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Obsah

Contents

TRENDS IN FOREIGN TRADE DEVELOPMENT OF SLOVAK AND KAZAKH REPUBLICS	5
<i>Andrianna BALEHA</i>	
MODELS OF THE WELFARE STATE IN EUROPE: GERMANY AND SWEDEN	18
<i>Jaroslav ĚHN, Andrea HORVÁTHOVÁ</i>	
YOUTH WORK IN REGIONAL CONTEXT	29
<i>Katarína HAVIERNIKOVÁ, Silvia ŠTEFÁNIKOVÁ, Mária PETRÍKOVÁ</i>	
ANALYSIS OF THE EXPECTED DEVELOPMENT OF DEMOGRAPHIC FACTORS AND THEIR ADAPTATION TO THE LABOR MARKET IN SLOVAKIA.....	40
<i>Andrea HORVÁTHOVÁ, Jaroslav Ěhn</i>	
REVIEW OF SCIENTIFIC MONOGRAPH: EU AND SLOVAK CLUSTER POLICIES INTERACTIONS WITHIN THE REGIONAL DEVELOPMENT ENHANCEMENT (PERSPECTIVES, CHALLENGES, ISSUES)	51
<i>Eva Koišová</i>	
PSYCHOLOGICAL FREEDOM TO FEAR WHEN DEFENDING A THESIS IN PORT TECHNOLOGY MANAGEMENT.....	53
<i>Saulius LILEIKIS</i>	
COMPARISON OF NEURAL NETWORKS AND REGRESSION TIME SERIES IN ESTIMATING THE DEVELOPMENT OF THE AFTERNOON PRICE OF GOLD ON THE NEW YORK STOCK EXCHANGE.....	61
<i>Veronika MACHOVÁ, Tomáš KRULICKÝ, Jakub HORÁK</i>	

TRENDS IN FOREIGN TRADE DEVELOPMENT OF SLOVAK AND KAZAKH REPUBLICS

Andrianna BALEHA

Abstract

The Republic of Kazakhstan is the most economically developed country in Central Asia which has a large content of strategically important natural resources, and it is an important hub of their transport. The country is located on the New Silk Road, and it connects the interests of many Asian and European trading partners. For Slovak exporters, Kazakhstan can provide great prospects for the realization of its goods and services, and the creation of joint investment projects can bring significant economic benefits to both countries. The aim of the article is to research the tendency of development and actual situation of mutual trade between Slovakia and Kazakhstan, and the position of given economic partners in their foreign trade. The research conducted on the basis of the latest available statistical data has identified possible prospective ways to intensify trade relations between countries for their mutual prosperity and economic development.

Key words:

Republic of Kazakhstan, Slovak Republic, foreign trade, foreign direct investments (FDI).

JEL Classification: F19, F21

Introduction

The Slovak economy has a relatively small economic potential, but at the same time it is a developed, market and strongly integrated Eurocentric economy, which is largely based on exports (OECD, 2019). The share of Slovak economy in world GDP in 2019 represents 0.14% or the value of 112 milliard USD (International Monetary Fund, 2019). Slovak economy is the fourth most open economy in European Union and in 2018 Slovak exports and imports accounted for 190% of the country's GDP (Statistical Office of Slovak Republic, 2020).

It is an axiom that the vast majority of national economies benefit from participating in international trade. At the same time, this interdependence is associated with a high risk of the negative effects of a globalized economy. The main task of each state's economic policy is to secure a compromise and find a balance between the benefits of liberalism and protectionism. The diversification of the territorial structure of foreign trade and the expansion of sales markets is a promising strategy for the further economic development of each state.

The countries of Central Asia represent a promising area of cooperation for many countries that are trying to promote their economic and geopolitical interests in this region. European Union is one of them. As part of the renewed partnership strategy presented by the European Commission on 15 May 2019, cooperation between the two regions will focus on following aspects such as better energy, transport and digital interconnections, intensified cooperation on water and environmental protection, increased trade in goods and services, and combat drug trafficking from Afghanistan and Islamic radicalism (European Union. External Action, 2019).

The Republic of Kazakhstan, with its economic potential, is the economic engine of Central Asia and accounts for 60% of the region's GDP (World Bank Group, 2020). In 2019, according to data released by the International Monetary Fund, its gross domestic product reached 182 milliard USD, creating the 0.38% of the world's GDP volume (International Monetary Fund, 2019).

Kazakhstan determines the direction of development of the region not only in economic sphere, but also initiates the solution of many strategic political, security, integration and many

other challenges within the regional and international context.

Objective and Methodology

The aim of this article is to evaluate the most important development factors of foreign trade and investment relations between Slovakia and the Republic of Kazakhstan. Based on the information obtained, we examine the position of the partners on a range of trade preferences and will determine the possibilities of more advantageous mutual cooperation for companies of both countries.

