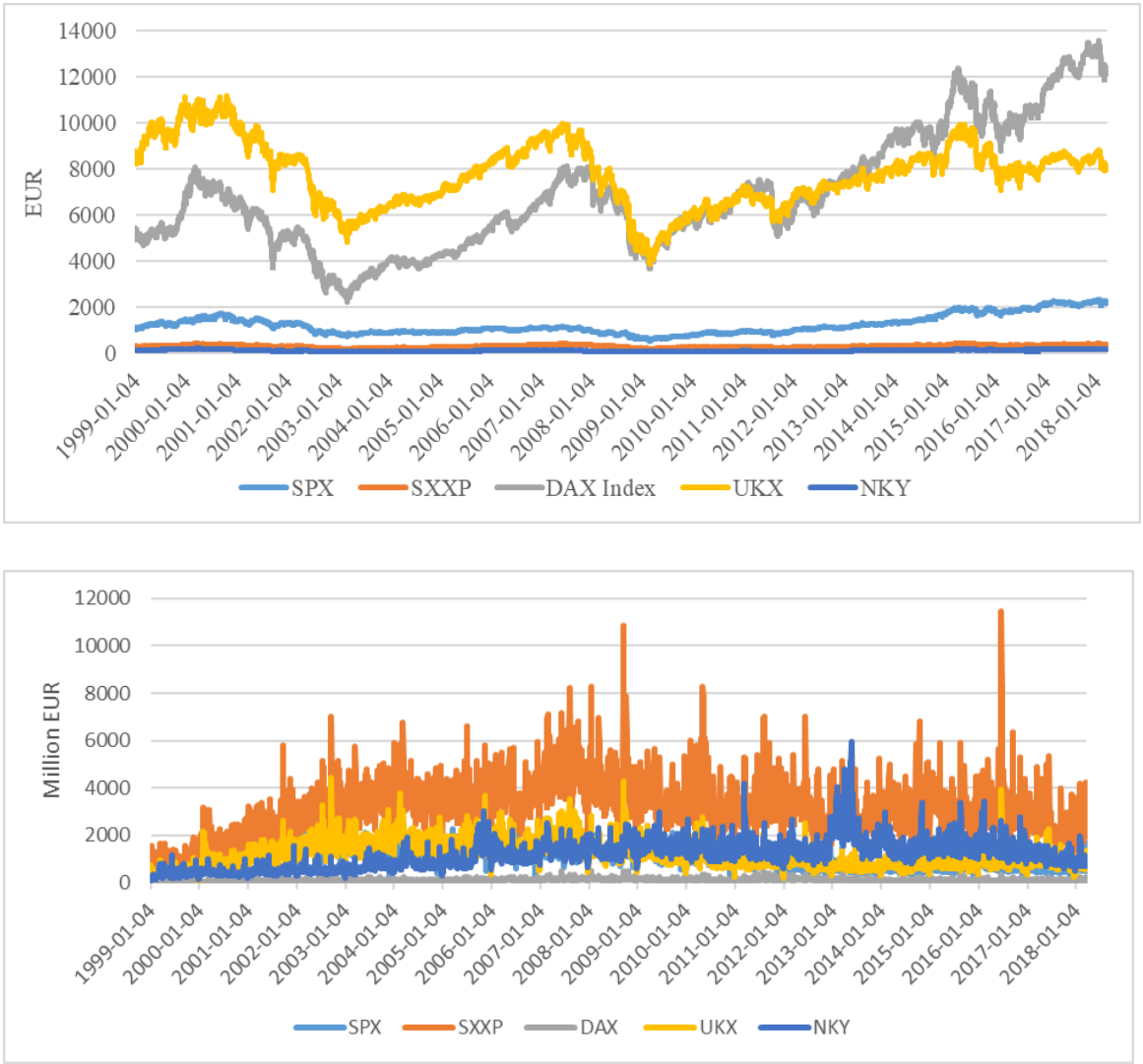
The coefficient of variation represents the risk per unit of profit rate Eq. (3), where σi is standard deviation of investment instrument, ri is average return on investment instrument.

The moving average is one of the technical analysis indicators. This indicator is the most popular and most used, it is based on a large number of other indicators. A moving average is the average price over a given period. This is a line that shows the average price after the specified time period, which is expressed in the amount of candles and/or bars. The moving average is very large and different. It could be calculated the moving averages for the short and long periods. It is recommended to use MA21 (the average stock price index for 21 days) for analysis of a short period. MA365 (the average stock price index for 365 days) is recommended for analysis of long periods.

**Results and debate**

The price trend is analyzed in the stock indexes of different regions of the world: Standard and Poor's 500 Index (SPX, America), STOXX Europe 600 Index (SXXP, Europe), Nikkei-225 Stock Index (NKY, Asia), German Stock Index (DAX, Germany), FTSE 100 Index (UKX, United Kingdom). The price trend and volume are analyzed every day from January 4, 1999 to March 22, 2018, total 4460 days (see Figure 1-2). The most expensive stock index before the global crisis was SPX, but after the crisis, the DAX Index surpassed SPX. On March 22, 2018, the DAX index cost 12100 euros. During the entire analysis period, the average daily price was as follows: SPX 1222 EUR, SXXP 301 EUR, DAX 6894 EUR, UKX 7776 EUR, NKY 108 EUR. All global stock indices were affected not only by the global economic crisis in 2007-2009, but also by the dot com bubble in 2000-2003. The highest price for the SPX index reached 22 January 2018 and was equal to 2314 EUR. The lowest SPX price was on March 9, 2009 and reached 535 euros. The highest price for the SXXP index reached 15 April 2015 and was equal to 414 EUR. The lowest SXXP price was on March 9, 2009 and reached 158 euros. The highest price for the DAX index reached 23 January 2018 and was equal to 13560 EUR. The lowest DAX price was on March 12, 2003 and reached 2203 euros. The highest price for the UKX index reached October 24, 2000 and was equal to 11146 EUR. The lowest UKX price was on March 9, 2009 and reached 3872 euros. The highest price for the NKY index reached March 31, 2000 and was equal to 207 EUR. The lowest NKY price was on March 10, 2009 and reached 56 euros. So, the lowest daily price for all indices was March 9-12, 2009, except for the UKX index. The lowest price for the UKX index was March 12, 2003. The maximum price was different. The highest prices for SPX and DAX indexes were on January 22 and 23, 2018. The UKX and NKY indexes peaked at the highest prices on October 24 and March 31, 2000. The highest price of the SXXP index was on April 15, 2015.

***Figure 1-2. Price trend (EUR) and voulme (Million EUR) of stock indices per day from January 4, 1999 to March 22, 2018***

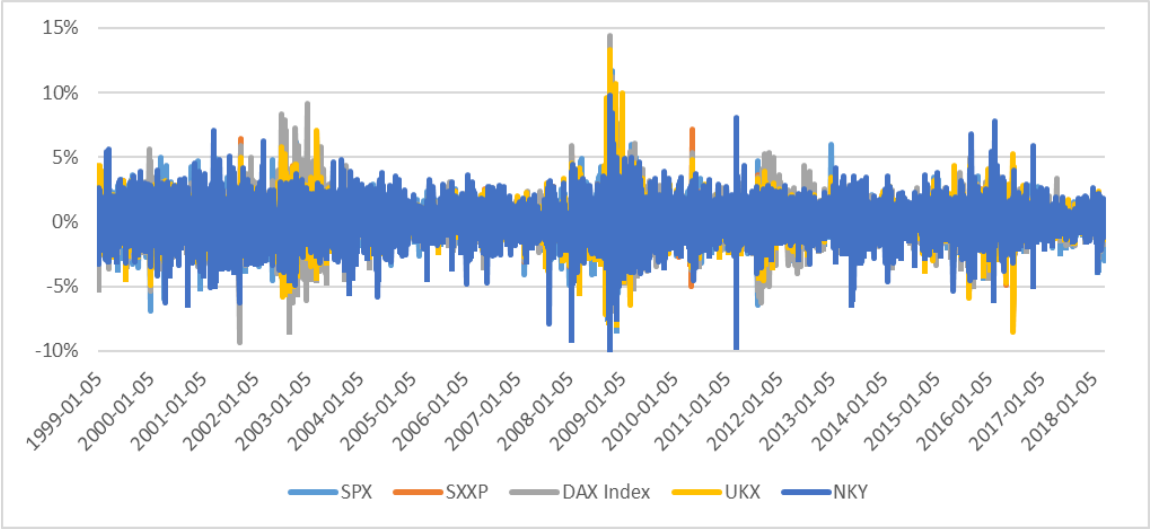



*Source: Bloomberg Database*

Investors are interested in profitability. Graph 3 shows the profitability of one day over the entire analyzed period from January 1999 to March 2018. The SPX index peaked at one-day profitability of 11.7% and the lowest -8.4%. The SXXP index had a one-day profitability of 13.2% and a low of -7.6%. The DAX index had the highest profitability of one day at 14.4%, and the lowest -9.3%. The UKX index had a one-day profitability of 13.3%, while the lowest -8.8 percent. The NKY index had a one-day profitability of 9.8% and low of -9.8%. It is very important to analyze the volume of trading in stock indices. The volume of trade in indices for the period 1999-2018 of the SPX index peaked at 11.48 billion, at least 0.6 billion a day. The same volume of the SXXP index peaked at 0.49 billion, at least 6.4 million a day. The DAX index peaked at 4.44 billion, at least 0.08 billion a day. The UKX index peaked at 5.95 billion, at least 0.07 billion dollars a day. The NKY index peaked at 2.95 billion, at least 0.2 billion a day.

Calculating the average profitability of one day can see the following results (see table 1). The highest profitability per day is the SPX index and the DAX index, while the smallest profitability per day is the SXXP index and UKX index. However, the highest risk is the NKY index and the lowest risk for the SXXP index. It is very interesting that the highest coefficient of variation is for UKX index, and the smallest coefficient of variation is for SPX index.

***Figure 3. Profitability of stock indices per day from January 4, 1999 to March 22, 2018***




*Source: Bloomberg Database*

***Table 1. Average profitability, standard deviation and coefficient of variation per day for stock indices from January 4, 1999 to March 22, 2018***

| | **SPX** | **SXXP** | **DAX** | **UKX** | **NKY** |
|---|---|---|---|---|---|
| **Average profitability** | 0.03% | 0.01% | 0.03% | 0.01% | 0.02% |
| **Standard deviation** | 1.38% | 1.29% | 1.56% | 1.36% | 1.57% |
| **Coefficient of variation** | 53.45 | 92.85 | 50.53 | 160.07 | 67.20 |

***Table 2. Profitability and probability of stock indices according the normal distributions***

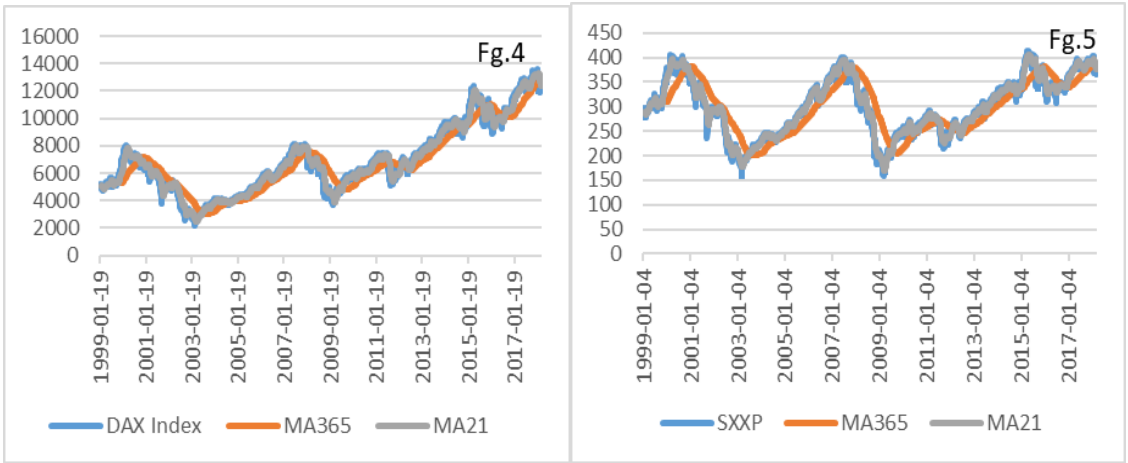
| SPX | | SXXP | | DAX | | UKX | | NKY | |
|---|---|---|---|---|---|---|---|---|---|
| Profit. | Prob. | Profit. | Prob. | Profit. | Prob. | Profit. | Prob. | Profit. | Prob. |
| -4.11 | 0.3% | -3.86 | 0.3% | -4.65 | 0.3% | -4.07 | 0.3% | -4.69 | 0.3% |
| -3.36 | 1.4% | -3.16 | 1.5% | -3.80 | 1.3% | -3.33 | 1.4% | -3.83 | 1.2% |
| -2.60 | 4.7% | -2.45 | 5.0% | -2.95 | 4.1% | -2.59 | 4.7% | -2.98 | 4.1% |
| SPX | | SXXP | | DAX | | UKX | | NKY | |

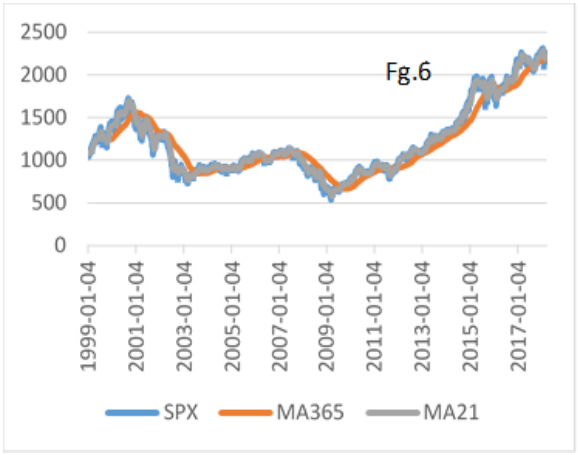
| Profit. | Prob. | Profit. | Prob. | Profit. | Prob. | Profit. | Prob. | Profit. | Prob. |
|---|---|---|---|---|---|---|---|---|---|
| -1.85 | 11.4% | -1.75 | 12.2% | -2.10 | 10.1% | -1.84 | 11.6% | -2.12 | 10.0% |
| -1.10 | 20.7% | -1.05 | 22.1% | -1.25 | 18.3% | -1.10 | 21.0% | -1.26 | 18.2% |
| -0.35 | 27.9% | -0.34 | 29.8% | -0.40 | 24.6% | -0.36 | 28.3% | -0.41 | 24.5% |
| 0.41 | 27.9% | 0.36 | 29.8% | 0.46 | 24.6% | 0.38 | 28.3% | 0.45 | 24.5% |
| 1.16 | 20.7% | 1.07 | 22.1% | 1.31 | 18.3% | 1.12 | 21.0% | 1.30 | 18.2% |
| 1.91 | 11.4% | 1.77 | 12.2% | 2.16 | 10.1% | 1.86 | 11.6% | 2.16 | 10.0% |
| 2.66 | 4.7% | 2.47 | 5.0% | 3.01 | 4.1% | 2.61 | 4.7% | 3.02 | 4.1% |
| 3.42 | 1.4% | 3.18 | 1.5% | 3.86 | 1.3% | 3.35 | 1.4% | 3.87 | 1.2% |
| 4.17 | 0.3% | 3.88 | 0.3% | 4.71 | 0.3% | 4.09 | 0.3% | 4.73 | 0.3% |

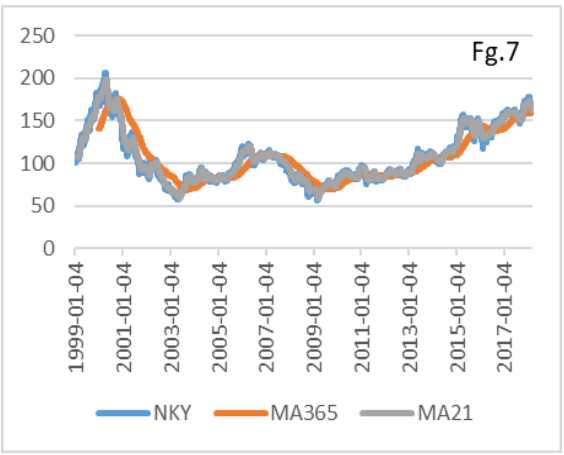
Table 2 presents the normal distributions of these stock indices: SPX, SXXP, DAX, UKX, NKY. There is a 0.3% probability getting such profitability per day from stock indices: SPX (4.17%), SXXP (3.88%), DAX (4.71%), UKX (4.09%), NKY (4.73%). However, there is also a 0.3% probability per day getting the same loss of these stock indices. Interestingly, the 30% probability per day is to get such profitability or loss from these stock indices: SPX (0.41%), SXXP (0.36%), DAX (0.46%), UKX (0.38%), NKY (0.45%). The results show that with the same probability, the highest profitability is possible by investing in the NKY stock index. However, making a profit is most likely to be invested in the SXXP equity index.

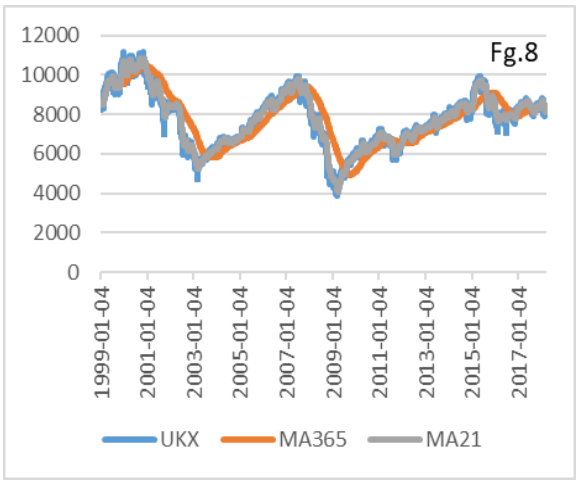
Floating averages can help determine the trend of stock price indices. Looking at long-term data, it is necessary to study the moving averages for a shorter and longer period. Selected 21-day and 365-day moving averages. When the short-term moving average crosses the long-term floating midsole from the bottom up, it shows a long position. According to Figure 4-8, it can be seen that the short-term moving average crossed the bottom of the long-term moving average in 2003 and 2009, when the stock price indices started to rise. Moving Average Method in 2018 in the first quarter showed different signals for stock indices. The stock indexes SXXP, DAX, UKX short period moving average crossed the long period moving average from top to bottom. It showed a short position for investors. For the stock indices, SPX and NKKY moving averages did not cross each other, so there were no bigger signals.

***Figure 4-8. Trend of stock indices price and moving averages (MA21 and MA365) per day from January 4, 1999 to March 22, 2018***






## Conclusions

After analyzing the stock index price trend in 1999-2018, it can be concluded that all stock indices (SPX, SXXP, DAX, UKX, NKY) were strongly affected by the dot com bubble and the global economic crisis. The dot com bubble was the strongest hit by the DAX index price (almost four times). The lowest price for SXXP index fell (almost twice). During the global economic crisis, the price of the SPX index fell the most. The lowest price for the NKY index fell. During the period of 1999-2018, the highest upward trend was the SPX and DAX indexes. The UKX Indesque did not have a long-run trend. The highest average daily yield was the DAX index. The highest risk was the NKY index. The 2018 stock price index does not show optimistic expectations.