Slovakia has a long-standing friendly diplomatic relationship with this particular Central Asian partner, which was established on January 1, 1993. In 2005, the Embassy of Slovak Republic was opened in the capital of Kazakhstan - Nur Saultane. With the opening of the Embassy of the Republic of Kazakhstan in Bratislava in 2019, not only diplomatic but also economic relations between the two countries were further strengthened (Posol'stvo Respubliki Kazakhstan v Slovatskoy Respublike. 2020). Within this political context, the analysis of mutual trade between Slovakia and Kazakhstan is gaining even more academic weight and relevance.

To fulfill the set goal, we used classical theoretical research methods - synthesis, induction, deduction and analysis. Our research also combines qualitative (analysis of available documents, expert opinions and case studies) and quantitative methods (statistical data, its processing and analysis). Based on statistical data published by the Statistical Office of Slovak Republic, the Ministry of Foreign Affairs of Slovak Republic, the Statistics Committee of the Ministry of National Economy of Kazakhstan and the National Bank of the Republic of Kazakhstan, we evaluated the development trends of trade in goods and foreign direct investment. For a deeper study of bilateral trade relations between those countries and the degree of fulfillment of mutual export capacities, we used the Trade Intensity Index set by the World Bank.

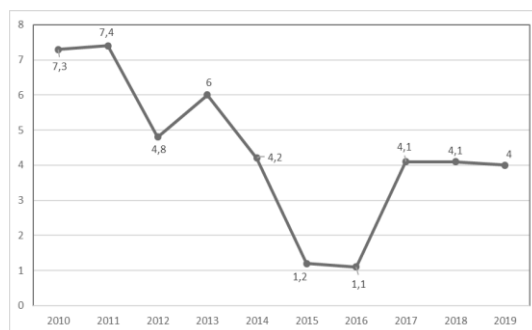
At the end of the article, based on deduction and induction, we defined the main promising areas of cooperation for Slovak and Kazakh business partners and investors for the expansion of their sales markets and subsequent economic

prosperity. An important aspect for our research was the preservation of systematics, constructivism and objectivism during the data processing from Kazakh, Slovak and international official sources.

1. Development of trade relations between Slovakia and Kazakhstan in the years of 2010 - 2019

Kazakhstan is the country with the largest economic potential in the region of Central Asia and the 54th economy in the world in terms of GDP. Kazakhstan's share of global GDP is 0.21%¹ (World Bank, 2019). In 2019, the absolute value of the country's GDP reached 196 milliard USD and GDP per capita reached about 10,000 USD. The economic growth of the Republic of Kazakhstan shows a declining trend in the observed period, but nevertheless it shows sufficiently high indicators on a global scale (MZVaEZ SR, 2019).

Figure 1. Economic growth of Kazakhstan in% during 2010 - 2019



Source: World Bank, 2019

¹ Slovakia's share in global GDP is 0.12

The slowdown in economic growth in the Republic of Kazakhstan and its fall in 2015-2016 was caused by a sharp decline in world oil prices, a decline in domestic and foreign demand, caused by a slowdown in economic growth in China and Russia, which largely affected Kazakhstan's exports. Since 2017, we can observe stable economic growth at 4%, based on domestic demand, public and private investment and foreign trade (World Bank, 2019).

According to data published by the Statistical Office of Kazakhstan, the main components of Kazakhstan's GDP in 2018 are: services - 54.4%,

38.3% - production of goods and 7.3% - net taxes on products (Economic Research Institute, 2020). The largest share in the field of services is represented by wholesale and retail - 15.9%, transport and storage - 8.3% and real estate activities - 7.6%. The sector of industries producing goods is mainly represented by the mining industry, which accounts for about 15.3% of GDP and industrial production - 11.7%. Agriculture and construction contribute 4.2% and 5.4% to the country's GDP (Ministry of National Economy of the Republic of Kazakhstan - Komitet Po Statistike, 2020).

Table 1. Structure of Kazakhstan's GDP in 2018 in %

Total GDP	100
Industries producing goods	38,3
Agriculture, forestry, fishing	4,2
Industry	28,7
• Mining industry	15,3
• Manufacturing	11,7
• Electricity, gas, steam	1,7
Construction	5,4
Sectors producing services	54,4
Wholesale and retail	15,9
Transport and storage	8,3
Information and communication services	1,8
Financial and insurance activities	3,4
Real estate activities	7,6
Professional, scientific and technical activities	4,3
Administrative and support service activities	2,3
Public administration, defense	1,6
Education	2,7
Healthcare and social work	1,9
Other services	4,6
Gross value added	92,7
Net taxes on products	7,3

Source: Ministry of National Economy of Kazakhstan, 2020 and Ministry of Foreign Affairs and European affairs of Slovak Republic, 2019a

The Republic of Kazakhstan is one of the largest producers of energy raw materials in the world, which gives the state a significant impact on international economic and political scene. Kazakhstan is one of the ten countries with the largest geologically explored reserves of oil, hard coal and uranium. Despite the fact that the state

strives to diversify the structure of its economy, energy resources and their transit are a major development factor. The basis of the country's energy complex consists of hard coal, oil and natural gas, which the state successfully produces to meet domestic demand and for export (Kazenergy, 2019).