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# THE AZERBAIJAN ECONOMY BY 2025: CRUDE OIL PRODUCTION AND PRICES IN THE WORLD

*Nijat HUSEYNOV*

***Abstract***

*Understanding the world economies requires to dive into the individual country experiences. In that context, there are group of countries, where their economic and political milestones hold many common aspects. One of this group is the cluster of the resource dependent economies. The recent researches by scholars on Azerbaijan outline and show the existence of the similar aspects of a resource dependent economy. That is why, in this research, the author attempts to make the forecast for the Azerbaijan economy by 2025 via delivering parallels with the data of the resource dependent economies. The key point in this research to find out the potential actions by the government in Azerbaijan in terms of the fiscal policy, oil export, monetary policy via learning other resource dependent economies and the trends in the world markets.*

***Key words***

*Resource Dependent Economies, Oil Prices, Oil production, Public Expenditure, Exchange rate of National Currency*

**JEL Classification**: P48, Q41, H50, O24

## Introduction

In the world crude oil market, the volatile conditions and environment induce the players: exporting countries either to be price maker (impactor) or taker. The first group of countries are the OPEC members, where they can have indirect impact on the world crude oil prices via stabilizing production level. However, for the second group of countries, particularly small players, such as Azerbaijan, the market does not offer much flexibility. In this context, learning future of the crude oil prices in the world energy markets is becoming crucial research area for the Azerbaijan economy.

Before diving to the studies, understanding the existing forecasting tools to be applied in the future of the crude oil prices could be important. However, the recent history shows that, old projections on the passed periods not always match with the reality. That means that empirical knowledge may not be only factor to be considered in the making any planning. Missing factors maybe included the international political relations, decisions, national, regional and global interest. That is why, author does not attempt to make any exact statement about the future of the world crude oil prices. In this research, the author investigates the current studies about the future of the world market and studies on the Azerbaijan "oil economy".

Testing the existing forecasts based on the current circumstances in the world oil market and measuring the worst-pessimistic scenarios on the Azerbaijan economy are the main contributions of this study. Logically, after delivering such variants, the results will help us to realize how volatile or sensitive is Azerbaijan under varied cases. That covers how the current fiscal and monetary policies are sustainable and efficient in the Azerbaijan economy. Particularly, the relations between the oil rents and public spending, "infection" level of the oil money into the current expenditure in Azerbaijan demonstrates accumulated financial assets' depletion time is not far from the now.

## 1. The world crude oil prices and Azerbaijan economy in the studies

The recent economic trends in the resource dependent economies motivates us to have a general investigation in the group or individual studies. Basically, understanding the root causes downs and ups in the prices are not easy job. That requires to dive into the many country cases and making parallels. In these kinds of the research's

uncial experiences may be one of the key barriers to make general judgments and issue one common recipe for the rest of the countries. However, good news is that, as the author outlined above, due to the ongoing external process and world market conditions drive the countries to react via similar and mutual behaviors. In that case, interpreting fundamental aspects and finding out the common points of the resource depending economies might be easier to scholars. The author believes that, Azerbaijan is not so non-common country as the member of the clyster of the economies that covered in this study.

Nazlioglu, Gormus and Soytas (2018) outline that oil price changes have impact on macroeconomic indicators including monetary policies, banking regulations in the resource importing countries. Similarly, learning the impact of the dramatic fluctuations in the oil prices over the exporting countries' economy is key focus area. Simply, the geopolitics, increasing oil production volume, operating new additional oil reserves, "starvation" to the oil cash even with low profitability under cost base have been the key reasons of the recent oil price drops (Khan, 2017). On the other hand, low oil prices can foster the transition process to the green targets via freezing the production volume where there is no economic value to be proceed (Harvey, 2017).

The world energy market expands quite faster while the volatility in terms of the prices. The unstable oil prices create the basis to change the market's direction to the alternatives such as natural gas. However, due to the nature of the existing oil-gas markets, oil and gas prices are quite correlated with each other (Shi and Variam, 2017). Safari and Davallou (2018) highlight that making forecasts on the world oil prices are getting more important due to their key role over the economies. The scholars list the external factors which have impact over the oil prices such as market conditions, international politics, the variety of the monetary policies.

Another important factor which has impact over the future of the oil price is the demand which holds weak elasticity in the market due to vital driver of the economies (Jianwei, Bao, and Ye, 2017). As the result of the instable oil rent flows, the resource dependent economies could not ensure efficient fiscal policy, where there exist clear connections between the oil money and current public spending. The point is that, even in the higher oil prices the governances could not achieve foster the economic development importantly, on the other hand, economies are becoming more dependent on one factor: oil price (Mehrara, 2008).

In fact, as the part of the world oil market, Azerbaijan has been small player and price taker. Importantly, understanding the level of the impacts of the oil price volatility on the Azerbaijan economy, scholar made varied studies. Interestingly, the world oil market is not managed by market rules (supply/demand). The volatility of the oil prices affect the resource dependent oil producer's economies regardless of their size of the production and Azerbaijan has not been out this kind of impact (Humbatova, Gasimov and Hajiyev, 2019).

In another study, Zulfigarov and Neuenkirch (2019) summarize that, the falling (increasing) oil prices caused declining (rising) output growth, cuts in the current public spending, pushed down (up) the size of the whole economy, challenges in the monetary policies due to higher dependency from the oil-gas sector. On the other hand, Mukhtarov, Mammadov and Ahmadov (2019) find out that, the oil price volatility has the positive correlations with the monetary policy and purchase value of the national currency. The scholars highlight that Azerbaijan has so close characteristics of the resource dependent economies, particularly sensitivity to any volatilities in the world oil markets. That is why, the diversification of the national economy and stabilizing monetary policy should be in the priorities of the governance in Azerbaijan.

Notably, the existing resource dependency has made the economy in Azerbaijan more passive and rely only energy rents. In this context the financing opportunities to cover current public spending via private sector's non-oil tax returns is becoming weak due closed and intercorrelated nature of the economy in Azerbaijan. This fact takes us to the result of the strong relation between volatility of the world oil prices and other tax returns in Azerbaijan (Aliyev, Ismayilov and Gasimov, 2019).

Humbatova and Hajiyev (2019) determines that the main reason for the recent changes in the macroeconomic indicators including the value of the national currency and the total output has

been the changes in the world oil market conditions and price mainly. The authors state that the minimum level of the participation of the government should be ensured in order to establish sustainable economy in Azerbaijan. Hajiyev and Rustamov (2019) determine that, the lower oil prices lead the Azerbaijan economy to higher inflation rate and falling total output.

In this study, the author brings additional approach to the future of the Azerbaijan economy via testing potential scenarios. The author's main goals are to test how sustainable is the Azerbaijan economy in the nearest future and comparing breakeven point oil price for with the global forecasts and the pessimistic numbers.

## 2. The comparison between resource dependent economies and Azerbaijan in the numbers

Based on the studies abovementioned, there is need to have a look to the international and local numbers in order to identifies global trends in the world oil markets and the Azerbaijan economy. Not surprisingly, Azerbaijan was in the top 20 countries where the resource sector holed one of the fifth of the total output in 2017 (Table 1). That shows that the Azerbaijan economy highly depends on the resource revenue, which motivates all sector to be more focused in one direction: non-renewable energy oil-gas sector.

***Table 1. Total natural resources rents, 2017***

| Country Name | *(% of GDP)* |
|---|---|
| Congo, Rep. | 43 |
| Mongolia | 41 |
| Libya | 38 |
| Iraq | 38 |
| Kuwait | 37 |
| Suriname | 33 |
| Congo, Dem. Rep. | 33 |
| Timor-Leste | 31 |
| Guyana | 25 |
| Liberia | 25 |
| Equatorial Guinea | 24 |
| Mauritania | 24 |
| Saudi Arabia | 24 |
| Oman | 23 |
| Solomon Islands | 23 |
| Sierra Leone | 22 |
| Chad | 22 |
| Papua New Guinea | 22 |
| Azerbaijan | 21 |

*Source: World Bank Data. (2019). Total natural resources rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.TOTL.RT.ZS*

Obviously, in the years of the boom of the oil prices the natural resources revenue had been cruciallyhigher and vice versa. Table 2 demonstrates that more than 80% of the total resource revenue has been belonged to the oil export in the recent decades, while second major item has been natural gas, which is controlled either with the fixed prices based on the contracts. In fact, the alternative the revenue source has been the tax returns on the economy. However, the main question is to identify whether the targeted sectors by tax authorities are directly related to the oil-gas sector or not? That point is quite important to understand how the Azerbaijan economy dependent on the resource sector.

***Table 2. Macroeconomic indicators of Azerbaijan, 2008-2017***

| Indicator Name | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total natural resources rents (% of GDP) | 41 | 28 | 32 | 35 | 31 | 27 | 23 | 15 | 15 | 21 |
| Oil rents (% of GDP) | 37 | 25 | 29 | 32 | 28 | 24 | 20 | 12 | 13 | 18 |
| Natural gas rents (% of GDP) | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 2 | 2 | 3 |
| Tax revenue (% of GDP) | 16 | 14 | 12 | 12 | 13 | 13 | 14 | 16 | 15 | 13 |

*Source: World Bank Data, (2019). Azerbaijan. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/country/azerbaijan?view=chart*

The efficient management of the fiscal policy in a resource dependent economy requires deep understanding, research of a specific country before making any final budget planning. Table 3 displays the general overview of the state budget of Azerbaijan in 2018 as the percentage of the total revenue and spending respectively. Obviously, more than one of the third of the total revenue collected from the tax returns. This fact could be classified as the positive sign of a sustainable economy, however, that is not simple as the first look. When we check the biggest portion of the source of the revenue, which is classified as the other returns hold more than half of the income of the budget. On the other hand, the main part of this revenue are transferred from the State Oil Fund of Azerbaijan. This number proves the level dependence on the oil-gas sector.

***Table 3. Revenues and Expenditures of state budget, Azerbaijan, 2018***

| **Revenues-total** | **100.0%** |
|---|---|
| profit tax of natural entities | 4.4% |
| profit tax of legal entities | 11.1% |
| tax on land | 0.2% |
| property tax | 0.8% |
| value added tax | 19.0% |
| Excise | 3.2% |
| tax on mining | 0.6% |
| tax related with foreign economic activities | 5.1% |
| other taxes | 2.5% |
| other returns | 53.0% |
| **Expenditures-total** | **100.0%** |
| national economy | 34.4% |
| Education | 8.7% |
| health care | 3.1% |
| social protection and security | 9.5% |
| culture, art, information, physical training and activities not included in other categories | 1.3% |
| Science | 0.5% |
| court authority, law enforcement agencies | 5.8% |
| legislation, executive and governmental authorities | 2.8% |
| other expenditures | 34.0% |

*Source: The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en*

In the public spending split, the structure shows that, key priorities as part of any sustainable economy: education, health care, social protection and security have not been key agenda in the state budget of Azerbaijan. Generally, the poor classification and lack of the systematic details of the public spending make the challenges to ensure the guarantee for the permanent economic growth in an economy.

***Table 4. The structure of the export, Azerbaijan, 2018***

| Commodities | % of the total export |
|---|---|
| Crude petroleum, according to the reports of SOCAR and AIOC | 83.12% |
| Natural gas, according to the reports of SOCAR and AIOC | 8.67% |
| Heavy distillates or gas oils for other purposes | 1.68% |
| Kerosene fuel for jet engine | 0.89% |

*Source: The State Statistical Committee of the Republic of Azerbaijan. (2019). Trade. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/trade/?lang=en*

Apparently, the structure of the total export illustrates the clear picture of a resource dependent Economy (Table 4). In 2018, the resource sector had more than 90% share of the total export numbers.

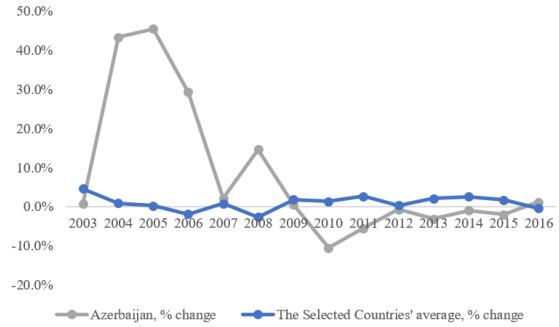
***Table 5. Oil production, thousands of tons, 2003-2017***

| Years | Azerbaijan | % change | The Selected Countries' average | % change |
|---|---|---|---|---|
| 2003 | 15,327 | | 91,501 | |
| 2004 | 15,425 | 0.6% | 95,666 | 4.6% |
| 2005 | 22,104 | 43.3% | 96,454 | 0.8% |
| 2006 | 32,146 | 45.4% | 96,595 | 0.1% |
| 2007 | 41,548 | 29.3% | 94,740 | -1.9% |
| 2008 | 42,401 | 2.1% | 95,428 | 0.7% |
| 2009 | 48,595 | 14.6% | 92,823 | -2.7% |
| 2010 | 48,824 | 0.5% | 94,457 | 1.8% |
| 2011 | 43,662 | -10.6% | 95,674 | 1.3% |
| 2012 | 41,220 | -5.6% | 98,205 | 2.6% |
| 2013 | 40,929 | -0.7% | 98,467 | 0.3% |
| 2014 | 39,640 | -3.2% | 100,450 | 2.0% |
| 2015 | 39,230 | -1.0% | 102,936 | 2.5% |
| 2016 | 38,443 | -2.0% | 104,666 | 1.7% |
| 2017 | 38,881 | 1.1% | 104,149 | -0.5% |

*Source: OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from:https://data.oecd.org/energy/crude-oil-production.htm*

Table 5 and Figure 1 show the oil production volume and their percentage changes for the selected 37 resource dependent economies (average) and Azerbaijan. The production level has not similar trend with the world average. In the earlier years, the reason for the sharp increase in Azerbaijan were new launched pipelines and projects. Generally, the oil production volume has reached its maximum point when there were higher oil prices. However, the limitation over the production capabilities does not allow to increase the level much more point. Differently, the world oil production showed the quite flat trend in the last decades.

***Figure 1. Oil production, thousands of tons, 2003-2017***



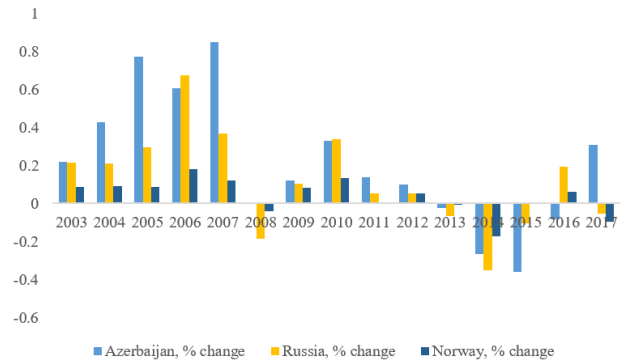

*Source: OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.oecd.org/energy/crude-oil-production.htm*

The author attempts to compare the Azerbaijan economy with one of the best successful cases: Norway and neighbor country: Russian Federation in terms of the fiscal policy (Table 6 and Figure 2). In the early years, Azerbaijan directed the "oil money" to the public spending dramatically and that is the main reason for the immediate ascending trends. In Norway that trend seems quite flat due to efficient fiscal policy management via applying the golden rule, which prevents any booms and shock might be caused from the volatility in the world oil market. Not surprisingly, as the former soviet union country and member of the CIS states, Russian Federation had similar patterns with the Azerbaijan experience.

***Table 6. Public expenditure, mln USD***

| Years | Azerbaijan | % change | Russian Federation | % change | Norway | % change |
|---|---|---|---|---|---|---|
| 2003 | 1,441 | | 154,363 | | 109,503 | |
| 2004 | 1,753 | 21.7% | 187,575 | 21.5% | 118,903 | 8.6% |
| 2005 | 2,499 | 42.5% | 226,631 | 20.8% | 129,861 | 9.2% |
| 2006 | 4,424 | 77.1% | 292,973 | 29.3% | 140,962 | 8.5% |
| 2007 | 7,104 | 60.6% | 490,290 | 67.3% | 166,144 | 17.9% |
| 2008 | 13,120 | 84.7% | 670,950 | 36.8% | 185,918 | 11.9% |
| 2009 | 13,067 | -0.4% | 545,508 | -18.7% | 178,075 | -4.2% |
| 2010 | 14,658 | 12.2% | 600,824 | 10.1% | 192,867 | 8.3% |
| 2011 | 19,489 | 33.0% | 803,221 | 33.7% | 218,261 | 13.2% |
| 2012 | 22,169 | 13.7% | 845,995 | 5.3% | 218,832 | 0.3% |
| 2013 | 24,401 | 10.1% | 889,981 | 5.2% | 230,165 | 5.2% |
| 2014 | 23,853 | -2.2% | 831,798 | -6.5% | 228,637 | -0.7% |
| 2015 | 17,448 | -26.8% | 539,473 | -35.1% | 188,691 | -17.5% |
| 2016 | 11,142 | -36.1% | 483,189 | -10.4% | 188,661 | 0.0% |
| 2017 | 10,221 | -8.3% | 576,820 | 19.4% | 199,853 | 5.9% |

***Figure 2. Public expenditure, mln USD***



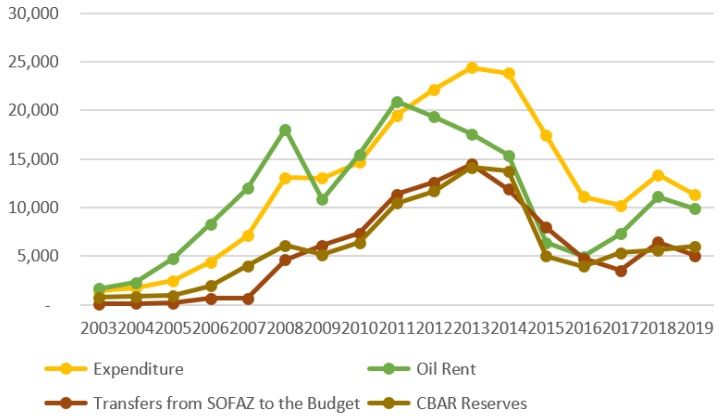

*Source: International Monetary Fund - IMF. (2019). Government Finance Statistics. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.imf.org/?sk=5804C5E1-0502-4672-BDCD-671BCDC565A9; The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en; World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*

Table 7 and Figure 3 explains the crucial characteristics of the macroeconomic indicators and situation in the Azerbaijan economy. Public spending trend has been already illustrated and explained in above. The key measurement: the amount of the oil rent moves in a line with the production level and volatility of the oil price in the world market. The foreign currency reserves' balance of the Central Bank of Azerbaijan changed quite similarly with rest of the factors. Importantly, the pattern of the direct transfers from the State Oil Fund, which can be classified as the infecting of the oil money, fluctuated with the same order with the world oil price changes. In brief, the numbers and visualized trends prove that the fiscal policy hugely is dependent on the volatility in the world oil market.

***Table 7. Azerbaijan in numbers, mln USD***

| Years | Expenditure | Oil Rent | Transfers from Fund to Budget | CBAR Reserves |
|---|---|---|---|---|
| 2003 | 1,441 | 1,667 | 117 | 757 |
| 2004 | 1,753 | 2,277 | 152 | 877 |
| 2005 | 2,499 | 4,761 | 175 | 962 |
| 2006 | 4,424 | 8,300 | 683 | 1,967 |
| 2007 | 7,104 | 12,007 | 683 | 4,015 |
| 2008 | 13,120 | 18,090 | 4,627 | 6,137 |
| 2009 | 13,067 | 10,870 | 6,114 | 5,162 |
| 2010 | 14,658 | 15,502 | 7,369 | 6,408 |
| 2011 | 19,489 | 20,946 | 11,391 | 10,482 |
| 2012 | 22,169 | 19,371 | 12,608 | 11,695 |
| 2013 | 24,401 | 17,566 | 14,467 | 14,152 |
| 2014 | 23,853 | 15,398 | 11,904 | 13,758 |
| 2015 | 17,448 | 6,388 | 7,976 | 5,017 |
| 2016 | 11,142 | 4,989 | 4,780 | 3,974 |
| 2017 | 10,221 | 7,302 | 3,544 | 5,335 |
| 2018 | 13,371 | 11,136 | 6,446 | 5,622 |
| 2019 | 11,335 | 9,881 | 5,081 | 6,004 |

***Figure 3. Azerbaijan in numbers, mln USD***



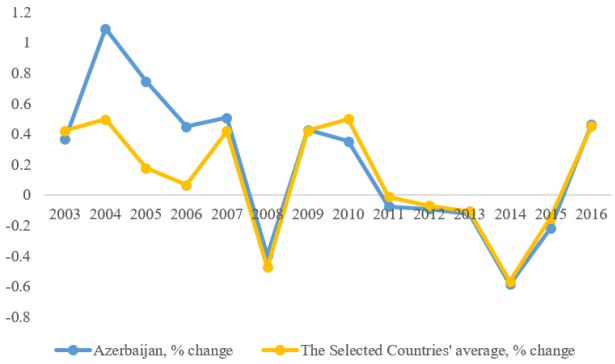

*Source: The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en*
*Central Bank of Azerbaijan – CBAR. (2019). Currency. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/currency/custom*
*World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*
*State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf*
*Central Bank of Azerbaijan – CBAR. (2019). Monetary indicators. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/page-42/monetary-indicators?language=en*

Table 8 and Figure 4 compares the amount of the oil rent and their percentage change between 2003 and 2017 years for the selected countries (average) and Azerbaijan. Excluding early years, Azerbaijan experience quite similar position in the money in from the oil export in comparison with the average trend for the selected resource dependent economies.

***Table 8. Oil Rent, mln USD***

| Years | Azerbaijan | % change | The Selected Countries' average | % change |
|---|---|---|---|---|
| 2003 | 1,667 | | 12,158 | |
| 2004 | 2,277 | 36.6% | 17,284 | 42.2% |
| 2005 | 4,761 | 109.1% | 25,817 | 49.4% |
| 2006 | 8,300 | 74.3% | 30,341 | 17.5% |
| 2007 | 12,007 | 44.7% | 32,311 | 6.5% |
| 2008 | 18,090 | 50.7% | 45,775 | 41.7% |
| 2009 | 10,870 | -39.9% | 24,003 | -47.6% |
| 2010 | 15,502 | 42.6% | 34,080 | 42.0% |
| 2011 | 20,946 | 35.1% | 51,051 | 49.8% |
| 2012 | 19,371 | -7.5% | 50,410 | -1.3% |
| 2013 | 17,566 | -9.3% | 46,851 | -7.1% |
| 2014 | 15,398 | -12.3% | 41,786 | -10.8% |
| 2015 | 6,388 | -58.5% | 18,024 | -56.9% |
| 2016 | 4,989 | -21.9% | 15,280 | -15.2% |
| 2017 | 7,302 | 46.4% | 22,149 | 45.0% |

***Figure 4. Oil Rent, mln USD***




*Source: World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*

## Data and Methodology

In this study the author has collected the data for the 37 resource dependent economies including Azerbaijan from the publicly available sources (Table 9). The key challenges were the adaptation and consolidation of the data in order to make parallels, carrying out the relevant analyses and forecasts.

***Table 9. Historical average crude oil price per barrel***

| Year | USD |
|---|---|
| 2003 | 28.12 |
| 2004 | 36.01 |
| 2005 | 50.71 |
| 2006 | 61.08 |
| 2007 | 69.08 |
| 2008 | 94.45 |
| 2009 | 61.06 |
| 2010 | 77.45 |
| 2011 | 107.46 |
| 2012 | 109.45 |
| 2013 | 105.87 |
| 2014 | 96.29 |
| 2015 | 49.49 |
| 2016 | 40.76 |
| 2017 | 52.43 |
| 2018 | 69.78 |
| 2019 | 64.30 |

*Source: OPEC, (2019). Basket Prices. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.opec.org/basket/basketDayArchives.xml*

In addition to that, the author has evaluated the break even point for the Azerbaijan oil sector, where under that level, the production will not be economically efficient. Unlikely other scholars, the author has utilized the official forecasts by OPEC until 2025 in the understanding the future of the Azerbaijan economy and resource dependent economies (Table 10).

***Table 10. Average forecasted crude oil price per barrel, Brent, Dubai and West Texas Intermediate, nominal US dollars, $/bbl***

| Year | Nominal USD per Barrel |
|---|---|
| 2020 | 65.00 |
| 2021 | 65.50 |
| 2022 | 66.00 |
| 2023 | 66.50 |
| 2024 | 67.00 |
| 2025 | 67.50 |

*Source: World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf*

And finally, the author made his own pessimistic judgment about the future of the world oil price via understanding stress level of the sensitivity of the Azerbaijan economy to the volatilities (Table 11).

***Table 11. Oil prices based on the worst scenarios***

| Years | USD per Barrel |
|---|---|
| 2020 | 45 |
| 2021 | 40 |
| 2022 | 35 |
| 2023 | 30 |
| 2024 | 25 |
| 2025 | 22 |

*Source: The Author's own forecast*

As the basic approach, the author has forecasted the changes of the selected indicators: oil rents, oil production, public spending, direct transfers from the State oil fund, foreign currency reserves. As the forecasting tool, the author has applied the MS office excel, Forecast function (Microsoft Office Support, 2019, a) which estimates the future trends based on the statistics.

FORECAST (x, given_y's, given_x's) **(1)**

After calculating future values, the author has applied the basic correlation via MS excel, Pearson functions (Microsoft Office Support, 2019, b) which finds out

PEARSON (group of independent values, group of dependent values) **(2)**

The main reason in the application of the correlation is to understand relations between fiscal policy and the volatility in the world oil market.

**Results**

Table 12 shows that the oil production level will be less fluctuated if the world oil prices will be Close to the current official forecast by OPEC.

***Table 12. Oil production based on the forecasted prices***

| Years | Azerbaijan | % change |
|---|---|---|
| 2018 | 32,651 | |
| 2019 | 35,086 | 7.46% |
| 2020 | 35,257 | 0.49% |
| 2021 | 35,378 | 0.35% |
| 2022 | 35,500 | 0.34% |
| 2023 | 35,622 | 0.34% |
| 2024 | 35,744 | 0.34% |
| 2025 | 35,865 | 0.34% |

*Source: The Autor's own calculation based on the data:*
*OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.oecd.org/energy/crude-oil-production.htm*
*World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf*

In case of the falling pessimistic scenarios there will be downturn in the volume of the oil Production (Table 11&13).

***Table 13. Oil production based on the worst scenarios, thousands of tons***

| Years | Azerbaijan | % change |
|---|---|---|
| 2020 | 30,388 | |
| 2021 | 29,171 | -4.01% |
| 2022 | 27,954 | -4.17% |
| 2023 | 26,736 | -4.35% |
| 2024 | 25,519 | -4.55% |
| 2025 | 24,789 | -2.86% |

*Source: The Autor's own calculation based on own forecast and the data:*
*OPEC. (2019). Crude Oil Production. [on-line] [acc.: 2019-01-10]. Retrieved from:*
*https://data.oecd.org/energy/crude-oil-production.htm*

Table 14 demonstrates that the oil rent will be stable if the world oil prices will be not be far from the current official forecast by OPEC.

***Table 14. Oil rent based on the forecasted prices, mln USD***

| Years | Azerbaijan | % change | The Selected Countries' average | % change |
|---|---|---|---|---|
| 2018 | 11,136 | | 31,377 | |
| 2019 | 9,881 | -11.27% | 28,763 | -8.33% |
| 2020 | 10,042 | 1.63% | 29,098 | 1.16% |

| | | | | |
|---|---|---|---|---|
| 2021 | 10,156 | 1.14% | 29,336 | 0.82% |
| 2022 | 10,271 | 1.13% | 29,575 | 0.81% |
| 2023 | 10,385 | 1.11% | 29,813 | 0.81% |
| 2024 | 10,499 | 1.10% | 30,051 | 0.80% |
| 2025 | 10,614 | 1.09% | 30,290 | 0.79% |

*Source: The Autor's own calculation based on the data:*
*World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf*
*World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*

The most importantly, the author finds out that, 22 USD is the breaking even point for the oil sector in Azerbaijan and in the lowest pessimistic scenario the economy may experience crucial challenges. In comparison, even in the lowest pessimistic cases, the average oil rents in the world oil market will not go down as fast as Azerbaijan (Table 15).

***Table 15. Oil rent based on the worst scenarios, mln USD***

| Years | Azerbaijan | % change | The Selected Countries' average | % change |
|---|---|---|---|---|
| 2020 | 5,464 | | 19,562 | |
| 2021 | 4,320 | -20.95% | 17,178 | -12.19% |
| 2022 | 3,175 | -26.49% | 14,795 | -13.88% |
| 2023 | 2,031 | -36.04% | 12,411 | -16.11% |
| 2024 | 886 | -56.36% | 10,027 | -19.21% |
| 2025 | 200 | -77.48% | 8,596 | -14.27% |

*Source: The Autor's own calculation based on own forecast and the data:*
*World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*

Table 16 displays that there will be nor crucial changes in the fiscal policies if the world oil prices will be around the current official forecast by OPEC.

***Table 16. Public expenditure based on the forecasted prices, mln usd***

| Years | Azerbaijan | % change | Russia | % change | Norway | % change |
|---|---|---|---|---|---|---|
| 2018 | 13,371 | | 546,303 | | 180,211 | |
| 2019 | 11,335 | -15.23% | 503,281 | -7.88% | 174,074 | -3.41% |
| 2020 | 11,498 | 1.44% | 508,794 | 1.10% | 174,860 | 0.45% |
| 2021 | 11,615 | 1.01% | 512,716 | 0.77% | 175,420 | 0.32% |
| 2022 | 11,731 | 1.00% | 516,639 | 0.77% | 175,980 | 0.32% |
| 2023 | 11,848 | 0.99% | 520,561 | 0.76% | 176,539 | 0.32% |
| 2024 | 11,964 | 0.98% | 524,484 | 0.75% | 177,099 | 0.32% |
| 2025 | 12,081 | 0.97% | 528,407 | 0.75% | 177,658 | 0.32% |

*Source: The Autor's own calculation based on the data:*
*World Bank Commodity Price Forecast, (2019). Average forecasted crude oil price per barrel. [on-line] [acc.: 2019-01-10]. Retrieved from: http://pubdocs.worldbank.org/en/598821555973008624/CMO-April-2019-Forecasts.pdf*
*International Monetary Fund - IMF. (2019). Government Finance Statistics. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.imf.org/?sk=5804C5E1-0502-4672-BDCD-671BCDC565A9*

*The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en*
*Central Bank of Azerbaijan – CBAR. (2019). Currency. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/currency/custom*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*

The author realizes that, the public spending is directly derived and financed by mainly the current money inflow from the oil-gas sector in Azerbaijan (Table 7). In order to understand that connection, the author has made simple calculation: the fixed public spending need is identified as 12 billion USD between 2020 and 2025. In that case, the results show that under the pessimistic scenario, oil rents will not be enough to be finances. That means, either the governance should go for the cuts in the fiscal policy (Table 18), which is becoming more challengeable year by year due the increasing social needs and claims. If that doesn't work, the governance will tend to utilize the accumulated, future generations' share from the SOFAZ via making direct transfers to the state budget. If that really happens, the governance may go for default in 2024 which will create the basis for the long-term painful borrowings (Table 17).

***Table 17. Public Expenditure, worst, Azerbaijan, with fixed expenditure, mln USD***

| Years | Fixed expenditure | Oil rent | SOFAZ Reserves |
|---|---|---|---|
| | | | 45,000 |
| | | | Transfers from SOFAZ to the Budget |
| 2020 | 12,000 | 5,464 | (6,536) |
| 2021 | 12,000 | 4,320 | (7,680) |
| 2022 | 12,000 | 3,175 | (8,825) |
| 2023 | 12,000 | 2,031 | (9,969) |
| 2024 | 12,000 | 886 | (11,114) |
| 2025 | 12,000 | 200 | (11,800) |
| | | Balance | (10,925) |

*Source: The Autor's own calculation based on own forecast and the data:*
*World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*
*State Oil Fund of the Republic of Azerbaijan. (2019). Recent Figures. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/en/report-and-statistics/recent-figures*
*State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf*

***Table 18. Public Expenditure, worst, Azerbaijan, declining expenditure, mln USD***

| Years | Expenditure | Oil Rent | Transfers from SOFAZ to the Budget | CBAR Reserves |
|---|---|---|---|---|
| 2018 | 13,371 | 11,136 | 6,446 | 5,622 |
| 2019 | 11,335 | 9,881 | 5,081 | 6,004 |
| 2020 | 6,840 | 5,464 | 2,274 | 2,575 |
| 2021 | 5,675 | 4,320 | 1,547 | 1,859 |
| 2022 | 4,511 | 3,175 | 819 | 1,143 |
| 2023 | 3,346 | 2,031 | 92 | 427 |
| 2024 | 2,181 | 886 | (635) | (289) |
| 2025 | 1,483 | 200 | (1,072) | (719) |

*Source: The Autor's own calculation based on own forecast and the data:*
*The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en*
*Central Bank of Azerbaijan – CBAR. (2019). Currency. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/currency/custom*
*World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*
*State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf*
*Central Bank of Azerbaijan – CBAR. (2019). Monetary indicators. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.cbar.az/page-42/monetary-indicators?language=en*

Table 19 reconfirms that the revenue from the oil-gas sector has positive correlation with public spending in Azerbaijan. The coefficient with the total expenditure is 0.78, which support the author's earlier statement on the huge dependency on the resource sector. Interestingly, the spending over the court authority and law enforcement agencies is among the highest correlated categories with the oil money inflow.

***Table 19. Correlations Coefficients, Azerbaijan***

| Oil Rent correlation with | Pearson |
|---|---|
| Total Expenditure | 0.78 |
| national economy | 0.78 |
| Education | 0.85 |
| health care | 0.77 |
| social protection and security | 0.72 |
| culture, art, information, physical training and activities not included in other categories | 0.65 |
| Science | 0.47 |
| court authority, law enforcement agencies | 0.79 |
| legislation, executive and governmental authorities | 0.69 |
| other expenditures | 0.68 |

*Source: The Autor's own calculation based on the data:*
*World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS*
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*
*The State Statistical Committee of the Republic of Azerbaijan. (2019). Finance. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.stat.gov.az/source/finance/?lang=en*

Importantly, the governance' approach to transfer or infect the oil money to the current public spending has the positive correlation with the oil rent (Table 20).

***Table 20. Azerbaijan***

| | Pearson |
|---|---|
| Oil rent & Transfers | 0.76 |

*Source: The Autor's own calculation based on the data:*
*World Bank Data. (2019). Oil Rents (% of GDP). [on-line] [acc.: 2019-01-10]. Retrieved from:*

https://data.worldbank.org/indicator/NY.GDP.PETR.RT.ZS
*World Bank Data. (2019). GDP. [on-line] [acc.: 2019-01-10]. Retrieved from: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD*
*State Oil Fund of the Republic of Azerbaijan. (2018). Annual Report. [on-line] [acc.: 2019-01-10]. Retrieved from: https://www.oilfund.az/report-and-statistics/get-download-file/7_2018_tam_en.pdf*

## Conclusion

Understanding the resource dependent economies and identifying similarities between Azerbaijan and the selected countries is the fundamentals of this study. The author points out that, this research area has been investigated via varied methodologies by the scholars all over the world. And there are need further research as much as done until today.

This study is one of the thousands of the researches which attempted to make judgements on the nearest future of the world oil market conditions and the Azerbaijan economy. Regardless of the future volatility of the oil prices, the author reconfirmed that, there are need to immediate reformations in terms of the fiscal and monetary policies in Azerbaijan, where we are not so far from the potential pessimistic future.

One of the key red point, result in this study is existence of the higher risk of the full utilization of the accumulated financial assets through the oil-gas sector via infecting the public spending. That is why, the author crucially highlights that, the governance should be prepared via efficient solution for any pessimistic conditions.

Most of the findings over the Azerbaijan economic indicators leads to have a general idea: the Azerbaijan economy is becoming more resource dependent economy year by year. That prevents the economy to ensure and maintain sustainable output growth and prevent any side effects of the volatilities in the world oil market. Another key find is that, the oil rents are key financing drivers for the current public spending via having positive correlation.

In fact, there is not exact answer to the questions about the future of the world oil market. However, what is clear that, not only the market rules, but also other non-market factors will play crucial role to draw the future. Regardless the future, the governance in Azerbaijan has to take immediate actions via fast forwarding plans to mitigate and eliminate visible negative side effects over the volatiles.

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# THE LEGAL FRAMEWORK TO CREATE AN OPEN EU SINGLE MARKET FOR PAYMENT SERVICES

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***Abstract***

*This scientific study analyses the introduction and transposition of common rules for the provision of payment transactions, if they are electronic means of payment (e-money), in the Pan-European market. Our study must analyse a dual objective: The Second Payment Services Directive of the European Union and a Slovak Act about payment services regarding the provision of payment initiation services and account information services. The legal regulation introduces conditions for the provision of services by non-bank payment service providers and regulates the relationship between a payment service provider and its corporate and retail customers. Our findings show that the law of the European Union directly or indirectly influences the formation of an open market for payment services in the Member States of the European Union; this can be considered as liberalization of payment services and allows the entrance of new providers with innovative payment services. In the present study, we discuss the responsibility of the Member States of the European Union regarding the transposition of EU secondary acts into national law.*

***Keywords***

*legal framework, payment services, non-banking payment*

**JEL Classification**: O15, D61, D60

## 1. Introduction

The global economy is entering a new phase, including the use of new communication networks across all areas of economic and social life. The world economy is becoming increasingly integrated and interconnected through trade (Milošovičova et al., 2015). The current global economic trend is an increase in the importance of services. The service sphere is currently one of the most dynamic areas of economic development, with an increase in service consumption being driven by economic changes (globalization, privatization, information services, labour productivity, franchising chains), social changes (migration, higher female employment, customer behaviour), demographic changes (declining fertility, aging population), technological change (internet access, digitization, mobile devices) and also by changes in the buying behaviour of consumers (Gubíniova, 2009).

Given the fast-evolving digital market, a new form of payment service provision is emerging through electronic communication networks and through non-bank payment service providers. The characteristics of the digitization process of financial services include simplified access for end users via the internet or mobile apps, an increase in the processing speed of automated processes, reduction in costs, a stronger focus on customer service, more convenience, higher transparency and the exploitation of network effects (Statista, 2018). With the goal of a good functioning single market for payments the European Union is introducing harmonized common rules for entities and payment institutions to provide payment services through electronic communication networks. The institutions of the European Union adopt legal acts and other acts to support security of and confidence in electronic payment. The first legal act became the Directive 2007/64/EC on payment services in the internal market (PSD 1) (OJ L EC 319, 5.12.2007, pp. 1-36). Two years later there was the Regulation (EC) No 924/2009 on fees and charges for cross-border payments. Following the developing communications technologies and with the aim to open up payment markets to new entrants has been adopted Directive 2015/2366/EU of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market (OJ EU L 337,

23.12.2015, pp. 35-127) (hereafter: the PSD2, Directive 2015, second Directive on payment services).

The European Union's regulation of payment services was adopted in response to the development of electronic communication networks with a view to enhancing the protection of consumer rights and allowing liberalization of the provision of payment services by entities others than banks. This scientific study is a discourse on the legal framework that provides the legal basis for the further development of a better integrated internal market for electronic payments within the European Union. At the same time, it points to the importance of introducing common comprehensive rules in EU Member States for payment services through electronic communication networks (such as internet and mobile payments), and points to the fact that banks have lost their monopoly on the provision of payment services.