Table 2. Energy complex of Kazakhstan in 2018

	Resources	Mining	Export	World production share
Oil	30 mld. barells 3,9 mld. tons	91,2 mil. tons per year 1,9 mil. barells a day	71,5 mil. ton	2 % ²
Gas	1,3 mld. m ³	54,8 mld. m ³	19 mld. m ³	1,4 % ³
Coal	25,6 mld. tons	50,6 mld. tons	29,2 mld. ton	1,3 % ⁴

Source: Ministry of Foreign Affairs and European affairs of Slovak Republic, 2019; British Petroleum Statistical Review of World Energy, 2019

The mining industry plays an important role in the economy of Kazakhstan. The country has a large volume and various types of minerals. From an economic point of view, a major advantage of the industry is the presence of mineral resources close to the earth's surface, which does not require high mining costs. Kazakhstan has the world's largest reserves of tungsten, the second largest reserves of uranium (39%) and chromium. There are reserves of many non-ferrous metals in Kazakhstan, such as: manganese, silver, lead, zinc, titanium, copper and gold. The Republic of Kazakhstan has the eight highest world reserves of iron ore - 8.7 billion ton. Up to 70% of extracted iron ore is exported. Extensive reserves and diversity of minerals are the basis for the development of chemical, petrochemical and engineering industries (Kakhakhstanskaya Fondovaya Birzha, 2019).

Kazakhstan's geographical location between Europe and Asia is another comparative advantage of the state. Kazakhstan actively supports the international project for the restoration of the Silk Road "One Belt, One Road", which was presented in Almata in 2013 by the President of the People's Republic of China - Xi Jinping. As part of this initiative Kazakhstan has invested about 30 milliard USD into the development of its transport infrastructure over the last ten years; 2.5 thousand kilometers of railways and 12.5 thousand kilometers of expressways have been built and modernized (Ofitsial'nyy Sayt Prezidenta Respubliki Kazakhstan, 2019).

In 2015, Kazakhstan, together with Armenia, Belarus, Kyrgyzstan and Russia, formed the Eurasian Economic Union (EEU), which was transformed from the Eurasian Economic Community in 2000 and the Common Union in 2010. The economic union is the highest degree of economic integration among the states. Along with with the Common Customs Tariff and the free movement of goods and production factors, it ensures the coordination of macroeconomic policies and the harmonization of legislation in key economic areas - the monetary and fiscal spheres (Evroaziyskaya Ekonomicheskaya Komissiya, 2018). According to Zubro (2014), the countries that form the basis of the Eurasian Economic Union have a common past, largely recognize similar political and cultural values, and have historically had comprehensive economic relations. Kazakhstan's membership in that international organization brings the benefits from the free movement of goods, services, capital, labor, and opens up free access to new markets with a total population of 184 million people.

Kazakhstan's foreign trade is primarily focused on EEU Member States and mainly on the Russian Federation, which is the main importer (37% of total imports in 2018) and the third territory of exports for Kazakh goods (8%) (Strategy 2050, 2019). In 2018, mutual trade between states exceeded the value of 18 milliard USD.

²The world's major oil producers - US (669 million tonnes), Saudi Arabia (578 million tonnes), Russia (563 million tonnes), Canada (256 million tonnes), Iraq (226 million tonnes)

³ The world's major natural gas producers - USA (832 miliard m³), Russia (670 miliard m³), Iran (240 miliard m³), Canada (185 miliard m³), Qatar (176 miliard m³)

⁴The world's main producers of hard coal - China (1,829 million tonnes), the USA (365 million tonnes), Indonesia (323 million tonnes), India (308 million tonnes), Australia (301 million tonnes)

Table 3. Mutual trade in goods between EEU countries, in mill. USD, 2014 - 2018

	2014	2015	2016	2017	2018
Armenia - Belarus	38,3	34,6	35,4	41,6	49,1
Armenia - Kazakhstan	7,3	4,9	5,5	10,5	17,3
Belarus - Kazakhstan	940,8	578,6	411,2	693,5	871,4
Belarus - Kyrgyzstan	95,3	61	52	130,5	127,3
Kazakhstan - Kyrgyzstan	1 206,5	756,1	702,7	785,3	882,1
Kazakhstan - Russia	20 196,2	15 413,7	13 005,6	17 104,4	18 085,4
Kyrgyzstan - Armenia	0,5	0,5	1	1,9	1,1
Kyrgyzstan - Russia	1 856,8	1 467,3	1 211	1 665,1	1 949,5
Russia - Armenia	1 397	1 295,8	1 337	1 804,3	2 007,9
Russia - Belarus	37 374	26 003,2	26 198,9	32 474,5	35 730
all	63 112,7	45 615,7	42 960,3	54 711,6	59 721,1

Source: Eurasian Economic Commission, 2019

The

year 2015 was also significant for the Republic of Kazakhstan because of its entry into the World Trade Organization - WTO. Kazakhstan has become its 162nd member state, which has taken the country's involvement in international trade to a new level. Since the application was submitted in 1996 and until the time of accession in 2015 (19 years), Kazakhstan has held 20 rounds of multilateral negotiations. Already at the preparatory stage, Kazakhstan has made the required changes in national legislation and foreign trade regulation.

Kazakhstan has made the following concessions regarding its accession to the WTO:

- 1) The state subsidies volume reduction in agriculture to 8.5% of the value of total production.
- 2) Import duties reduction on agricultural products from 14% to 7.6% (by 46%).
- 3) Liberalization of 10 sectors and 116 subsectors in services. In 2017, Kazakhstan lifted restrictions on the share of foreign capital in telecommunications sector and allowed foreign travel agencies to work in internal market.
- 4) Since December 2020, Kazakhstan has pledged to allow foreign banks to open subsidiaries in the country.

At this stage, it is not possible to evaluate the effective direct economic benefits of Kazakhstan after its accession to the WTO. Unlike its regional neighbors - Uzbekistan, Kyrgyzstan, Tajikistan

and Turkmenistan, Kazakhstan actively uses the platform to pursue its economic and political interests in international trade (Mardinova, 2019).

Kazakhstan's foreign trade with the Member States of European Union plays an important role in its economic and political development. According to Eurostat data, we can say that in 2018, the Member States of European Union were the main trading partners of Kazakhstan and their mutual trade exceeded the value of 31 milliard EUR (40% of the total volume). Imports from the Member States of European Union reached 20% (5.6 milliard EUR) of the total imports of the Republic of Kazakhstan, which is the second largest after Russian Federation. The largest import items of Kazakhstan from European Union according to HS2 are nuclear reactors, boilers, electrical machinery and apparatus, pharmaceutical products. Kazakhstan's main export partner in 2018 remained the European Union. The value of Kazakh goods exports is 26 milliard EUR, which is a half of the total export volume - 51%. Up to 90% of exports are presented by fuels and mineral oils (European Commission, 2019).

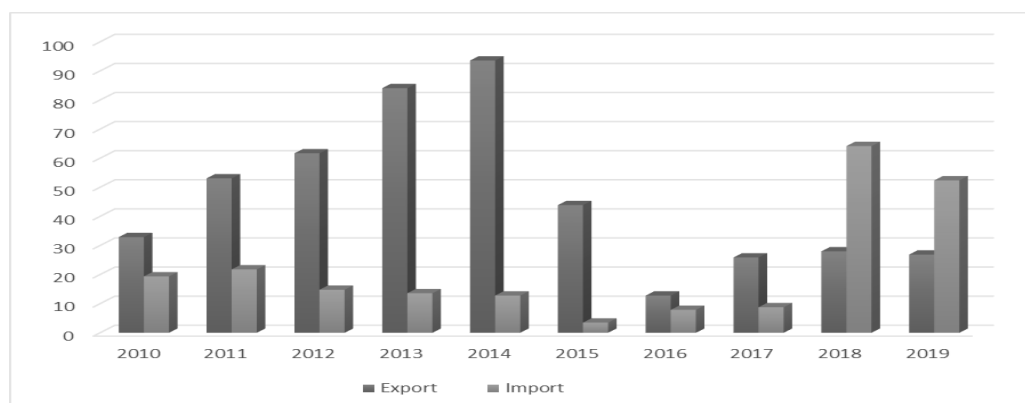
Table 4. Business partners of Kazakhstan, in mil. EUR, in 2018

	IMPORT		EXPORT		OVERALL TURNOVER		% of total turnover share
1	Russia	10 135	EU 28	26 273	EU 28	31 927	40 %
2	EU 28	5 654	China	5 284	Russia	14 351	18 %
3	China	4 556	Russia	4 216	China	9 840	13 %
4	USA	1 269	South Korea	2 492	South Korea	3 279	4 %
5	South Korea	781	Switzerland	2 428	Switzerland	2 578	3 %

Source: European Commission, 2019

In the article we will focus on a more detailed analysis of foreign trade relations between Slovakia and Kazakhstan in an observed period.

Figure 2. Foreign trade between Slovakia and Kazakhstan in mil. EUR during 2010 - 2019



Source: Statistical Office of the Slovak Republic, 2019

Table no. 5. Foreign trade between Slovakia and Kazakhstan in mil. EUR during 2010 - 2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Export	32,9	53,1	61,7	84,1	93,6	43,9	12,8	25,9	28	26,9
Import	19,4	21,8	14,8	13,6	12,8	3,5	7,9	8,8	64,2	52,4
Turnover	52,3	74,9	76,5	97,7	106,4	47,4	20,7	34,7	92,2	79,3
Balance	13,5	31,3	46,9	70,5	80,8	40,4	4,9	17,7	-36,2	-25,5

Source: Statistical Office of the Slovak Republic, 2019

As we can see in Figure 2, the exports of Slovak Republic to Kazakhstan had a growing tendency until 2014. Over a five-year period, the given indicator tripled and in 2014 amounted to 93.6 million EUR. The main export items of Slovakia in a particular year were presented by vehicles other than rail and their parts (36%), electrical machinery and equipment (19%) and machinery and mechanical equipment (18%). In the years of 2015 - 2016, a significant decline in exports was

recorded; when in 2016 it reached only 12, 8 million EUR, or 7 times less. Subsequently, the situation began to be stabilized, but the volume of Slovak exports to Kazakhstan did not reach the level before 2014.