## 2. Methodology

The subject of further investigation is the specific legal regulation on the level of the European Union and the Slovak legislation concerning the payment transactions performed by the provider of electronic communication networks or services. The study looks for answers to practical questions:

- What legislation was adopted by the EU to open a payment market for new payment service providers?
- In what way the Directive EU on payment services in the internal market was transformed into national law?

The current globalized world is much more complicated and individual economic processes are much more complex and therefore exists a need for legal regulation of a harmonised market for electronic payments across the European Union. Legal regulations create rules that bring more total revenue than costs for all actors involved; in other words, they will bring the maximum total net benefit to the recipients of the service. Legal regulation considers the strengths of the digital market, reducing transaction costs, setting clear rules of responsibility for security, open competition, and removing barriers.

The authors respond to the individual questions in the investigation by using the following tools and methods:

- The first question is answered by a legal analysis of the Directive 2015/2366/EU of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market with regard to the provision of Articles 65, 66 a 67.
- The solution to the second research question is found by analysing the regulations regarding the provision of payment services in the sense of the Slovak Act No.624 / 2017, which will amend Act No. 492/2009 Coll. on Payment Services and Amendments to Certain Laws (hereafter Act No.624 / 2017), which was prepared by the Ministry of Finance of the Slovak Republic with the cooperation of the National Bank of Slovakia (Coll., SR 22.11.2017).

Since the law itself regulates all legal relationships relating to the provision of payment services and has 102 provisions, we have focused only on new types of payment services following the 2015 Directive. The basic sources were the interim report on the designed law and the already mentioned Act No.624/2017. In this act is correctly and effectively transposed the Directive 2015/2366 of 13 January 2018.

From the methodological point of view, the work uses mainly descriptive-analytical or, in certain passages, exclusively analytical approach. As far as scientific access is concerned, the empirical-analytic method is used. To determine the level of compatibility of the Slovak law with this directive, we used the method of legal comparison. We compared some of the provisions of the secondary EU legislation with the provisions of the Slovak law on payment services. Comprehensive Payment Services Act.

The sources used to elaborate this scientific study correspond to the nature of the topic, which is in the current literature devoted to increasing interest. The following types of primary sources were used in the research: valid Slovak and EU law, judgements of the CJ EC/EU, as well as scientific literature and other documents of financial institutions providing payment services published on their websites (National Bank of Slovakia). As far as legal documents are

concerned, in many cases, we used the text directly from the valid version.

## 3. Review of literature

The European integration is continually deepening, and economic policies are becoming increasingly harmonized. To enforce the common aims of the European Union, the Member States must take measures promoting the proper functioning of the internal market and fulfilling the priorities declared in the Europe 2020 strategy. Part of this process is the formation of a digital market and the introduction of new technologies in banking and the provision of payment services through electronic communication networks. This trend has not only a European, but a global dimension and the provision of cross-border payment services enters the foreground. Within the legal system of the European Union, all legal barriers to the provision of payment services using technology have been removed, but at the same time the European Union places emphasis on ensuring safe user authentication and reducing the risk of fraud. There are many scientific studies and scientific articles on the subject. Sedliaková (2018) in the paper Innovations and changes in payment services under PSD2 states that "in recent years, the number of electronic and mobile channels is growing throughout the Pan-European area, new providers and new payment services are emerging." Indeed, it is true that because of digitization, conditions on the financial market are constantly changing rapidly, bringing many new ways to implement financial transactions, although this trend does exist only in countries with a developed economy.

Shuiqing (2012) says that *"mobile payment is an emerging and important application of mobile commerce. The adoption and use of mobile payment services are critical for both service providers and investors to profit from such an innovation."* Dennehy and Sammon (2015) similarly represent the opinion that "*mobile payments (m-payments) are increasingly being adopted by organisations as a new way of doing business in the 21st century. During the last few years, the use of m-payments as a new payment channel has resulted in an increase in the volume of literature dedicated to the topic."* In Switzerland, for example, over the last 3 years hundreds of FinTech companies were established (Fintechnews, 2018).

New technologies are changing the financial industry and the way consumers and firms access services, creating opportunities for FinTech-based solutions to provide better access to finance and to improve financial inclusion for digitally connected citizens (Action plan COM/2018/0109). New technologies also bring new payment methods. "*Another notable development is that of alternative payment methods. These are payment systems that do not rely on the classic actors usually found within payment systems – such as banks or payment service providers – and that may go as far as to substitute the use of accepted legal tender for that of alternative currencies*" (Valke et al., 2016).

All authors share the opinion that the digitization process is helping to liberalize the payment services market and that new service providers enter this area. In this context, one should not forget that, although this market is open to all, it is essential that safety, standards and transparency must be implemented. In this regard, we must emphasize that any liberalization of service provision strengthens competition and is an advantage for the recipient of the service.

## 4. History of EU legislation on payment services

In connection with the Treaty establishing the European Community, and the first and third sentences of Article 47(2) and Article 95 thereof has been adopted the first payment service directive - Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC (OJ EC L 319. 5.12.2007). This legal framework laid down rules on the execution of payment transactions where the funds are electronic money and ensured the coordination of national provisions on prudential requirements, the access of new payment service providers to the market, information requirements, and the respective rights and obligations of payment services users (Recital 5,9 Directive 2007).

Inadequate legal regulations concerning the market entry of new internet service providers offering third party online payment initiation were the reason for the initiative in 2013 to adopt the Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market (OJ EU L 337, 23.12.2015, p. 35–127). That directive is based on the primary law of Article 114 of the Treaty on the Functioning of the European Union. In general, the Directive allows the accession for new payment service providers, with the result that banks have lost their monopoly for the provision of payment services. In practice, for example, it means that a client of different banks can get one application to manage payments in all his accounts in different banks. The Directive promotes the development of existing banking, insurance and securities brokerage services and increases payment convenience.

## 5. Key points of the Directive on payment services 2015

From a legislative-technical point of view, the revision of Directive 2007/64/EC in 2015 led to the adoption of EU Directive 2015/2366, which repeals the original 2007 Directive. The Directive was chosen as a legal instrument to ensure the approximation of legislation in the individual Member States in the field of payment services.

The Directive (2015) brings many changes in connection with the development of information technology and the greater use of electronic means for payment services. This Directive regulates the financial relationships of the following categories of payment service providers: credit institutions, electronic money institutions, post office giro institutions, payment institutions, ECB and national central banks. Subject matter are payment services provided within the Union. *This Directive introduces a neutral definition of acquiring of payment transactions to capture not only the traditional acquiring models structured around the use of payment cards, but also different business models, including those where more than one acquirer is involved* (Recital 10 Directive 2015). Secondary regulation is of a general nature, but Member States must transpose certain provisions into national law in their entirety, that is, they do not have the possibility to create specific rules. For example, the Directive explicitly defines the payment service provider's rights and obligations *as entities that were granted permission to act as payment initiation service provider or are registered as payment account information service provider*. For some provisions (corporate clients), Member States must not fully transpose the text of the provision into national law. In terms of structure this Directive consists of six parts or "Titles".

Title I. contains a summary of the Directive - subject matter, scope and definitions; in Title II. the specific conditions for payment service providers are given; Title III. deals with the transparency of conditions and information requirements for payment services**;** Title IV. contains rights and obligations in relation to the provision and use of payment services; Title V. establishes delegated acts and regulatory technical standards; Title VI. contains as usual final provisions. The Directive also includes ANNEX I, which specifies the types of payment services: executing payment transactions, executing direct debits, including on-off direct debits, executing payment transactions through a payment card or a similar device, executing credit transfers, including standing orders, money remittances. This can include transfers of funds, direct debits, credit transfers and card payments. Paper transactions are not covered by the Directive 2015 (EUR-Lex, 2017).

The Directive sets out rules concerning:

a) payment initiation services in the field of e-commerce**,**

b) conditions for granting and maintaining authorization as payment institutions,

c) the security of payment transactions and customer protection against demonstrable risk of fraud,

d) guarantees for fair competition in that market,

e) conditions for account information service providers,

f) consumer protection in cases of card-based payment transactions by introduction of so-called strong authentication,

g) reduction of payer's liability from current 150000 € to 50000 €,

h) supervision of payment institutions by the Member State where they are authorized to provide the defined payment services,

i) removing of surcharges for using a consumer credit or debit card,

j) requirements regarding transparency of contractual conditions.

In the context of this Directive there has also been strengthened the European Banking Authority (EBA), which is an independent EU Authority with the task of ensuring effective and consistent prudential regulation and supervision across the European banking sector (Regulation (EU) No 1093/2010). The role of this authority is to develop a publicly accessible central register of authorized payment institutions, which shall be kept up to date by national authorities and assist in resolving disputes between national authorities.

- Freedom of business and the freedom to provide services are based on the prohibition of restrictions and of discrimination due to nationality as well as on liberalization and correct application of competition rules in economic competition. The European Union rejects discriminatory measures in all economic policies. The smooth functioning of the internal market and the development of a modern, socially inclusive economy increasingly depends on the universal provision of payment services (Recital 3, Directive 2014/92).
- Payment services under Union law may be provided by credit institutions ((1) of Article 4 (1) of Regulation (EU) No 575/2013). According to the Directive, the following *third-party providers* of payment services may operate on the market:

a) a payment service provider issuing card-based payment instruments (Art.65, Directive 2015),

b) a payment initiation service provider (Art.66, Directive 2015),

c) an account information service provider (Art. 67, Directive 2015).

One form of service under the Second Payment Services Directive is to provide information about the availability of funds in the client's account. This type of service is based on the possibility of obtaining information from the bank where the client has an account bound, whether the client's account has available funds for the execution of a payment operation. In the end, it is about checking the client's financial situation.

Payment initiation service providers must be licensed to provide payment services. According to the Directive payment services play a part in e-commerce payments by establishing a software bridge between the website of the merchant and the online banking platform of the payment service provider, who handles the payer's account, to initiate internet payments based on a credit transfer.

The payment initiation service provider shall not store sensitive payment information, shall not hold the payer's funds, shall be responsible for the correct presentation of the payment order and shall not be discriminated against by the bank. The primary goal of payment initiation providers is to provide convenience to the payer and reassure the payee that the payment has been initiated, an incentive for the trader to sending goods and services without delay (Sedliaková, 2018, p.4). Account information service provider can obtain authorization from the bank to provide access to an online account. This entity is not entitled to obtain all information about the client - the recipient of the service, it may be provided with information to which the client has given explicit consent. A special feature is, that the provision of account information services shall not be dependent on the existence of a contractual relationship between the account information service provider and the account servicing payment service provider for that purpose (Art. 67 (4) Directive 2015). In principle, the Directive introduces a new type of payment service in the field of internet payments at European level and introduces appropriate regulations for these services that must be respected by all Member States. It creates opportunities for new service providers to work with a license granted by the competent national authority of a Member State. The payment service provider must guarantee the same data protection and data security as the bank. In a broader context, we must emphasize that these services do not replace the services provided by the banks but are new payment services that may also be provided by other payment service providers than the bank in relation to the bank's payment accounts. The Directive was transposed into national law to the scheduled date in all member states of the EU.

Interesting is the title German Act - Act implementing the Second Payment Services Directive. The title of the law implies that it is a 2015 Implementing Directive from German law.

## 6. Responsibility of the Member States for the transposition of EU secondary acts into national law

In accordance with Article 288 of the Treaty on the Functioning of the European Union, the institutions shall adopt regulations, directives, decisions, recommendations and opinions. A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods.

The success of the European Union's tasks and policies depends on Member States complying with international membership obligations and transposing the directives into national legislation. EU secondary acts are the main means by which the EU is achieving its objectives and bringing Member States' legal systems closer together. Member States' transposition of legal acts and their implementation is a way of respecting EU membership obligations. The Directives in European law are understood to be legal acts that are binding in relation to the Member States to which they are addressed, as well as in relation to the objective to be achieved. The national authorities are left to choose which forms and methods are chosen to achieve the result. The key requirements for transposing the Directive are: transposition of the precise content of the Directive and transposition of the Directive at a specified time. The European Commission, according to Article 2 (1) of the Treaty on the European Union, has the obligation to ensure that Member States apply EU law. Since it is often referred to as the "guardian of the treaties", it is responsible for the application of EU law. Pursuant to Article 258 of the Treaty on the Functioning of the European Union (TFEU), the Commission is entitled to initiate proceedings against a Member State for a breach of its obligations under the Treaty on the Functioning of the European Union, respectively the Treaty of the European Union. Many of the judgments of the Court of Justice of the EC / EU result in some criteria for the Member States to transpose the directives correctly into national law, the respect of which is a precondition for avoiding possible actions by the Commission for failure to fulfil obligations under EU treaties.

## 7. Slovak legislation on payment service

The obligation to transpose legal acts into national legal order, as well as the correct implementation of EU law, is also regulated in the Constitution of the Slovak Republic and one of the obligations of all Member States. The Directive (EU) 2015/2366 was transposed into Act No 492/2009 Coll. on payment services and changes certain laws, which enter into force on 13 January 2019. In addition to the Act, some provisions of the Directive 2015 have been transposed into Act no. 747/2004 Coll. on financial market supervision, Act no. 566/1992 Coll. on the National Bank of Slovakia Act no. 102/2014 Coll. on consumer protection when selling goods or services based on a distance contract or a contract concluded outside the business premises of the seller, Act no. 483/2001 Coll. about banks and so on. That legislation has largely changed the original Payment Services Act. The principal legislation regulating payment services and financial relationships in the Slovak Republic was influenced by the secondary EU act. This act regulates the conditions of payment services provided by a payment service provider, for the issuance of electronic money, administration of electronic money and redemption of electronic money by an electronic money institution. The amendment to the Law in 2017 provides for new forms of payment services and allows new payment service providers to enter the market. The opening of the payment services market in Slovakia allows payment service providers to make financial payments (payment orders). New payment service providers can be expected to come to the market soon. These services do not replace the services provided by banks but are new payment services that may also be provided by other payment service providers than the bank in relation to the payment accounts held with the bank. Pursuant to § 2 (g and h) of the Payment Services Act, a payment service means a payment initiation service and an account information service. In principle, the amendment to the Act extended payment services if the payment account is

accessible online via the Internet. The Act No. Act No 492/2009 Coll. on payment services introduces two new types of licence for Third Party Providers, a licence for Payment Initiation Service Providers and a licence for Account Information Service Providers.

If a payment service provider wishes to provide these types of services, he must have the authorization or license of the National Bank of Slovakia and is obliged to prove technical, organizational and personnel readiness and ability to provide payment services properly and safely. The entity must be a legal entity with its registered office in the territory of the Slovak Republic and must have paid up a deposit of at least EUR 125,00, if the payment institution only provides payment initiation services, the capital will be at least EUR 50,000. Personnel to be in management positions must have a second-level university degree and a three-year management experience in the provision of management services and banking. A prerequisite is that the provider must ensure that the payment service user's personalized security features are sent by secure and effective means so that they are not accessible to others. The service provider is not authorized to store the payment service user's sensitive payment information. In this relationship, the payment service provider carries out payment operations based on a clear payment order from the payment service user, which is a payment order in paper form or electronic form to execute the payment transaction. In practice, this means that a third-party provider can enter the original bilateral relationship as a payment service provider. He will gain access to the client's account only after the client's consent has been granted. In principle, the client allows the third-party provider access to banking operations and to execute basic banking operations through applications. The payment initiation service is realized with the participation of a third-party provider with the client's consent (authorization) in the form of an Internet platform - online payment. A payment initiative provider provides a service for e-commerce payments by creating a software bridge between the merchant's website and the online banking platform of the payer's account provider's payment service provider (credit card payment means) to initiate payment-based on internet payment and with the client's consent. If the client has given his/her consent to execute a payment transaction, the payment transaction is authorized (Para. 8 Act No. 2017.)

Innovations introduced in financial services allow that a payment card is longer necessary to be used to purchase goods, but the merchant receives money from the client's bank account through intermediaries. According to the new regulations, retails will ask clients for permission to use the client's bank details, and after the license is granted, the retailer will receive a payment directly from the bank. This direct link between bank and retail can be shortened with the Application Programming Interface (API). This interface is a communication interface that allows third parties to securely communicate with the bank. Through this interface, the Bank will make available to third parties payment accounts of clients for the purpose of providing new payment services. This type of service can also be referred to as low cost internet and mobile services that run between a merchant and a buyer bank and allow payments without a credit card. Service providers of this kind must comply with the same standards as other payment institutions and are under the control of the National Bank of Slovakia. Account information service is a service to provide consolidated information about the status of a client's payment account and a client's financial account balance via the Internet or distribution channel if it has open accounts in several banks (Para. 3b Act No.2017). In other words, if the client gives consent, the third-party provider will obtain information about the account's financial balance and the transaction history of the client's account. Entities licensed to provide payment services must guarantee the same data protection and security as banks. The current legislation allows to make a financial payment or obtain an account overview through a third-party provider without contacting the bank. In contrary to original payment service providers and payment initiation service providers, the difference is that the payment service provider (legal entity - bank, a foreign bank or a branch of a foreign bank, whose banking license includes the provision of payment and settlement services, and post office giro institution, e-money and payment institutions) establishes and maintains a payment account for the payer. A payment initiation service provider provides only online payment services via the Internet, for example

internet banking. The payment initiation service provider has a limited scope of service provision.

In accordance with Article 4 of the Directive 2015, the payment service user authentication institute was also introduced while paying attention to the security of the payment service user. These elements are independent of each other and created in such a way that the disruption of one element does not interfere with the reliability of other elements, nor the confidentiality and protection of the client. Authentication (Art. 97 Directive 2015) is based on the use of 2-factor customer authentication or multiple elements, such as knowledge, ownership and payment service user characteristics. Knowledge is something only the user knows (a password or PIN), ownership is what only the payment service user owns or holds, and characteristics specify biometric data (finger prints or voice).

The peculiarity is that the payment institution is not entitled to merge the funds received from users with its funds. Funds not transferred to the beneficiary or to another payment service provider by the end of the business day following the day of receipt must be stored in a separate account with the bank. In the following table we demonstrate the transposition of the directive into Slovak law. Based on the comparison of individual provisions, we have found that the above provision of the Slovak law is fully compatible with the Directive and therefore it can also be said that the harmonization is complete.

***Table 1. Table of concordance of legal provisions with directive EU and Act No 624/2017 Coll.***

| Directive EU 2015/2366 | Act No.624/2017 Coll. |
|---|---|
| Article 2 (1) | § 1 (2) |
| Article 65(1) | § 28b (1) |
| Article 65(2) | § 28b (2) |
| Article 65(3) | § 28b (3) |
| Article 65(4) | § 28b (4) |
| Article 65(5) | § 28b (5) |
| Article 65(6) | § 28b (6) |
| Article 66 (1) | § 3a (1) |
| Article 66 (2) | § 3a (2) |
| Article 66 (3) | § 3a (3 a 4) |
| Article 66 (4) | 3a (5) |
| Article 66 (5) | § 3a (6) |
| Article 67 (1) | § 3b (1) |
| Article 67 (2) | § 3b (2) |
| Article 67 (3) | § 3b O 5 |
| Article 67 (4) | § 3b O 6 |

*Sources: Own processing by Directive EU2015/2366 and Act No.624/2017 Coll.*

## 8. Slovak financial market

There are several payment service providers in the Slovak market, which can be divided into two groups. payment institutions and other entities (telecommunication operators O2 Slovakia Ltd., Orange Slovensko Inc., Slovak Telekom Inc., SWAN Mobile Inc.). Paying institutions without limitation may also operate in other Member States and may mediate payments, issue credit cards, keep accounts, carry out currency exchange, execute payment initiation service and payment account information service.