Imports from Kazakhstan to Slovakia were lower than exports. From 2010 to 2015, we can observe a slightly declining trend of the indicator. In 2015, the value of imports fell to a minimum of 3.5 million EUR. Mineral fuels and mineral oils

(51%), iron and steel (42%) account for the largest share of imports. A slight increase in imports in 2016 was ensured by imports of copper and copper products (42%) and also by mineral fuels (41%).

The turnover in foreign trade relations between Slovakia and Kazakhstan can be observed in 2018 and 2019, when the foreign trade exchange of Slovakia with Kazakhstan recorded a negative balance. The volume of imports from Kazakhstan to Slovakia significantly exceeds the volume of exports for the particular two years.

During the observed period (2010 - 2014), foreign trade turnover between the two countries had a growing tendency. In 2015, the indicator more than doubled compared to the previous year, but subsequently the situation in mutual trade got

stabilized and reached the value of 79.3 million EUR in 2019. The decline in foreign trade between Slovakia and Kazakhstan in 2015 can be explained by a change in Kazakhstan's territorial orientation in foreign trade after its accession to the EEU, when Russia became its main trading partner and China to a lesser extent.

According to statistics published by the Ministry of National Economy of Kazakhstan, in 2018 Slovakia was at the 24th spot in terms of turnover of goods among the states of European Union. The main trading partners and countries to which Kazakhstan's exports were heading are Italy, the Netherlands and France. In terms of import volume, Slovakia ranks the 19th spot (Ministry of National Economy of the Republic of Kazakhstan Komitet Po Statistike, 2020).

Table 6. Kazakhstan's trading partners within the EU, in mil. USD, in 2018

	IMPORT		EXPORT		Turnover		% share
1	Germany	1 639	Italy	11 734	Italy	13 219	35
2	Italy	1 485	Netherlands	6 186	Netherlands	6 493	17
3	France	657	France	3 839	France	4 496	12
4	UK	459	Spain	1 862	Germany	2 102	6
5	Netherlands	307	Rumunsko	1 497	Spain	2 041	5
	Slovakia	53	Slovakia	8	Slovakia	61	0,2

Source: Ministry of National Economy of Kazakhstan, 2019

We summarized the commodity structure of Slovak exports and imports according to HS2 to the Republic of Kazakhstan into ten key commodity groups, which are presented in Table 6 and Table 7.

Table 7. Commodity structure of Slovakia's exports to Kazakhstan in 2019

	EXPORT	Value in v EUR	% of total exports share
1	Cars and other motor vehicles principally designed for the transport of persons	8 920 213	33 %
2	Live bovine animals	2 082 820	8 %
3	Reciprocating or rotary internal combustion piston engines	1 790 560	7 %
4	Birds' eggs, in shell, fresh or preserved	1 667 040	6 %
5	Conveyor belts or transmission belts from vulcanised rubber	1 338 439	5 %
6	Paper, paperboard, cellulose wadding and webs of cellulose fibers	1 128 848	4 %
7	Electrical transformers, static converters (for example, rectifiers) and inductors	879 653	3 %
8	Medical, surgical, dental or veterinary instruments	879 618	3 %
9	Transmitting apparatus for radio - broadcasting or television	822 190	3 %
10	Parts and accessories of motor vehicles	539 690	2 %

Source: Statistical Office of the Slovak Republic, 2019

Passenger cars represent the main export item of Slovakia being exported to Kazakhstan, which accounts for about 33% of the total value. An interesting factor is that the two most important

export items are agricultural goods - live cattle and birds' eggs. However, a significant part of exports from Slovakia to Kazakhstan are also represented by devices and automotive parts.

Table. 8. Commodity structure of Slovakia's imports from Kazakhstan in 2019

	IMPORT	Value in v EUR	% of total imports share
1	Petroleum oils and oils obtained from bituminous minerals, crude	50 392 718	96 %
2	Mineral or chemical fertilizers containing two or three of the fertilizing elements	735 091	1,4 %
3	Petroleum gases and other gaseous hydrocarbons	303 567	0,6 %
4	Fish, frozen, excluding fish fillets and other fish meat	207 000	0,4 %
5	Ferroalloys	143 140	0,3 %
6	Other oil seeds and oleaginous fruits, crushed or uncrushed	128 480	0,2 %
7	Slag-wool, rock-wool and similar mineral wools; slate vermiculite, ...	88 657	0,2 %
8	Oxides and Chromium hydroxides	85 885	0,2 %
9	Salts of oxometallic or peroxometallic acids	58 694	0,1 %
10	Fish fillets and other fish meat (minced or not), fresh, chilled, frozen	27 376	0,05 %

Source: Statistical Office of the Slovak Republic, 2019

Imports from the Republic of Kazakhstan to Slovakia are represented by the main and practically the only item that accounts for 96% of total imports - petroleum oils. Imports of those goods exceeded 50 million EUR, which is more than double for the total export of the ten main items of goods (around EUR 20 million). More than 1% is achieved by the product group - mineral or chemical oils. The rest of the goods represent only an insignificant part of the state's imports.

2. Foreign direct investment between Slovakia and Kazakhstan in the years of 2010 - 2019

Mutual economic cooperation between Slovak Republic and Kazakhstan is also developed at the level of foreign direct investment area.

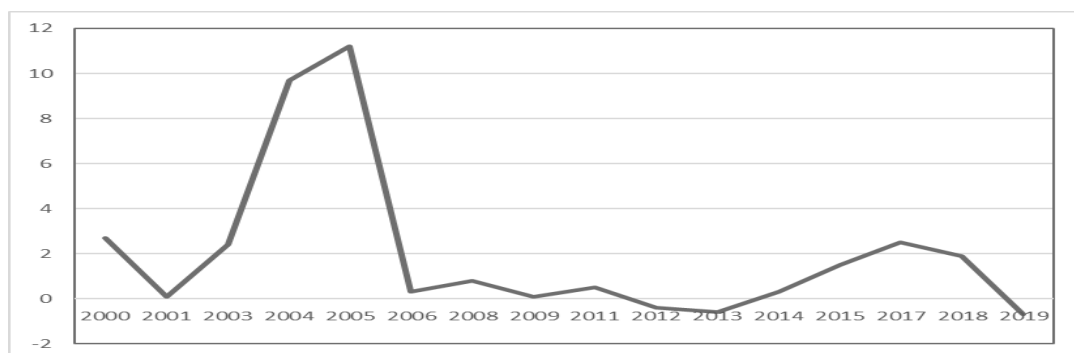
According to the latest results within the rating of Doing Business project, which is implemented by the World Bank among 190 countries of the

world for evaluating the effectiveness of legal norms in business sphere, the Republic of Kazakhstan ranked the 25th spot. This particular indicator allows potential investors to assess the degree of competitive advantage and attractiveness of investments in a particular country. Slovak Republic ranked only the 45th spot within this rating.

Total foreign direct investment in the Republic of Kazakhstan has a long-term increasing trend, with the latest figures for 2018 showing 24.3 milliard USD. In the first 9 months of 2019, the value reached more than 18 milliard USD.

Investments in Kazakhstan come from different countries, but the volumes of these investments vary significantly. As we can see in Table 9, the largest foreign investor in Kazakhstan is the Netherlands, which accounts for more than 30% of investments. In second place is the USA, followed by Switzerland, the Russian Federation and China.

Figure 3: Gross inflow of FDI from Slovakia to Kazakhstan in mil. USD during 2000 - 2019



2000	2001	2003	2004	2005	2006	2008	2009	2011	2012	2013	2014
2,7	0,1	2,4	9,7	11,2	0,3	0,8	0,1	0,5	- 0,4	- 0,6	0,3

2015	2017	2018	2019
1,5	2,5	1,9	- 0,7

Source: National Bank of Kazakhstan, 2019

The inflow of FDI into Slovakia also has a long-term growing tendency, and according to the data of the National Bank of Slovak Republic in 2018, the value amounted to 1,002,501 thousand EUR (National Bank of Slovakia, 2020). Investments from Czech Republic, United Kingdom and France account for the largest share of total FDI flows. Kazakh investments in Slovakia are not recorded due to their minimum value.

Despite the fact that the statistics show a low level of mutual investment between the Republic of Kazakhstan and Slovak Republic, the political and economic representatives of both countries show great interest in intensifying cooperation in this area. Business meetings supported by the Slovak Investment and Trade Development Agency (SARIO) and KAZAKH INVEST are organised on regular basis, in which representatives of the relevant ministries are involved, as well as the particular trading companies (Kazakh Invest, 2020). Currently, there are more than 40 companies with a Slovak ownership stake in Kazakhstan, such as: Oftum laser vision correction centers, electrical engineering and energy company ELTECO, KANTO METAL and CSBC as companies in the field of development and sale of chemical machines for defence industry, CME Slovakia company, which operates in the field of diagnostic and therapeutic technologies supply,

and the PROGAST company - a manufacturer and supplier of a wide range of food additives and spices (Zakon.kz, 2010).

The creation of a Kazakh-Slovak company for the production of diesel railway trains with the ownership participation of the Kazakh joint-stock company Kazakhstan temir zholy (Казахстан темір жолы) and Slovak company ZOS Vrútky Slovenská a.s. can be considered a successful result of bilateral trade negotiations between the states with a total project value of \$ 60 million USD (Zakon.kz, 2010). One of the largest solar power plants in Kazakhstan is being built by a Slovak-Czech-German consortium worth of 130 million EUR (Ministry of Foreign Affairs and European affairs of Slovak Republic, 2019a)

3. Foreign trade intensity analysis between Slovakia and Kazakhstan

For a deeper analysis of foreign trade relations between Slovakia and the Republic of Kazakhstan, in the next part of the article, we will use the Trade Intensity Index.