The first intelligent bank in Slovakia, Bank 365, is an organizational unit of Poštová Banka Inc., Bratislava. Although this bank is not a payment institution, we can see in this example how the use of mobile applications is expanding. In Germany, the N 26 mobile bank operates with a banking license in Germany. It authorizes it to provide EU-wide banking products and operates in Slovakia too.

In Slovakia, there are several institutions providing payment services, for example 24-pay Ltd., Diners Club CS Ltd., Home Credit Slovakia Inc., Payment Institution NFD Inc., Pay Solutions Inc. and TrustPay Inc. For example, TrustPay provides merchants to receive payments from customers around the world in any currency. If the customer chooses TrustPay as the method of payment, it will redirect him to his bank or the client will enter the data (Jančura, 2017).

In the Slovak financial market conditions for new payment service providers have already been established. At the same time, we must not forget that this kind of service, i.e. the provision of a payment initiation service and an account information service do not replace payment services provided by banks. Banks must, in accordance with the applicable legislation, make the accounts of clients accessible to payment service providers, the so-called third parties. The provision of services is realized through the Application Programming Interface (API), an application programming interface (a set of software services) that makes payment service users' payment accounts available to third parties. (Digital interface is any software, including a website or user-accessible applications, including mobile applications.)

In the Slovak Republic and other countries standardization initiatives have been developed, which aim to develop a specification for the API meeting the above conditions (Slovak Banking API Standard created by SBA, Czech Open Banking Standard created by ČBA, Štandard Berlin Group, British Open Banking Standard, STET) (NBS, 2018).

The entity authorized to execute payment initiation services requests access to the Bank's API interface and completes a request for a communication key. After fulfilling the conditions, the bank sends the communication key to the applicant to his e-mail address, which is secured by a ZIP password assigned by the bank. The applicant must be properly registered in the public register of payment initiators.

## 9. Negative aspects

Every technological advancement simultaneously brings negative impacts. In this context, we must bear in mind that the execution of payment transactions is at greater risk of fraud and misappropriation of the information obtained. The negative side in this process of digitizing payment services is that the third party - the service provider - gets into internet banking through screen scraping and gets information about other financial operations and payments of the client. In this way, it can get to a client's sensitive information.

Another negative aspect is that this kind of payment requires some knowledge, appropriate mobile devices and internet access. In 2016 a monitoring in Slovakia showed, that only 59% of citizens have reached a basic level of digital skills. A lack of digital skills shows up with people in the business sector as well. The execution of payment transactions is not only demanding on skills, but also financially demanding, because not every household in Slovakia has established internet. This is supported by the indicators published by the Ministry of Finance of the Slovak Republic (2016) in the Report Indicators for monitoring the development of the digital society 2014-2020. The data provided indicate that in the year 2014, only 51% of the online banking was used by citizens aged 16-74. In 2018, a report on the Digital Economy and Society Index (DESI) was produced at European Commission level (2018 Digital Economy and Society Index (DESI) Country Report - Slovakia). This report shows that 56% of the population used e-banking in 2016 and 63% in 2017. According to the European Commission, Slovakia ranked 20th out of the 28 EU Member States in 2017 in the Digital Economy and Society Index, thus making progress compared to previous years. Despite the progress made, Slovakia belongs to a group of countries with weak results in the digital economy index and therefore the expectations of new payment service providers will not be met.

## 10. Conclusion

The aim of this study is to answer questions concerning the legal framework for the provision of payment services in the European Economic Area, as technology and digitization and their related applications are also affecting management and delivery of payment services. The positive aspect of the adoption of these legal

acts is that the market for payment services opens and the security of internet payments is increased by introducing a strong client authentication and payment authorization, but the question of regulatory technical standards remains unresolved. Authorization requirements allow for effective supervision of service providers to ensure the stability, integrity, and fairness of markets. Given that the original Slovak legislation is fully harmonized with the Payment Services Directive 2015, we can clearly state that the Slovak Republic has also contributed to a better integrated internal market for electronic payments within the European economic area. According to the new Act of 2017, payment initiation services and payment account information services are provided in Slovakia by companies that gain access to bank accounts of clients and, if authorized by the user, can execute payment transactions on their behalf.

In conclusion, the regulatory initiative brings a new dimension to European economic integration processes, which is in line with today's economic realities and is characterized by increasing digitization and new business models.

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# THE DIFFERNCES IN ORGANIZATION OF RISK MANAGEMENT BETWEEN SLOVAK AND POLISH SMEs

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***Abstract***

*Nowadays SMEs are facing number of factors that undermine their business and financial results. These factors are the source of risks and due this fact, the organization of risk management becomes more and more significant. The main aim of the paper is to compare two basic characteristics of risk management between Slovak and Polish SMEs. Within the comparison, we focused on responsibilities of risk management and the level of the risk perception. To achieve the main aim, the questionnaire surveys in both countries were carried out. We found out, that in both countries, the responsibility for risk management in SMEs lies on owners and SMEs perceive the risks. The results of the paper contribute to the wide spreading of risk management context in SMEs.*

***Key words***

*Small and medium enterprises, risk management, responsibility, risk perception, risk identification.*

**JEL Classification**: L25, L26, G32

## Introduction

The actual situation in each economy is affected by factors and changes in social and economic environment as well as political situation. Also small and medium enterprises (SMEs) face many problems and critical situations. While the consecutive metamorphoses in the world economy changes the paradigm of doing business, the sources of success of almost every type of business transfer from tangible to intangible assets, and the information and its value becomes more and more significant, especially in the segment of small and medium sized enterprises (Kraľova, 2018; Ključnikov et al., 2019; Pakosta et al., 2017). Development of entrepreneurship is influenced by a broad range of issues of various nature and changes in many of them will require a long time to implement. The constantly changing legislation may be considered as the most substantial issue, whereas many legislative changes are adopted without thorough consideration of their impact on the business environment, which, besides application issues, causes chaos and eventually leads to further amendments. Even an entrepreneur with legal background is facing huge problems when trying to navigate in these changes. (Peráček et al., 2017) SMEs are a sector particularly sensitive to all changes occurring in the environment and at the same time showing huge capabilities of adapting to such changes. According to Krajnakova et al. (2015), the majority of SMEs cannot compete directly with large enterprises, and therefore they adjust their management to operate in niche markets. They are too small to be of interest of mass-producers, which tend to offer more products and services to a wider variety of consumers. A small company with low level of current costs (low employment) might be able to earn enough money to survive by selling a single product/service in a very specific market. Additionally, a small firm may be able to charge a premium price for product or services and there is the reason why they can survive in competition with corporations. The significance of these enterprises' segment is rising especially in transition economies (Belas et al., 2018). These facts require from executives of SMEs to be prepared for the changing environment in each area of their daily activities. An integral part of this preparation is the adaptation of managerial practice in the risk and uncertainty conditions. That is why, the organization of risk management becomes more and more significant.

The principles of risk management are common to all types of enterprises. Risk management is a rational approach to the work with risk and uncertainty with the use of instruments and methods of risk steering. Risk

management provides data for proactive decision that is also based on systematic assessment of possible threats for an organization. It defines which risks are important (assign risk priorities) and implements strategy for dealing with them. Assessment of risks is linked with quantification of impacts and with definition of an approach to evaluate amount of risk. Enterprise risk management is a new trend in security and growth of stakeholders' wealth. It is a new integrated approach to management of enterprises risks. The risk management can be implementing in enterprise as for whole entity, or it can be applied in selected areas of business. One of the factors of successful risk management in enterprise is its integration into the framework for risk managing. This framework consists of several activities, by which it provides the basic organizational configuration of risk management: understanding of internal and external factors of enterprise's environment, the policy of risk management creation, the determination of responsibilities for risk management in the entity, the integration of risk management into internal processes in the entity, the creation of risk management plan, the allocation of personal, material, technological, systematical and other resources necessary for all stages or risk management process, the creation of information system for internal communication between all stages of management and external communication with subjects and entities that are necessary for achieving of business plans.

The core principle of risk management in case of SMEs is that the focus of entrepreneurs should be oriented at recognizing of the future uncertainty, deliberating risks, possible effects and formulation of plans to address these risks and reduce its impact on enterprise.

In SMEs, the main responsibility for risk management is bearing mainly by the owners, whose risk perception and their attitude towards risk management influence the adequacy of the achieving of stated goals. Although the owners and managers of SMEs in Slovakia are intuitively aware of the risks in their business, they have considerable reserves in applying risk management in comparison with more developed countries (Hudáková et al., 2019). Risk perception is the subjective assessment of the probability of a specified type of accident happening. Individual and social characteristic of person who is responsible for risk management in the organization forms their risk perception and influences the way he reacts towards the risks. As Rohrmann (2008) stated, the risk perception refers to people's judgments and evaluations of hazards they (or their facilities, or environments) are or might be exposed to. Such perceptions steer decisions about the acceptability of risks and are a core influence on behaviors before, during and after a disaster.

The dynamic character of the sector of SMEs in Poland, Slovakia and across the world makes it necessary to constantly observe such entities and analyze individual and common areas of their economic activity, each of which is undoubtedly reflected in an enterprise risk management. The studies of the subject literature and empirical research show that there is a need for constant systematization and improvement of the knowledge on this subject.

The structure of paper is as follows. Literature overview provides short introduction into risk management context with focusing on its application in SMEs. There is characterization of realized research procedures and hypotheses statement in the part of goal and methodology. The part of findings and discussion bring results of realized questionnaire survey in Slovakia and Poland. There are also the statistical verification of stated scientific hypotheses in this part. The paper is finished by conclusions.

## Literature overview

The risk management is an integral part of strategic management of each organization. It is an integrated and holistic process. Within the risk management, an organization methodically solves risks elements. The risk that accompanies business activities is a specific form of uncertainty that reflects a complex phenomenon. Risk refers to the uncertainty that may affect future results and events of each organization. Risk and uncertainty are an important attribute of the most human activities, especially in business activities, the SMEs not excluding. Among the many assumptions about taking-risk widely embraced but rarely tested is the notion that large companies risk culture are less averse to risk than risk culture in the SMEs sector (Gorzen-Mitka, 2018). Business and financial relationships

between companies (regardless of their industrial taxonomy) are characterized by the presence of risks (Kramarova, 2016). The core of risk in business activities creates the decision making process that is realized currently, but the results will affect the future.

For effective and efficient risk management a formal approach is required. The risk management process is divided into individual stages that follow and influence each other. The process of implementing and finishing of these stages is a prerequisite for effective risk management. The stages of risk management are: (1) communication and consultation, (2) establishing of the context, (3) the identification of risks, (4) the risk analysis, (5) the risk assessment and risk treatment (6) monitoring and review. Organizations that better understand the nature of risk can better and more efficiently handle the risk management and they can avoid unforeseen disasters (Ward and Chapman, 2003). Risk management application and specific risk management procedures create a spectrum of specific managerial activities that determine decision making, strategy and operational activities of an organization (Klučka, 2010).

Specific category of risk management is the risk management in SMEs. SMEs sector play a decisive role in economic development and economic condition of countries (Sipa., 2017). They are considered as an important pillar and stabilization factor of country economy and its regions (Mynarzova, 2018). The existence and development of SMEs depend on enterprise understood as an approach characterized by taking initiative, dynamism in acting, creativity, innovativeness, and even propensity to take risky decisions and flexibility in adaptation to market requirements. The owner of a small company manages it in a different way than a professional manager does: he/she sets the rules of an enterprise's operation on his/her own, strives to achieve own plans and visions and takes the economic risk himself/herself (Borowiecki and Siuta-Tokarska, 2008; Lemańska-Majdzik, 2018). Because the owner's personality is usually dominant, then if he's a competent leader with sufficient charisma and the ability to concentrate people around his ideas, it brings the enterprise positive effect. When the owner is incompetent, unprofessional and lacks dynamism, than various problems arise (Filip et al., 2010). By combining the functions of the owner and manager, the owner of an enterprise takes the full risk of the decisions made, which may cause the loss of not only the capital invested but often also the private property of the owner not used to conduct the business activity. The fact that the owner fulfils top managerial functions is often perceived as the basic advantage of an enterprise of this type. Passing the management of the company to third parties would significantly change, in the traditional perspective, the character of the enterprise, excluding it from the sector of small and medium-sized enterprises.

The management of SMEs has to make decisions under uncertainty and insecurity, and has to take into account the risks that are associated with the business (Myšková&Doupalova, 2015). The application of risk management in SMEs has its institutional, process and communication part. It is necessary to state following solutions: the establishment of new organizational units and working positions responsible for risk management, the application of risk management principles within the framework of organizational units and description of working positions (differentiating of tasks, competencies) (Klučka, 2006).

Risk perception can influence behavior of entrepreneurs and vice versa, risky behavior may cause results of entrepreneurial activities. For example, an entrepreneur who takes a chance to go into the risk entrepreneurial activity, knows the risk is enhanced but when there is no problem, learns not to be worried or feel unsafe.

The risk management unit has a leading position at the top level of business management. The head of this unit is the manager responsible for risk management. For managers, the risk management process is one of the most important things, which they do in frame of managing the risks. For them it is necessary to know how to apply a systematic risk management process through the putting into action the six core risk management process steps.

## Goal and Methodology

The focus of the paper is oriented on the comparison and evaluation of the main differences in risk management organization in case of Slovak and Polish SMEs.

In this paper we assessed following issues: responsibility of risk management, risk perception and ways of risk identification. Within the stated objective, we compared the selected issues of risk management organization of Slovak and Polis SMEs according their size category.

The surveys ware carried out among selected sample of respondents. In our case, we have a relatively small number of respondents, but according to Borrego, Douglas and Amelink (2009), the aim of qualitative research that focuses on smaller groups is to examine in detail the specific context. The aim is not to provide a broad, generalizable description that is representative of most situations, but rather to describe a particular situation in sufficient depth to make the full meaning of what is happening clear. In this context survey took part 123 Slovak and 150 Polish respondents. Respondents came from seven economic branches: agriculture (5.49%), industry (18.32%), construction (19.05%), transportation (9.16%), tourism (2.93%), trade and catering (32.60%) and others (12.45%). The structure of respondents according economic branches presents Table 1.

***Table 1. The number of respondents by branch's classification***

| **Economic branch** | **Slovakia** | **Poland** | **Total** |
|---|---|---|---|
| agriculture | 11 | 4 | **15** |
| industry | 13 | 37 | **50** |
| construction | 33 | 19 | **52** |
| transportation | 14 | 11 | **25** |
| tourism | 6 | 2 | **8** |
| trade and food services | 29 | 60 | **89** |
| others | 17 | 17 | **34** |
| **Total** | **123** | **150** | **273** |

*Source: own research*

Table 2 presents the structure of respondents according size category. Respondents belong to one of the category with less than 10 employees (57.88%), from 10-49 employees (31.14%) and from 50 to 249 employees (10.99%).

***Table 2. The number of employees***

| Number of employees | Poland | Slovakia | Total |
|---|---|---|---|
| less than 10 employees (micro) | 74 | 84 | 158 |
| from 10 to 49 employees (small) | 58 | 27 | 85 |
| from 50 to 249 employees (medium) | 18 | 12 | 30 |
| Total | **150** | **123** | **273** |

*Source: own research*

In this paper, we set out six scientific hypotheses:

H1: There are not significant differences in the case of responsibility for risk management between Slovak and Polish SMEs.

H2: There are not significant differences in the case of responsibility for risk management according size category of respondents in case of Slovak and Polish SMEs.

H3: There are not significant differences in the case of responsibility for risk management according economic branch to which respondents belonged in case of Slovak and Polish SMEs.

H4: There are not significant differences in ways of risk perception between Slovak and Polish SMEs.

H5: There are not significant differences in ways of risk perception according size category of Slovak and Polish SMEs.

H6: There are not significant differences in ways of risk perception according economic branch to which respondents belonged in case of Slovak and Polish SMEs.

We verified the statistical significant differences by using the Chi-square test at significance level of 5%. If the calculated p - value was lower than 5% we reject the hypothesis about nonexistence of statistical significant differences and adopted the alternative one. The calculations were realized in statistical program STATISTICA.

## Findings and Discussion

The results related to responsibility of risk management are presented in table 3. The results of our research showed that responsibility of risk management between Slovak and Polish SMEs is concentrated at the level of owners or managing directors. The result of p-value, calculated for Chi-square test, between the respondents from Slovakia and Poland showed, that the hypothesis H1 was confirmed. We can conclude that there is not the statistical relationship between categorical variables.

***Table 3. The responsibility for risk management between Slovak and Polish SMEs according categories of respondents (%)***

| **Categories** | **Slovakia** | **Poland** | **Total** |
|---|---|---|---|
| 1. owner / managing director | 81.30 | 86.67 | 84.25 |
| 2. risk manager | 8.94 | 2.00 | 5.13 |
| 3. board members | 2.44 | 5.33 | 4.03 |
| 4. supervisory board members | 2.44 | 0.67 | 1.47 |
| 5. external staff | 4.07 | 0.67 | 2.20 |
| 6. nobody | 0.00 | 3.33 | 1.83 |
| 7. others | 0.81 | 1.33 | 1.10 |
| **Total** | 100.00 | 100.00 | 100.00 |
| **Chi-Sq. p = 0.188** | | | |

*Source: own research*

The assessment of hypothesis H2, individually for Slovak as well as Polish SMEs presents table 4. The results of Chi-square statistic in Slovakia as well as in Poland did not confirm hypothesis H2. The calculated p-values were less than 0.05. We can conclude that in this case, there is an association between enterprise size by number of employees and categories of respondents due to the responsibility for risk management. Questionnaire results presented in the respect to enterprise size measured by number of employees also showed that, there is an increase the responsibility of owners (managing directors) with decreasing numbers of employees.

*Table 4. Responsibility for risk management versus enterprise size by number of employees (%)*

| Category* | Slovakia | | | Poland | | |
|---|---|---|---|---|---|---|
| | micro | small | medium | micro | small | medium |
| **1.** | 63.41 | 13.82 | 4.07 | 46.00 | 32.00 | 8.67 |
| **2.** | 2.44 | 3.25 | 3.25 | 0.00 | 1.33 | 0.67 |
| **3.** | 0.00 | 1.63 | 0.81 | 0.67 | 3.33 | 1.33 |
| **4.** | 0.81 | 0.81 | 0.81 | 0.00 | 0.67 | 0.00 |
| **5.** | 1.63 | 1.63 | 0.81 | 0.00 | 0.00 | 0.67 |
| **6.** | 0.00 | 0.00 | 0.00 | 2.67 | 0.67 | 0.00 |
| **7.** | 0.00 | 0.81 | 0.00 | 0.00 | 0.67 | 0.67 |
| **Total** | **68.29** | **21.95** | **9.76** | **49.33** | **38.67** | **12.00** |
| **Results of Chi-Sq.** | **p=0.001** | | | **p=0.028** | | |

** 1. owner / managing director, 2. risk manager, 3. board members, 4. supervisory board members, 5. external staff, 6. nobody, 7. others*

*Source: own research*

If we compare the responsibility for risk management in dependence of economic branch in which SMEs carry out their activity, we can see similar situation than was in previous cases. For Slovakia the H3 was adopted. There is not significant difference among respondents according economic branch in case or responsibility for risk management. The results of p-value is higher than confidence level p=0.05. (Table 5)

*Table 5. Responsibility for risk management versus economic branch - Slovakia (%)*

| Economic Branch | Responsibility for risk management* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1.** | **2.** | **3.** | **4.** | **5.** | **6.** | **7.** | **Total** |
| agriculture | 5.69 | 0.81 | 0.81 | 1.63 | 0.00 | 0.00 | 8.94 | **8.94** |
| industry | 8.13 | 1.63 | 0.00 | 0.00 | 0.81 | 0.00 | 10.57 | **10.57** |
| construction | 23.58 | 2.44 | 0.81 | 0.00 | 0.00 | 0.00 | 26.83 | **26.83** |
| transportation | 9.76 | 0.81 | 0.00 | 0.00 | 0.00 | 0.81 | 11.38 | **11.38** |
| tourism | 2.44 | 1.63 | 0.00 | 0.00 | 0.81 | 0.00 | 4.88 | **4.88** |
| trade and food services | 18.70 | 1.63 | 0.00 | 0.81 | 2.44 | 0.00 | 23.58 | **23.58** |
| others | 13.01 | 0.00 | 0.81 | 0.00 | 0.00 | 0.00 | 13.82 | **13.82** |
| **Total** | **81.30** | **8.94** | **2.44** | **2.44** | **4.07** | **0.81** | **100.00** | **100.00** |
| **Results of Chi – sq.** | **p=0.069** | | | | | | | |

** 1. owner / managing director, 2. risk manager, 3. board members, 4. supervisory board members, 5. external staff, 6. nobody, 7. others*

*Source: own research*

In Poland risk management is focused in the person of the owner even stronger than in Slovakia. However, some exceptions are visible according to SMEs fro industry, and trade ad food service branch, where in about 6% entities risk management is run by members of the board. The results of Chi square test for Polish case was also higher than confidence level and that is why the H3 is also adopted (table 6).

*Table 6. Responsibility for risk management versus economic branch - Poland (%)*

| Economic Branch | Responsibility for risk management* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1.** | **2.** | **3.** | **4.** | **5.** | **6.** | **7.** | **Total** |
| agriculture | 2.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.67 |
| industry | 21.33 | 0.67 | 1.33 | 0.67 | 0.00 | 0.00 | 0.67 | 24.67 |
| construction | 11.33 | 0.00 | 0.67 | 0.00 | 0.00 | 0.67 | 0.00 | 12.67 |
| transportation | 5.33 | 0.67 | 0.00 | 0.00 | 0.00 | 1.33 | 0.00 | 7.33 |
| tourism | 1.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.33 |
| trade and food services | 34.00 | 0.67 | 2.67 | 0.00 | 0.67 | 1.33 | 0.67 | 40.00 |
| others | 10.67 | 0.00 | 0.67 | 0.00 | 0.00 | 0.00 | 0.00 | 11.33 |
| **Total** | **86.67** | **2.00** | **5.33** | **0.67** | **0.67** | **3.33** | **1.33** | **100.00** |
| **Results of Chi – sq.** | **p=0.981** | | | | | | | |

** 1. owner / managing director, 2. risk manager, 3. board members, 4. supervisory board members, 5. external staff, 6. nobody, 7. others*

*Source: own research*

Hypothesis H4 was related to risk perception in Slovak and Polish SMEs (table 7). To assess risk perception, the question how the business entity perceive the risk, which could have impact on activities of its business was used. Respondents were asked to rate the level of risk perception in a 3 point scale: I perceive the risk, I perceive the risk partially and I'm not perceiving the risk. Results of Chi-Square statistic for H4 showed that between answers of respondents from Poland and Slovakia due to the level of risk's perception there is not statistical dependence. We confirmed H4.

*Table 7. The level of respondents' risk perception*

| **The risk perception** | **Poland** | **Slovakia** | **Total** |
|---|---|---|---|
| Perceive | 91 | 91 | **182** |
| Perceive partial | 51 | 29 | **80** |
| Without risk's perception | 8 | 3 | **11** |
| **Total** | **150** | **123** | **273** |
| **Result of Chi-Sq. p = 0.336** | | | |

*Source: own research*

The hypothesis H5 was focused on assessment of the level of risk perception according size category individually in both countries. The calculated p-values for both countries is higher than 0.05. It means that between category of SMEs due to the number of employees and level of risk's perception is not dependence. We confirmed the H4.

*Table 8. The level of respondents' risk perception according sized category (%)*

| Category | | Perceive | Perceive partial | Without perception | Total | Results of Chi-Sq. |
|---|---|---|---|---|---|---|
| **Slovakia** | micro | 47.97 | 17.89 | 2.44 | **68.29** | **p=0.613** |
| | small | 17.89 | 4.07 | 0.00 | **21.95** | |
| | medium | 8.13 | 1.63 | 0.00 | **9.76** | |
| | **Total** | **73.98** | **23.58** | **2.44** | **100** | |
| **Poland** | micro | 30.00 | 18.00 | 1.33 | **49.33** | **p=0.580** |
| | small | 24.00 | 11.33 | 3.33 | **38.67** | |
| | medium | 6.67 | 4.67 | 0.67 | **12.00** | |
| | **Total** | **60.67** | **34.00** | **5.33** | **100.00** | |

*Source: own research*

There are the data and results of scientific hypothesis H6 testing in table 9 and table 10. The SMEs in Slovakia as well as in Poland perceive risks. The results of Chi-square for Slovakia showed that H6 was confirmed. There are not significant differences in ways of risk perception according economic branch to which respondents belonged

*Table 9. The level of respondents' risk perception according economic branch - Slovakia (%)*

| Risk perception | Economic branch* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **A** | **I** | **C** | **T** | **TO** | **TFS** | **others** | **Total** |
| Perceive | 8.94 | 7.32 | 18.70 | 8.94 | 2.44 | 17.89 | 9.76 | **73.98** |
| Perceive partial | 0.00 | 3.25 | 6.50 | 1.63 | 2.44 | 5.69 | 4.07 | **23.58** |
| Without risk's perception | 0.00 | 0.00 | 1.63 | 0.81 | 0.00 | 0.00 | 0.00 | **2.44** |
| **Total** | **8.94** | **10.57** | **26.83** | **11.38** | **4.88** | **23.58** | **13.82** | **100.00** |
| **Chi – sq.** | **p=0.446** | | | | | | | |

** A agriculture, I industry, C construction, T transportation, TO tourism, TFS trade and food services*
*Source: own research*

In case of Poland, the H6: There are not significant differences in ways of risk perception according economic branch to which respondents belonged was not confirmed (table 10).

*Table 10. The level of respondents' risk perception according economic branch - Poland (%)*

| Risk perception | Economic branch* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **A** | **I** | **C** | **T** | **TO** | **TFS** | **others** | **Total** |
| Perceive | 1.33 | 17.33 | 10.67 | 3.33 | 0.67 | 20.67 | 6.67 | **60.67** |
| Perceive partial | 1.33 | 6.00 | 2.00 | 2.67 | 0.00 | 17.33 | 4.67 | **34.00** |
| Without risk's perception | 0.00 | 1.33 | 0.00 | 1.33 | 0.67 | 2.00 | 0.00 | **5.33** |
| **Total** | **2.67** | **24.67** | **12.67** | **7.33** | **1.33** | **40.00** | **11.33** | **100.00** |
| **Chi – sq.** | **p=0.034** | | | | | | | |

** A agriculture, I industry, C construction, T transportation, TO tourism, TFS trade and food services*
*Source: own research*

## Conclusion

Risk management is the part of managerial activities and it is the philosophy of how to improve competitiveness of an enterprise via application in its business culture. As the risk can not be permanently eliminated from the business activity, enterprises should implement risk management to identify, manage and respond to threats in the most efficient way (Korombel, 2012). The main objective of enterprise risk management is to increase value to owners via managing risk within an enterprise. SMEs need the implementation of a risk management strategy even more than large enterprises, because they have the limited resources to respond to threats from internal and external environment. The results of scientific research showed, that Slovak as well as Polish small and medium-sized entrepreneurs recognize risk in their realized activities. The responsibility of risk management is carried mainly by owners of enterprise. Only in few cases (in Poland by 3 and in Slovak by 11), the responsibility of risk management is carried by risk managers. Entrepreneurs of both countries perceive the risks, but the principles of risk management are transferred into intuitive approach to risk management.

The novelty of the paper is visible by exploring and compering the risk preception and responsibility for risk management in two populations of enterprises from different countries. After the analysis, it was clearly verified that the research results vary, sometimes significantly, from country to country. This study contributes to the management knowledge and could be the basis for preparing the recommendation for risk management improvements in SMEs in the future.

This article manifests some limitations. The strongest limitation of present research is the unrepresentative research sample, so the challenge for next research could be the realization of the fully representative research in the area of the risk preception and responsibility for risk management in SMEs.

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# DEVELOPMENT OF INFORMATION TECHNOLOGIES AND THEIR IMPACT ON THE LABOR MARKETS

*Kamila MAYEROVÁ, Simona HYŽOVÁ*

***Abstract***

*Information society, information, information technology are often used terms nowadays. Informatization of society is aimed at developing the potential based on knowledge, information, people and their ability to use information effectively. Nowadays, information technologies are being brought to the attention of not employers and employees, but also to young people, graduates of high schools or secondary schools. They relate to the fourth industrial revolution, called INDUSTRY 4.0, which is more influential on the labor market and individual labor market players, in particular employment and unemployment. Most future employees are expected to know and be able to adapt to the new times and society. In the article, we try to point out how new technologies affect those entities.*

***Key words***

*Industry 4.0, information technology, labor market, employment, wages*

**JEL Classification**: O30, M52, J20

## Introduction

Our world is constantly changing. Today, more and more emphasis is being placed on the development of new technologies that will make it easier and at the same time optimize not only production but also everyday life. Industrial production experts and futurologists are constantly asking how production will look like in the future. The beginning of the 21st century is connected with the rocket boom of the Internet, smart technologies and their penetration into all areas of human activities. Constant innovation, optimization or efficiency are key to gaining a competitive edge in today's market. The classic business model is changing because current production cannot meet the demands of increasingly demanding customers. The customer has more and more demands and their difficulty increases, moreover they want to have everything in the shortest time. A classic business model based on mass production is no longer enough. Informatisation of society is aimed at developing the potential based on knowledge, information, people and their ability to use information effectively. It is necessary to focus on ICT literacy, security and education for the new generation of efficient workers and the development of the Slovak economy. It is very important for the Slovak Republic to get to the level of neighboring countries with its economic activity and knowledge economy and thus to increase its competitiveness. Before today's technology came to the fore, there were seven basic ways to communicate: telephone, wire, television, radio, mail, fax, or pager. Radio signals and wires, as well as telephone wiring, allowed us to transmit a lot of information faster. The onset of mobility, which is connected to information sources 24 hours a day, 7 days a week, is still quite recent. Thanks to the progress that has been made, it is not possible to say what is being stored in the future, but more than a few light years from where we were 20 years ago. Workers can get the information they need within 2 seconds instead of 2 to 7 days. These technologies completely eliminate the need for mail or even the cost of overnight mail for very sensitive documents that can be encrypted (electronically encoded) and digitally signed. Also due to increased security measures, it is virtually impossible for foreign partners to access sensitive or private company information (Greene, 2017).

## Goal and Methodology

The main aim of the paper is to explore the development of new technologies and their impact on the labor market. In order to realize this

goal, we had to study various publications dealing with technologies or the labor market itself. As a method we used comparison, observation, analysis and we worked with various statistics or research. With our work, we want to point out that new technologies are largely influenced by unemployment and employment, which are being dealt with by employees and their employers, which is a daily issue.

**Findings**

With the development of new technologies, automation and thus robotization are related, where it is said that robots will replace the work of a person, in the labor market, many people may lose their jobs. People's jobs are the main theme of the last decade. However, the opposite seems true. Research from (manpowergroup, 2019) suggests that more employers than ever (87% globally and 83% in Slovakia) plan to increase or maintain their employees due to automation for the third consecutive year. Businesses do not reduce jobs, but rather invest in digitization, transfer jobs to robots, and create new jobs. At the same time, companies are adjusting the qualifications so that their employees can perform new tasks that will complement the operations performed by the machines. The skill revolution is in full swing. More than ever, more employers (83% in Slovakia) plan to increase or maintain the number of employees due to automation. According to this survey, which in 19 countries had 19,000 employers, employers asked about:

• the likely impact of automation on their staff over the next 2 years

• the positions most affected by their business, and which skills they value most,

• what strategies they are introducing to ensure that they have the necessary skills and skills for the future.

Automation creates jobs - but in Slovakia we are just getting started. More than ever, more employers assume that, as a result of automation, it will increase or maintain the number of employees - an increase from 83% to 87% globally and in Slovakia from 80% to 83% in three years. At the same time, the share of companies expecting job cuts has declined globally from 12% to 9%, and in Slovakia it was 11% and 10% in 2018 and 2019. Companies that introduce automation most intensely create the most jobs - but Slovakia is facing major structural changes. Companies that digitize are growing, and this growth is creating new and new types of jobs. Those companies that are already using automation and digital transformation claim that they will increase the number of employees. Globally, 24% of these companies expect to create new jobs in the next two years. Only 12% of automated companies say they will reduce stocks, while 3% are not sure what the future will bring them. In Slovakia, automation is primarily focused on replacing routine production work, with only 9% of companies expected to grow, but 15% of the companies that automate are planning to decline in the next two years. Of the 41% of companies that will automate some activities in the next 2 years, 24% will create new jobs. In Slovakia, 46% of companies automate and 9% create new jobs. The increase in skills development is due to the fact that companies are developing their employees due to the greatest shortage of people with the necessary profile in the last 12 years and the demand for new skills that are emerging as quickly as the old ones are disappearing, most companies plan to build talent in history and this trend is only expected to grow by 2020. Companies are finding that they can no longer expect to find the necessary talent when they look for it. Up to 84% of companies globally and even 93% in Slovakia expect to increase their employees' skills by 2020. Companies expect automation for the future. Trust in automation is growing around the world. In 35 out of 44 countries, more firms are planning to strengthen or maintain staff numbers rather than reduce them. Robots help increase productivity and prove that they are essential to economic growth. Anyone who does not invest in automation risks running out of business and job creation. Countries and regions are introducing robotics at a very different rate: Southeast Asia is overcoming Europe and North America, and China is ahead of the US (Manpowergroup, 2019). Industry Industry 4.0 is also perceived as a time where robotization (robots) will replace human labor and many people lose their jobs. Industry experts, technology suppliers, academics and the National Robotics Center are dedicated to this issue. According to these experts, the 2018 reveals not only the continuing growth of the market but also a positive shift in the perception

of the importance of robotized workplaces and the impact of robotization on employees. Robots streamline and speed up production, eliminate risky, strenuous and monotonous workforce, and release them for further professional growth. The positive trend in robots deployment is negatively affected by the lack of R&D support from the state. One of the experts, Martin Morháč, who is a member of Industry4UM, replied to whether the robots will replace human work. *"Today, the fear that robots will deprive people of their jobs. But we somehow missed the fact that robots almost wiped out professions with heavy and harmful work, such as welders and varnishers. This is how the robotics direction is set for the future, primarily removing the hard, risky and health-threatening work from human life."* Deploying robots increases the competitiveness of businesses, and it is the best way to maintain or increase jobs, increase business profitability and employee wages (Industry4UM, 2018). The forecast for 2025 is that robots work more hours than people do. At present, 29% of the work is done by robots. In 2018, employees spent 71% of the total hours worked at work. Within six years, robots work up to 52% of their working time, people only 48%. Many industrial enterprises are automated, over 300,000 new industrial robots have been put into operation last year. Slovakia is one of the most vulnerable countries. More than a third of current jobs are at risk from automation, with low-skilled positions being the most vulnerable. With the need for education and practice, the risk of jobs is reduced by machines. Slovakia is one of the countries where the automotive industry is moving the most towards more efficient production processes. Worldwide, the number of industrial robots will grow by 2.6 million in 2019. This is a million more robots than in the record year 2015 (TASR, 2019).

According to the survey, the share of Slovak firms fully applying Industry 4.0 is growing and is 14%. Some companies in Slovakia do not have an organizational and personnel structure for innovative management and change implementation.

Industry4UM representative Martin Morháč said: *"Industry 4.0 is a topic for most companies, but the stage they are in is different. Overall, we can conclude that businesses are gradually beginning to enter the first stages of Industry 4.0. Most companies are still in the process of implementing rather isolated measures focusing on individual optimization goals without a more comprehensive strategy."* According to the survey, enterprises are primarily focused on improving the efficiency and effectiveness of internal processes, they want to manage their business intelligently and reduce costs, and they also consider solutions to replace employees' scarcity. Over the next three years, they plan to innovate production (84%), more than half focus on innovation in the preparatory phase of production, logistics, storage and maintenance. The results of the survey also showed that companies are creating specialized application teams and up to 60% of companies have confirmed that they have enough knowledge and information about Industry 4.0 to take the next steps.

## 1. Information technologies

Information technology can be understood as the use of any computer, storage device, network, and other physical device, infrastructure and process to create, process, store, secure, and exchange all forms of electronic data. Typically, information technology is used in the context of business operations as opposed to personal or entertainment technologies. Commercial use of IT includes both computer technology and telephony (Rouse, 2015). Information and communication technologies are already our future. We can hardly imagine them without using a mobile phone, a personal computer, or a simple calculator. However, informatisation in our society is not the same as in other European Union countries. The knowledge economy is based on the information society and the Slovak Republic has the potential to improve it by using ICT. However, this improvement cannot be achieved without the technical equipment of people, enterprises, government and a technically educated society in basic informatics. The Slovak economy does not have as much money to support these changes. The European Union provides sufficient support to its Member States in this area. Its main goal is to integrate its partial economies into the global economy.

### *1.1 Impact of technology on employment and unemployment*

Technological change undoubtedly influenced the amount, manner and situation of all workplaces. At the same time, technology has created new jobs for the people who have kept up with it. Many people today believe that the impact of technology on destroying jobs is more pronounced than creating it.

#### *1.1.1 Impact of technology on unemployment*

The impact of technology on our lives integrates quickly. Expanded technology has raised concerns that it can replace the various jobs of unskilled workers who cannot adapt to technological change. To keep up with technology, working people need more work flexibility and lifelong learning. But not all are reluctant to change, new technologies have a major impact on local jobs. Computers replace most jobs and create a fear of losing their jobs.

• *Impact of technological change on work* - using the machine increases efficiency and performance by eliminating human errors and risk factor.

• *Inability to adapt to change* - if one fails to cope with technological change, then they have the same chances to face unemployment.

• *The speed of technology development* - the pace of technological progress is so drastic that workers are unable to constantly monitor these changes. Income inequality is increasing rapidly

#### *1.1.2 Impact of technology on employment*

On the other hand, there are some positive effects of technology on unemployment. Technology development has a strong workplace impact with increased productivity, performance and performance while eliminating risk and human error.

*Key points on the impact of technology on employment are:*

• *Creating skilled jobs* - technology creates jobs for skilled workers.

• *Easy to communicate* - use of phone and fax now replaces tablets and notebooks to improve workplace communications.

• *Improve performance and accuracy* - technology creates a computerized workflow that can reduce risk and errors in improving performance.

• *Increased salaries* - increased demand for skilled workers with higher wages has led to increased jobs in sectors.

• *More production creates more jobs.*

• *Increasing the working profile* - when we outline the relationship between technology and unemployment.

Technology has brought new work profiles in software, IT and AI for professionals. Technology has made various positive changes in areas such as medicine, agriculture, education, industry and many, so it is important that people can adapt to new innovations (Warfield, 2018).