The Trade Intensity Index (TII) allows us to calculate whether trade volumes between Kazakhstan and Slovakia are larger or smaller than it would be expected based on their position

in world economy (World Bank, 2013). Mathematically, we can express the particular indicator as follows:

$$TII_{ij} = 100 * \left[\frac{x_{ijk}}{X_{ik}} / \frac{x_{wjk}}{X_{wk}} \right] \quad (1)$$

x_{ijk} - value of export of goods into and from the country - j

X_{ik} - value of total exports of goods to and from the state - i

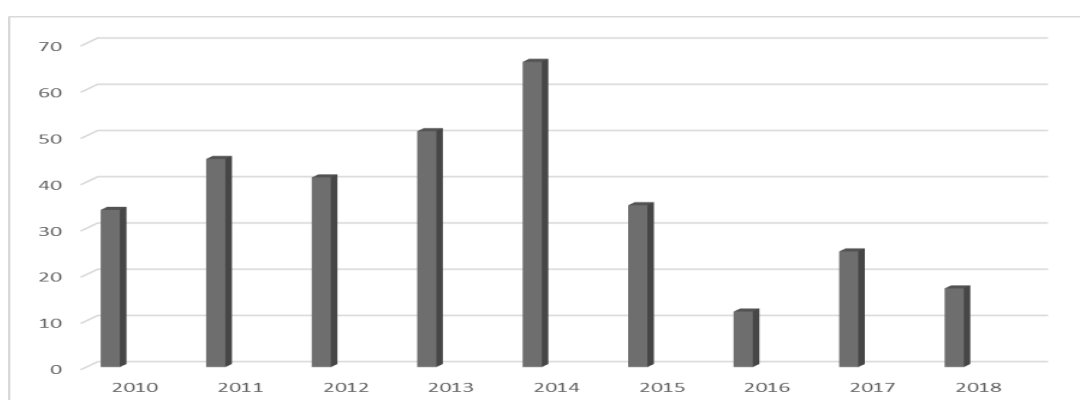
x_{wjk} - world export of goods to the state - j

X_{wk} - worldwide export of goods - k

The index values range from 0 to $+\infty$. The TII indicator, being more than 100, documents that bilateral trade relations between partners are developing more intensively, compared to the world average.

The dynamics of Trade Intensity Index development between Slovakia and Kazakhstan is shown in the following graphs.

Figure 4. Development of TII between Slovakia and Kazakhstan during 2010 - 2018

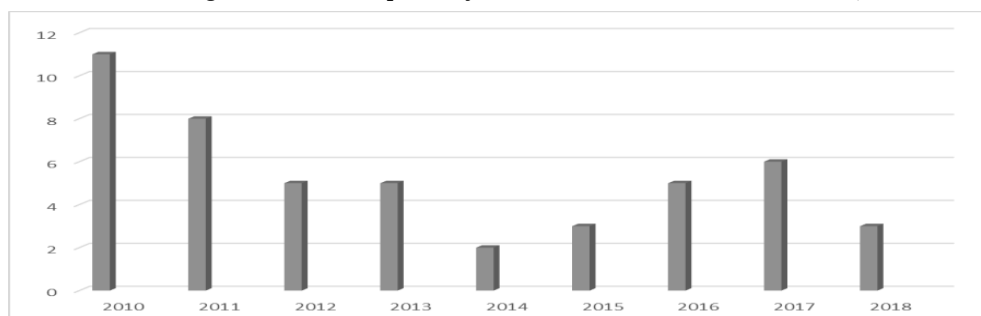


Source: own calculation based on data from the International Trade Center, 2019

As a result of Trade Intensity Index calculated values for the period from 2010 to 2018, reaching the values significantly lower than 100, we can talk about a low level of export intensity of

Slovak goods to Kazakhstan. The development trend of the particular indicator also has a significantly declining value from 2014 to the present.

Figure 5. The development of TII between Kazakhstan and Slovakia, 2010 - 2018



Source: own calculation based on data from the International Trade Center, 2019

The trade intensity index of Kazakhstan with Slovakia has reached its figures significantly lower than the set indicator in 100% during the observed period. From 2010 to 2018, the TII between countries reached a maximum of 11% at the beginning of the period under review. The development of the particular indicator indicates that the export intensity of Kazakhstan towards Slovakia is very low and Kazakhstan is making business much more actively with other countries.

Conclusion

The Slovak Republic, as a member state of European Union, and Kazakhstan, which is the founding state of the Eurasian Economic Union, are united by long-standing political and diplomatic relations. The question is whether such geographically distant and economically different states can also unite trade relations? And if so, how intensively they trade with each other and with what kinds of goods. We tried to answer these questions on the basis of examining the development and intensity of mutual foreign trade relations between Slovakia and the Republic of Kazakhstan over the last ten years.