## 2 Labor markets

Work fulfills many important functions in human life and in society. Therefore, the definition of the term work is not uniform, it is based on the diversity of the concept of work. These definitions can basically be divided into two large groups. The first group is characterized by understanding work as a subject of market exchange and a means of achieving economic interest for man. The second group defines the definitions of the term work, which understands work mainly as a form of self-realization of man in society. Therefore, in practice we can encounter a different understanding of the concept of work. The most commonly used definition of work is the definition by Samuelson (1992), which states that "Work is a purposeful activity of man, aimed at creating material and non-material goods and services that meet his needs." Labor and the labor market are basic economic categories." The labor market is an important area in which the company operates. It is attended by individuals, sellers of their work, employers and the state. From an individual's perspective, work is a source of income, but also self-fulfillment or a source of social status. For the employer, it is important to have a sufficient job market offer in quality that is able to guarantee its smooth production. The state is entering the labor market not only as an employer but also as a creator and guarantor of market rules (Workie, Tiruneh, 2012).

*Unemployment* is a socio-economic phenomenon associated with the existence of a market, namely the labor market. Unemployment

is therefore a consequence and imbalance in the labor market, between supply and demand for labor. At present, unemployment is becoming a serious economic problem because it represents the lost potential value of the whole economy. At the same time, however, it acts as a social indicator, as it is associated with negative social phenomena such as crime. Also, the adverse effects of long-term unemployment on physical and psychological status of the individual, poor physical and mental health, increased divorce in families and many other negative social phenomena are also demonstrable.

*Employment* is a macroeconomic category that, according to Habánik et al. (2014, p. 201) "characterizes the involvement of the working population in the process of creating new products and services" and is one of the most important indicators of the performance evaluation of individual regions and economies. Employment is the ability of an individual to find a job that is consistent with his or her individual characteristics and objective labor market requirements (Kuchař, 2007).

The wage is the monetary fulfillment or fulfillment of the monetary value (wage in kind) provided by the employer to the employee for work. In particular, wage compensation, severance pay, severance pay, travel allowances including non-claim travel allowances, social fund contributions, supplementary pension savings allowances, employee life insurance contributions, capital gains (shares) or bonds, tax bonus, compensation, are not considered as wages. income in case of temporary incapacity for work, supplementary payments to sickness benefits, compensation for work readiness, monetary compensation pursuant to § 83 and par. 4 and other performance provided to the employee in connection with employment under this Act, special regulations, collective agreement or employment contract that is not a wage. Further wages provided by the employer to the employee after profit after tax are also not considered as wages (Alexy, 2005). The rapid and breakthrough technological development of recent years has transformed all areas of individual life as well as the functioning of society as a whole. It also manifests itself in the way industrial production is organized. In general, we can say that labor market conditions are improving. But there are areas struggling with structural problems. Even if the total number of places is maintained, some employees will require new competencies from some employees. The difference in qualification needed to handle one particular assembly step and oversee the complex system of intelligent production lines is so great that it is quite possible that many people will not be able to re-qualify accordingly during their remaining working life. On the other hand, Industry 4.0, on the other hand, has the potential to involve people with disabilities in work in production, people who have not been able to do so by their physical constitution or qualification. In fact, the entire Industry 4.0 concept also includes intelligent assistance systems for workers.

The employment rate is approaching the European average at a fast pace. In the third quarter of 2017, it reached 71.2% in Slovakia, compared to 72.3% in the European Union. Long-term unemployment and high unemployment among vulnerable groups and low female employment rates remain a challenge. There is also a lack of action in this area and perhaps also a political will to address this long-standing problem. The generally stated principle of gender equality does not work in practice. The biggest barrier to this situation is the unwillingness of political elites to admit that gender inequality exists in Slovakia. Historically record employment brings another phenomenon with which the Slovak Republic has almost no experience. Labor shortages are putting increasing pressure on demand for foreign workers. Their number increased year-on-year by 40% in 2017. There is a lack of legislation in place to regulate the conditions of employment to protect domestic workers. Third-country employees are willing to work in poor working conditions and for lower wages. Another factor affecting the lack of jobs is the low wage assessment that persists in Slovakia despite the acceleration of wage growth. The higher the minimum wage, the more motivated the employee is to work and prefer employment before receiving various social benefits, which also affects the overall social protection and security system. The minimum wage eliminates the growth of the gray economy and black work, or the payment of some part of the remuneration to the employee's hand. Growing wages support the dynamics of consumption, which is positively

reflected in the revenues of the state budget, as well as in the self-government, but also in the growth of the business sector, while the growth of the minimum wage stimulates the overall growth of wages. At the same time, it contributes to reducing social inequalities and pay gap. Employers often argue with the threat of layoffs and rising unemployment if the minimum wage increases or pressure on wage increases. Recent years are a clear indication that the increase in the minimum wage does not have a negative impact on business environment and employment. Unemployment is declining and employers still point to the problem of finding suitable workers for thousands of vacancies. One of the reasons for this is the low and unattractive salaries offered. Stimulating the purchasing power of the population stimulates the economy, increases sales, thus creating a precondition for further growth in salaries or increasing employment. If an employer is not willing to pay his employee so that he can lead a dignified life (which should already be guaranteed by the minimum wage), he demonstrates the inability to lead a decent business and disrespect for the people who work for him and help him generate profit. Slovakia has the ninth lowest average wage cost among EU countries, the eighth lowest minimum wage and the third lowest ratio between minimum wage and average income from countries with a minimum wage. It has the highest labor productivity among V4 countries, which accounts for 80% of the EU average, but wages are at one third of the EU average. As many as 240,000 workers in Slovakia earn only up to € 500, putting these employees at risk of poverty. This may also be the reason that in 2017 the official number of Slovaks working abroad was 150,000. Of course, the unofficial number may be much higher. For example, according to health insurance data for the last 15 years, population decline due to migration is 5% (Klokner et al., 2018).

## 3 Industry 4.0

The Industry 4.0 concept originated in Germany in response to a decline in industrial production as a result of shifting production capacity to cheaper countries. Leading German concerns such as Siemens, Bosch, Schunk and Volkswagen have joined the initiative. The aim is to reindustrialize Germany with cutting-edge technologies capable of competing with even the cheapest labor force. At the same time, a number of jobs will be created for highly skilled people and will expand opportunities for further research and development. The term "Industry 4.0" means the fourth industrial revolution. Other terms we face include "Smart manufacturing", "Industrial Internet of Things" (IoT) or "Digital Enterprise". While Industry 3.0 focused on automating individual devices and processes, Industry 4.0 focuses on the complete digitization of all physical assets and their integration into digital ecosystems that communicate with each other, including partners throughout the value chain. The term Industry 4.0 by (Pirvu, Zamfirescu and Gorecky, 2016) for the current trend of automation and data exchange of manufacturing technologies. In practical terms, this is the fourth phase of the Industrial Revolution. Industry 4.0 is a name for large-scale changes entering the industry today. The carriers of these changes are digitization. It is about digitizing products, digitizing and optimizing all business processes, including services. The current wave of digitization will affect almost all areas of human life.

### *3.1 Industry 4.0 for 2018 in Slovakia*

The year 2018 was the onset of digital transformation for Slovak businesses. Businesses began to perceive the fact that Industry 4.0 is not only a technological shift, but also a gradual change in thinking in the smart future. Last year we recorded 6 important moments that impacted Industry 4.0. Belongs here:

- *Industry 4.0 pace increases.*

The number of companies starting to perceive Industry 4.0 is growing. Implementation in enterprises has a significant shift, but on the other hand, there is a high uncertainty amongst small and medium-sized enterprises as to what Industry 4.0 implementation requires and how to apply and use it. According to the Industry4UM survey on Industry 4.0 in Slovakia, 14% of companies started to apply the elements of the Industry 4.0 concept last year. Mainly companies are represented, which are represented by foreign capital. In 2018, 31% of businesses started with smaller measures and the first steps towards smart production, compared with 15% from 2017. Enterprises implement the implementation

independently, without external cooperation (60%), 11% cooperate with external suppliers. Last year's survey saw the penetration of the philosophy of transformation into the corporate culture of businesses. Companies are beginning to perceive the importance of a special team in charge of the transformation agenda, and are starting to address innovation and smart solutions.

➢ *The state takes the first conceptual steps to support Industry 4.0 in Slovakia.*

In October last year, the Government of the SR approved 35 measures to support the development of infrastructure for the development of intelligent industry prepared by the Ministry of Economy of the Slovak Republic. The measures are embedded in the Smart Industry Action Plan, which is important for the industry's current needs and development plans. Functional and real state aid should be the point to kick-start the business of digitizing and automating businesses and supporting their growth.

➢ *Research and development still insufficient.*

It can be said that support for science and research is not sufficiently secured in Slovakia. Slovakia does not have a secure and functioning ecosystem linked to science, research and innovation, as well as the development of human resources where they are needed. Our industry is largely lacking in research and development that will innovate and push production and higher levels in businesses. Well-established and elaborated state support documents and education systems will help businesses to innovate, compete and develop their economic growth.

➢ *Industry 4.0 encounters education.*

The year 2018 did not achieve a significant shift in the structure of employment under the influence of Industry 4.0. In our company, there are no qualified staff, no students' interest in studying technical subjects, insufficient elaboration of dual education, lifelong learning programs and retraining processes. Robotization and plant automation are beginning to be the solution for lack of staff. Businesses are beginning to see that if they want to be successful in transferring to Industry 4.0, the expertise and sufficient training of employees must be one of the most important requirements. Without the training of workers, it is not possible to talk about smart industry.

➢ *Robotizing and automating even in small and medium-sized businesses.*

Last year, companies' interest in automation and robotics increased. Increasing salaries, more responsibilities and reliability of machines, the need to produce better and faster, insufficient workforce are the reasons why companies are starting to implement. Our country confirms the robotic power, even though it does not produce robots, it belongs to the world. In the automotive industry in Europe, our country is third, Germany and France are ahead of our country. In 2017, Slovakia was ranked sixth in the global survey. It can be stated that robotics in Slovakia is a successful one, but the missing side is the missing research centers and institutions dealing with robotics.

➢ *Industry 4.0 communication intensified.*

One of the problems why Industry 4.0 does not go ahead is the lack of communication. Many companies, whether smaller or larger, cannot transfer or apply this fact or move to their business. The problem is also lack of information and poor and insufficient communication between employees and employers. One third of companies inform their employees about the basic steps in Industry 4.0. 2018 confirmed that quality information is becoming increasingly important. Compared to 2017, when up to 80% of companies evaluated the possibilities of obtaining information about Industry 4.0 as insufficient, last year up to 60% of companies confirmed enough necessary information and knowledge for further steps (Bendová, 2019).

## 4 The profession of the top and attention of industry 4.0

Industry 4.0 will need people with technical and analytical skills, new jobs, creative and professional skills, the quality of people's skills will change, and the value of people's skills will change as well.

• *Most at risk* - less skilled people, with low digital skills, but also, as it is becoming standard, people over 50. Furthermore, officials handling numerical data, general and auxiliary administrative staff, motorcycle and car drivers, and at all transport and logistics workers, staff in services, sales, construction, etc.

• *At least threatened* - management positions, such as in district, education, health, social and other areas, nurses, midwives, veterinarians and teachers.

• *Most in demand* - database and network specialists, ICT executives, software and computer analysts and developers. Increasing the number of people with higher education who may be more attractive to employers, but there is a lack of specialists who program, maintain and set up robots.

In the selection of human resources, attention will have to be focused on the selection of people with a high level of learning (LQ) and a system of their continuous development. Thus, employees will have to be able to learn new skills to remain employable.

*The most endangered professions:*

- Accounting Officer
- Librarian
- Watchmaker
- telemarketer
- Postman and delivery man
- Salesman and cashier
- Machine tool operator
- Warehouse worker and logistics worker

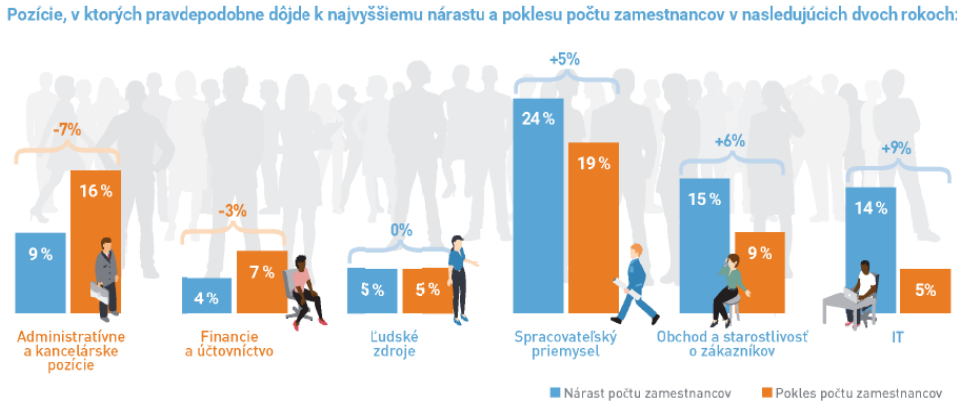
*The least endangered profession:*

- Teachers
- Nurses
- Therapists
- Doctors
- Entrepreneurs
- Writers
- Painters
- Cast

## 5 Methods to provide human and machinery cooperation

- Ensure that women are part of the solution. Women account for 50% of the workforce, and in 2017, they outstripped men in their education. Creating a culture in which women can thrive has never been so important and, moreover, when it is good for women, it is good for others.
- Remember that leadership is important. Managers need to initiate change, innovation and culture to ensure that their companies are learning organizations in the times of rapidly changing skills.
- Understand what your workers want. In 2025, millennium and Z generation will be more than 2/3 of the world's workforce. Companies need to respond to this by adapting NextGen work models, including freelancers, project work and part-time jobs, to attract and retain the best skills, as 87% of employees are interested in doing so.
- Customized training. Companies need to replace standardized training with precisely
- Targeted strategies and professional guidance, so workers can develop core, desirable skills.
- Know the skills of your people. Companies need to use evaluation, clean data, and predictive performance in an effort to deploy talent as efficiently as possible and avoid the creation of so-called talent. Bank Skills.
- Allow people to create synergies with technology. Companies need to continually improve their staff skills and create talents. They need to evaluate and re-evaluate the skills needed to make human talent complement automation.
- Build on soft skills. Businesses should align their strategies on talent with the fact that soft skills are more complex to develop than technical skills (Manpowergroup, 2019).

***Figure 1. Position with the lowest and highest increase in the number of employees***




*Source: Manpowergroup, 2019*

## Conclusion

In our work, we focused on the concept of employment, Industry 4.0 and information technology. Employment is one of the factors affecting the labor market. Many people lose their jobs because they cannot and in some cases do not want to adapt to new technologies, innovations. In some sectors, such as banking, automotive, or customer service (mobile, internet), there are constant changes, both for the employee and for the consumer. Customers have a big problem adapting to new innovations, which is why it is more complicated for the employee. In today's fast and modern times, it is expected to control all the necessary features, be it computer, mobile, tablet control. Our company is located in Industry 4.0, which means that we are coming to a time where artificial intelligence, digitization, informatisation or electronization will come first. It is supposed to help us to make the job easier, but also to make everyday life. The development of new technologies is related not only to the control of mobile phones or computers, but also to the control of machines with artificial intelligence, or intelligent or smart production itself. These concepts are unknown to people and also uninteresting. We believe that in our work we have contained everything that was needed to fulfill employment and its impact on technology development.

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# THE BUREAUCRAT IN THE 21ST CENTURY THROUGH THE EYES OF HIS CLIENTS

*Martina JAKUBCINOVA, JÁN KÚTIK*

***Abstract***

*The public sector is one of the main pillars of a mixed economy. At the same time, its activities significantly contribute in running and functioning of the State. of the world. At the same time, the trust that citizens of the State in question show to public institutions, institutes and their representatives cannot be overlooked. For this reason, an employee is a key consideration. The aim of this article is to provide an up-to-date view of human resources issues in the public sector. Among the wide apparatuses, we decided to focus attention especially on the area of the administrative apparatus, its attitude and relation to work, as well as possible areas of development. For this purpose, we have used several research methods. We can mention the method of analysis, synthesis, comparison, questionnaire investigation, interview, deduction and so on. These methods have helped us to achieve our goal and formulate recommendations based on our findings.*

***Key words***

*Bureaucracy, Client, ESO reform, Public Service, State*

**JEL Classification**: H70, H83, D73

## Introduction

Human resources are the most valuable resource of the public, private, and non-profit spheres. Significant contribution to this status is the absence of technologies or apparatus suitable for the substitution of the individual or the whole group. On the other hand, an era of humanoid robots can be expected, in which human resources will be substituted. All those involved are very aware of this reality. However, we assume that their onset will not be as fast. Therefore, the issue of human resources quality remains open and up to date. In this regard, one can speak of the rivalry that forms this space. It can be identified within internal and external systems. It is therefore difficult to obtain and maintain a quantitatively and qualitatively valuable human resource base. In our article we decided to focus attention on the issue of the clerical apparatus from the perspective of its customers, ie. clients. On the basis of such a defined object of exploration, we tried to approach and outline solutions leading to modification of the current scheme. Several methods have helped us to do this, eg. abstraction, analysis, synthesis, questionnaire investigation or deduction.

## 1. Human resources in the public sector

The human resources of any organization are the only source whose value grows over time. If the organization can understand this correlation, human resources will not be a cost item for it, but an investment (Vojtovič, 2011). In parallel to this, it is also the framework of the creation of the main goal of human resources management in the organization. According to Čapošová (2013), it is precisely the "search for a balance concerning the provision of an appropriate and necessary professional, personal and qualification structure of workers and their optimal quantity in accordance with the strategic and short-term goals of the given organization". We have to say, that management of human resources grows and becomes less important depending on the pressure the organization is exposed to. " (Milkovich, Boudreau 1993)

By addressing human resources issues and their governance in the public sector, these pressures need to be multiplied. The reason is the power of the public and the need to strictly comply with the laws, acts, regulations and so on. This specific group of people is closely linked to the performance of public administration. Their employer is the holder of state administration or

self-government. The occupation of an official therefore exhibits certain specific features that are in the private space not shown. This includes the representation of the State, the responsibility to the public and the performance of tasks under the laws and orders of the superiors.

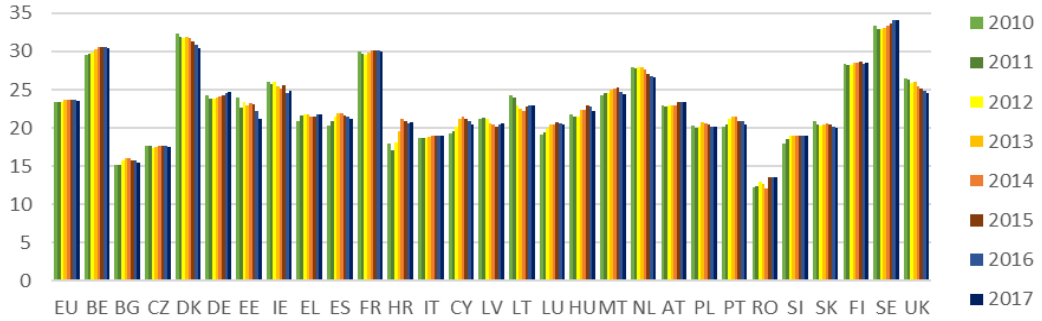
However, if we stop at the issue of legislation, procedures or regulations, we will come to a dilemma related to their double role. It is unnecessary to talk about their positive effects like eg. justice, equality or order. However, it is important to address their negative effects, such as e.g. inflexibility, low reflection on the needs or obsolescence of processes.

In a similar way, Wright and Němec (2003) literally write that "There are several limitations of individual procedures in the public sector, respectively activities and the enforcement of formal rules as in the private sector". We can also mention Berkley (1975), who atypically approaches this issue: "In the private sector, laws only tell managers what they cannot do. In the public sector, laws say what managers can do. Therefore, the question is whether it is possible to resolve this contradiction or be their slave.

### *1.1 The importance and role of bureaucrats in the public sector*

Bureaucracy is an administrative apparatus (Figure 1.) whose representatives are involved in fulfilling the functions and tasks of the State. For this reason, there is a need for action on governance, control and assistance by the State and society itself. Therefore, it is important to enhance this environment. It may be based on Johnson (1997), who states in his work: "The source of bureaucratic problems is not in bureaucrats, but in essence public goods and motives, controls and institutions that exist in bureaucracy. Therefore, any solution to bureaucratic problems must be based on the clarification and resolution of these institutions and motives so that bureaucratic decisions serve more to the public interest. " (D. B. Johnson, 1997)

***Figure1. Employment in public administration - percentage in EU countries (2010 - 2017)***




*By: Eurostat data (2019)*

Based on the above, it can be said that the quantitative and qualitative aspect of human resources in the public sector is constantly a burning issue. The general public (professional and lay) is interested in streamlining this space and building a new open management scheme. Reconciliation of the currently valid and valuable elements with the concepts of new public service, good governance and comprehensive quality management (Table 1.) should be a priority for any advanced State, nation or community. Another question may be asked: Why should it be so? It is possible to build on the implementation of several studies and the application of individual concepts in practice. For the time being, the results show several times higher benefits, which are perceived by both the public and the apparatus of the States in which these changes are realized.

***Table 1. Characteristics of each concept***

| | |
|---|---|
| New Public Service Principles | Serving citizens and society<br>To act democratically and think strategically<br>Respect people, citizenship, civil service |
| Good management<br>(good governance) | Responsible approach<br>Public participation<br>Applying ethical and moral principles<br>Transparency, clarity, and openness |
| Complex quality management | Clearly set plans and goals<br>Responsible organization of management structures<br>Increasing employee participation in decision-making processes |

*By: IFAC (2013), Klimovský (2014)*

The Slovak Republic is one of the countries that set out on this path. The Government of the Slovak Republic understood that this issue must be dealt acutely. Attention is focused on the activities of the State and its citizens, namely to simplify and unify the agendas, make procedures more transparent and the whole organization, the characteristics of bureaucratic apparatus, general satisfaction and so on. However, the need for legislative protection of all actors and actions remains crucial.

If we focus our attention on the bureaucratic apparatus, or the officials, it is imperative to set the assumptions of the work of its representatives. In the Slovak Republic, this issue is addressed by Act no. 552/2003 Coll. on the performance of work in the public interest. The law defines the basic conditions of the candidate who is interested in the position in the public sector institutions. According to the law, we include legal capacity, integrity, qualifications and personality, health fitness for the profession. At the same time, the law defines assumptions, duties and limitations as well as the possibility of business activities or compensation of public employees. According to Križanová and Kútik (2017) is for this area very important "the professional preparedness of its employees."

A candidate who becomes a public official should be identified with the duties associated with that function. At the same time, it is obliged to observe and respect the Constitution of the Slovak Republic, laws and regulations. In the performance of his / her duties, he / she is obliged to act and decide impartially, to maintain confidentiality of facts which cannot be communicated to others or not to misuse the information acquired during work. As a representative of this important profession, he must not engage in activities that significantly reduce dignity in relation to the function he performs, directly mediate trade with the State or local government and its budgetary organizations. It should respect and abide by moral and ethical principles, avoid corruption (accept, demand gifts and other benefits), not exploit the benefits of its work or make false statements.

In case that this employee is unable to identify with the principles, rules and regulations of this environment, it is not worthy of the function, place and status that he / she should exercise as a public service operator. The question therefore remains whether and how these persons can be identified and subsequently eliminated.

One possible solution is to prepare and educate future administrators of this environment. Universities are enabled to participate in the process of providing education in social, economic and legal sciences. These universities should instill the moral and ethical dimension of the profession. Together with them, they should actively participate in the construction of the basic pillar of modern bureaucracy, ie respect for themselves, clients, occupation and the State. Only in this way it can undergo a transformation that marks progress. Progress needed by the individual, society and the State. And it is the State who cannot afford to build an army of bureaucrats who are not conform to this.

At the same time, human resources that cover this area must distance themselves from promoting the individual's opinion and fulfilling their own interests. Therefore, let us say that the nature of correctness, transparency and compliance with legislation is the alpha and omega of the public sector. Guaranteeing the protection, fairness, equality or enhancement of

the idea of public interest should be the overriding aim of the State, its employees as well as clients, who are just citizens.

For this reason, it is important to pay attention to the qualities of this apparatus (education, experience, qualities, and values) and at the same time to monitor the performance and results they achieve. Only in this way can the general objective of human resources management be fulfilled, to ensure the organization has successfully accomplished its goals. According to Hajšová (2014, p.10) "the official makes a decisive contribution to the satisfaction".

*1.2 "Good Official" Initiative*

Bureaucracy is an element of guaranteeing the existence and operation of the State. For now, nothing better has been created to replace it. It is therefore necessary not only to accept its existence, but also to impose new requirements on it. The general public perceives bureaucracy negatively as a "necessary evil". Few are aware of its positive aspects. It is therefore appropriate to think about who or what can and how to make an adequate correction for such perception? For the time being, we will focus on the issue of bureaucrats themselves, ie. officials.

Although the official is not in Slovak legal terminology a public administration worker, we will use that term in this sense. Being an important part of the day-to-day realization of public authority in the state, an official need to be a representative of the positive values of society, organization and himself.

In this respect, we can speak about so-called Codex or rules of behaviour. These rules and their needs and possibilities evolve and transform on the basis of expectations and possibilities. It is important to think in this respect also about the adjustment of the conditions or processes of obtaining, selecting, evaluating and educating oficialls. This is possible solely on the basis of legislation and other related acts.

However, it is questionable whether this can be considered a sufficient element of the optimum guarantee. In the case of a negative answer, the next question is: How can we achieve this optimum? In the affirmative: How to keep this optimum?

As the literature suggests, very important of this area is the interaction with citizens (Braithwaite, 2007, Needham, 2006, Moon, 2002). It is undeniable that officials are among the first in contact and solving the government's and its clients' administrative agenda. It is the official who stand for the success or failure of activities related to this initiative. Significantly, geopolitical, economic, social and historical developmental changes have been marked on them.

In our conditions, we can speak about decades of misinterpretation of the meaning and potential of this apparatus. In order to remedy this situation, the need for maximum depoliticization of the area and ranking reconfiguration of the values of state representatives (public interest in the first place).

The steps taken by the initiative of a group of young Slovak officials are heading towards this idea (Good Official Initiative). They are trying to correct a negative official reputation. They openly focus their attention on the need to improve state culture and to introduce new solutions in the internal system. To this end, they seek to achieve a positive change in the perception of the profession of an official directly with the officials. They call for the official's mission to be the one who cares about building a functioning State and the reciprocity of all the actors concerned. For this reason, a "codex of good official" has been developed which can be considered as a clue or inspiration for responsible officials - Ten Commandments of a Good Official (Openness, Proactivity, Self-reflection, Efficiency, Ethics, Involvement, Participation, Over individuality, Idealism, and Motivator).

*1.3 Bureaucracy in a new dress*

Public administration is a phenomenon that cannot be ignored. There are several patterns in it that we cannot find anywhere else. At the same time, it should not be forgotten that many countries or government apparatuses are trying to set it in the most effective way for their own needs. However, they may not always reflect the needs of citizens or private entrepreneurs. But it is the citizen who should be the co-creator of this system and not his slave.

Denmark, the United Kingdom, Sweden and Estonia may be a positive example in this respect. This and many other states have succeeded in moving the established way of governance and thinking significantly forward. They managed to move from quantitative to qualitative, from the paper agenda to the digital agenda, from individualism to over-individualism, and so on. These changes have succeeded in fulfilling the expectations of their clients, whose priority is functional governance of the 21st century.

Therefore, the key issues in the Mzee (2012) are:

- strengthening systems and units of public administration planning and management;
- strengthening the core values of public service (low tolerance of corruption and crime; increasing sensitivity to and respect for citizens);
- promoting political culture (respect for institutions and standards, not personal interests);
- promoting professionalism in public administration (education, skills) and public service image (performance);
- creating a culture for the learning organization (promoting knowledge and use of ICT tools);
- introducing incentive structures (a fair remuneration system; increasing the need to recognize).

ESO reform does not deal with this and many other issues in the public sector, public services and public administration of the Slovak Republic. The State modifies this specific environment and moves it through a significant step forward. Not only eGovernment or informatisation of society can be highlighted. The burning issue is the realization, performance and results of the work of the main actors – the officials.

The solution of the material and technical deposit, the interest shifts into the area of qualitative goals and the creditworthiness of the human base of the administrative apparatus. The State creates space not only for initiatives from the outside (Good Officer), but also from its inner environment. This initiative is a proactive approach and the introduction of the "one time enough" principle, ie. Stop bureaucracy (Act No. 177/2018 Coll. On certain measures to reduce administrative burdens by using public administration information systems and on amendments and supplements to certain acts). We can therefore talk about a new era of communication between citizens and entrepreneurs with the extended hand of the State – the authorities and officials. Clients will no longer have to carry certificates to the authorities, which the authorities can also provide from state electronic registers. This applies, for example, to extracts from the Commercial Register, Trade Register and Real Estate database. The authorities will exchange important data and information among themselves. This also requires expertise and training for officials. On the other hand, it should be kept in mind that individual officials may fail individually when introducing new changes. This needs to be solved promptly.

But not only an appeal to the expertise of bureaucrats is important, but also an appeal to their moral values. As an extended hand of the State, they must uphold the principles of ethics and decent behavior. So we can talk about pride, credibility, decency, morality or moral values. Matoušek (2013) discusses the importance and tasks of moral consciousness, character traits, interpersonal relationships, and human behavior in the public-state area. The author expresses the idea of reciprocity and respect.

Many workshops, conferences and seminars have also shown interest in solving this issue. The seminar "How to increase the quality of Slovak officials" can be considered beneficial in the Slovak Republic. This seminar was organized by the European Commission Representation in Slovakia together with Transparency International Slovakia (December 10, 2018 in Bratislava). One of the participants of the seminar, Tatiana Janečková, is of the opinion that "The quality of public service is not only about the ability to meet citizens' requirements. It is important to be aware of social responsibility and the need to do the right things in the right way. This can be done by working with citizens / clients and public entities, all in accordance with integrity." In this context, B.C. Forbes' famous statement "Decency costs nothing. It can bring high benefits to individual and company."

## 2. Goal and Methodology

When processing the theoretical knowledge, information and data related to the issue we were based on available resources related to the issue in print and electronic versions. We also used a questionnaire and a method of interviewing the respondents we addressed. The questionnaire was distributed to 367 respondents who had the opportunity to comment on 3 open and 14 closed questions. This questionnaire has been expanded to include 6 more questions on public administration students' questions related to their future profession. We also approached 13 students with whom we conducted a controlled interview. The results were processed using mathematical calculations and comparison of groups of respondents. The most exciting results have been presented at work, and we have also tried to make some observations. In the final part of our work, we look at the conclusions we have drawn from the deduction.

## 3. Findings and discussion - The relationship between clients and the clerk apparatus

The public sector, as a major driver of public services, must be able to provide high quality and user-friendly services. Moreover, it must be borne in mind that it is these services that affect citizens' quality of life from their birth. At the same time, we derive health and welfare of the nation and the quality of the social State. This requires a clear strategy, regulation / frameworks and good human resources. Strengthening public sector capacities therefore requires a holistic approach. An approach that should be based on trust in the public sector, strengthening the core values of public service, culture, recognition and so on.

Extraxt from report of European Commission Quality of Public Administration 2017 says: „The ability to reflect today's needs and to anticipate tomorrow's, agile enough to adapt, must become permanent features of the public sector. Most of all, administrations must build on a solid foundation: ethical, efficient, effective and accountable. “

“Values are essential components of organisational culture and instrumental in determining, guiding and informing behaviour. For bureaucracies, adherence to high-level public service values can generate substantial public trust and confidence. Conversely, weak application of values or promotion of inappropriate values can lead to reductions in these essential elements of democratic governance, as well as to ethical and decision-making dilemmas.” Ireland’s Committee for Public. Management Research (European Union, 2017).

Public managers thus have to balance the intended and potentially unintended effects of taking charge behaviour (Homberg, 2017).

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Within this range of issues, we conducted a questionnaire survey in the first decade of 2018, the results of which we decided to publish in this article. Respondents (367 respondents from all over the Slovak Republic) were randomly selected actors dealing with the agenda with the State and at the same time future reinforcements of bureaucracy, ie. students of the study program Public Administration (34 respondents). All the respondents had the opportunity to comment on two issues: 1. Official - Professional (Organizational Performance), 2. Official - Man (Behavior). Similarly, interviews with students (13 respondents) were conducted.

*a) The Official - Professional*

It is proven that the quality of public services and the role of society in carrying out state tasks have a direct impact on the quality of citizen’s life. Achieving this can be done through a high-quality deposit of human resources. Its quality

level depends to a large extent on the level of education, skills and willingness to learn. The basis of the whole process is orientation in the issue. This can be acquired from a theoretical point of view in the educational process. This is ensured in our conditions by tertiary education. Approximately 780 potential bureaucrats (CVTI.SK) will annually leave universities, which include education in Public Administration and Regional Development, Public Economics and Public Policy and Public Policy. These graduates also gain practical experience through professional practice. In addition, respondents to our questionnaire survey expressed a very positive opinion on this obligation (320 respondents, 87.2%). Pleasing is the discovery that relates to students taking up education in the field. Up to 64.9% (22 respondents) would like to work in public administration institutions. The reason is the application of theoretical knowledge (9 respondents, 41%), fulfillment of the mission (7 respondents, 32%) and stability of public administration institutes (6 respondents, 27%). In personal interviews, the results were in the same order. In addition, it has been shown that they would like to be the initiators of change because of the negative perception of bureaucracy. They also justify the fact that an official - a professional - should be the initiator, supporter and implementer of change. They consider it is important that the agenda is done professionally, without unnecessary burdens on the client and with the utmost regard for their needs. The official should also focus his attention on details. These results were also confirmed through a questionnaire survey conducted by us. Clients using the services of the authorities consider the orientation in the issue to be the most important element of the system's functionality (83.1%). Professionalism is essential to them in terms of handling the agenda. They consider it unacceptable to have to repeatedly visit and communicate with the authorities, or to proactively search for agenda-related information themselves (96.7%). At the same time, they urge that the selection of representatives of this environment be as transparent as possible (75.5%).

*b) Official - man*

In examining this area of the issue, we focused on the ethical and moral values of the administrative apparatus. Ethics in public administration is important for building a good image in relation to the public. It can also be said that strong ethics is paramount in the public sector. However, adhering to an ethical and moral code is challenging. Strong external and internal pressures can cause damage that is not easy to eliminate. It is therefore important to withstand pressures and to tighten firmly rooted principles and targeting. Early and informative communication, as well as the transparency of individual processes and procedures, have a positive impact on good ethics in public administration. It creates trust and prevents or minimizes potential problems that may arise when information is published from outside sources.

The results of our investigation show that 72.8% of all respondents (267 respondents) rate this environment positively. This applies to both the state (82%) and the local government (73%). However, up to 9% of respondents (33 respondents) met with unwillingness and disrespect of the officials during their agenda. Respondents encountered this unfortunate experience mainly in relation to state authorities (ministries, tax offices), but 3 respondents also assessed the work of officials at municipal offices. In this respect, the professional skills of the officials dealing with the issue were also negatively evaluated. However, it is possible to draw attention to the fact that 3/5 of those concerned did not meet such behavior for the first time. However, a pleasing finding is that up to 78% of those who have experienced these negative experiences evaluate the qualitative shift in staff of this environment. We believe that the objectives and principles of the current ESO reform have an impact on the outcome. This directly appeals to open access and client orientation - actors in the process. The interview showed that the person who holds the post of an official should also represent this function in private. They also call for senior executives to follow a codex of decent people. The respondents also said that bureaucracy is not a problem, the problem is an element in this chain, and that is the man whose aims are low.

In the summary of the results, we can draw the following from our inquiry (Table 2.). The agenda and professionalism of the agenda is more important to clients than empathy and emotionality. This result did not surprise us

because we regard the right and professional approach as the basis. On the other hand, we were surprised by the result of ethical and moral characteristics who, despite declaring these values, are not commonplace with all officials. But the truth remains that the system is changing for the better. Superordination is slowly disappearing. Actors are transforming this area with their "human" behavior and thus shifting the image of public administration closer to clients. It is therefore desirable to continue to spread and fulfill the idea of Action Center - Citizen / Client. It is important to set up and emphasize professionalization and human approach correctly. Emphasize the choice of the appropriate human resource. And not just because of his education, skills, but also emotional assumptions. Ethical and moral approach is not only to declare, but also to implement. Build a pleasant environment for clients and employees, develop a given space by the State's natural influence and focus on the citizen / client. This significantly eliminates the threats of losing confidence and not fulfilling the vision, whether public administration or ESO reform, which focuses on these issues.

***Table 2. Official and his characteristics***

| Professional assumptions | | | | | Personality assumptions | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Knowledge of laws and regulations | | | Performance autonomy | | Mouth / Respect to clients | | Communic. skills | | Cultivated speech |
| Responsible processing of the request | Prompt processing of the agenda | Control of ICT | | | Facial expression | Haptics | Native language | Foreign language | Olfactory |

Monitoring and inquiry is equally important. However, not only in relation to clients but also in relation to workers. These activities, carried out within the internal and external environment, and their value are important in the field of modifications and improvements, as well as attention to weaknesses and characteristics of elements that weaken the process:

- Stagnation element (respect and strict adherence to valid standards - implementer)

- Activation element (innovation and creation of new schemes - Inspector)

- decadence element (loss and decline of values - destructor).

We can assess not only the process as a whole, but also its individual active ingredients, e.g. individual.

## Conclusion

Good governance is strengthened by public confidence in this area. The aim of this paper was to provide an up-to-date view of human resources issues in the public sector. Several changes and modifications of the environment led us to this setting up of strategies to fulfill the essence of ESO reform. We have focused our attention on the area of the administrative apparatus, ie. bureaucracy. This apparatus should always keep in mind that it works for the public. That is why we watched the shift and perception of news that the system modification brought with it. Based on a questionnaire survey, we have mapped and evaluated these facts. We can therefore conclude that the proximity of the State to the citizen is perceived positively. The qualitative shift in the field of professionalism and ethics reflects, perceives and feels the company. This enriches this space significantly. Therefore, it is necessary to constantly monitor external and internal needs or environment, inquiring and making proactive adjustments. These should touch the whole environment, not just human resources. However, given the focus of our work, the preparation of future officials, their education and their willingness to actively develop should be taken into account as well as the character and ethical

and moral dimension of those actors. We live in a time when the client becomes the center of attention, so it is appropriate for us to grasp this opportunity and communicate about our needs and ideas. Increasing proactivity, openness and participating in a new form of public administration is a step by which the State gives its citizens the knowledge that it respects and recognizes them.

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Zákon č. 177/2018 Z. z. o niektorých opatreniach na znižovanie administratívnej záťaže využívaním informačných systémov verejnej správy a o zmene a doplnení niektorých zákonov

Zákon č. 552/2003 Z. z. o výkone práce vo verejnom záujme


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**Introduction (Times new roman Body text 10)**

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**Goal and Methodology (Times new roman Body text 10)**

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**Findings (Times new roman Body text 10)**

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**Discussion (Times new roman Body text 10)**

**1. Title of the Chapter (Times new roman Body text 10)**

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**Conclusion (Times new roman Body text 10)**

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**Acknowledgments (Times new roman Body text 10)**

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