The results of our research can be summarized in several main points:

- 1) Although Kazakhstan has been a member of the Eurasian Economic Union since 2015, its main trading partner in 2018 is the European Union. Mutual trade is estimated at 31.927 million EUR, which represents 40% of foreign trade turnover. As a result, we can talk about the weakening economic position of Russian Federation within the foreign trade issue of Kazakhstan on one hand and the current successful diversification of its trading partners on the other hand.
- 2) Foreign trade between Slovakia and Kazakhstan had a declining trend during the period under review, and in 2018 and 2019 Slovakia recorded a trade deficit of 36.2 million EUR in 2018 and 25.5 million EUR in 2019.
- 3) The commodity structure of exports from the Republic of Kazakhstan to Slovakia is homogeneous and represented by goods from the primary sector of the economy - petroleum oils. Nevertheless, we see the possibilities and prospects for diversifying the commodity

structure of the Republic of Kazakhstan's exports in the future from other economic sectors as well.

4) The potential of Slovak exports to Kazakhstan is also not sufficiently used. The main goods items of exports are passenger cars and their parts. However, we are convinced that many Slovak companies have sufficient capacity and know-how to put their goods on the large sales market of Kazakhstan.

5) The main sectors that have a great potential in trade relations between Kazakhstan and Slovakia are: agriculture, waste treatment technologies, energy and food industry.

6) Economic cooperation between countries at the level of foreign direct investment is at an early stage of development, but with the active support of political representatives and business representatives of both countries, who meet regularly in bilateral negotiations, we see great prospects in the future.

Foreign trade between states located in two different economic blocs, such as Slovakia and Kazakhstan, despite their distance, can find the intersection of their economic interests for mutual prosperity and economic growth.

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MODELS OF THE WELFARE STATE IN EUROPE: GERMANY AND SWEDEN

Jaroslav ÉHN, Andrea HORVÁTHOVÁ

Abstract

The research subject of our work is the welfare state. The object of the research are models of the welfare state with a focus on selected countries. These countries are Germany, as a representative of the corporate model, and Sweden, as a representative of the social-democratic model. The aim of our work is based on selected models of the welfare (in Germany and Sweden) to identify social policy instruments and their current problems. Although there is no exact definition of the welfare state, in the first part of our work we will approach it with the help of definitions from several Slovak and foreign authors, which will help us to find out the current state of the researched problem. In the continuation of this part, we focus on the typology of the welfare state and concretize the typology according to G. Espring-Andersen. In the summary table, we will at least marginally present other typologies of welfare states, for example according to Leibfried, Siaroff or Bonoli. In the second part of our work, we specify the German and Swedish model, which we approach based on an analysis of the literature using data from individual ministries of the surveyed countries. In the third part, we compare the examined models of selected countries based on data on public social spending. We also arrive at the conclusions necessary to meet the goal of our work by analyzing the laws in the given area or data from the OECD.

Key words:

welfare state, social policy models, social policy, liberal model, conservative - corporate model, social - democratic model

Abstrakt

Výskumným predmetom našej práce je sociálny štát. Objektom skúmania sú modely sociálneho štátu so zameraním na vybrané krajiny. Týmito krajinami sú Nemecko, ako predstaviteľ korporatívneho modelu a Švédsko, ako predstaviteľ sociálno-demokratického modelu. Cieľom našej práce je na základe vybraných modelov sociálneho štátu (v Nemecku a vo Švédsku) identifikovať nástroje sociálnej politiky a ich aktuálne problémy. Aj keď presná definícia sociálneho štátu neexistuje, v prvej časti našej práce si ho priblížime za pomoci definícií od viacerých slovenských a zahraničných autorov, čo nám napomôže zistiť aktuálny stav skúmaného problému. V pokračovaní tejto časti sa zameriavame na typológiu sociálneho štátu a konkretizujeme si typológiu podľa G.Espring-Andersena. V sumarizačnej (porovnávacej) tabuľke si aspoň okrajovo predstavíme aj iné typológie sociálnych štátov, napríklad podľa Leibfrieda, Siaroffa, či Bonoliho. V druhej časti našej práce si špecifikujeme nemecký a švédsky model, ktoré si priblížime na základe analýzy literatúry za pomoci údajov z jednotlivých ministerstiev skúmaných štátov. V tretej časti si porovnáme skúmané modely vybraných štátov na základe údajov o verejných sociálnych výdavkoch. Taktiež analýzou zákonov z danej oblasti, či údajmi z OECD sa dopracujeme k záverom potrebným pre splnenie cieľa našej práce.

Kľúčové slová:

sociálny štát, modely sociálnej politiky, sociálna politika, liberálny model, konzervatívno – korporatívny model, sociálno – demokratický model

JEL Klasifikácia: I31, I38

Introduction

With the creation of a network of social security systems and the adoption of a set of laws in this area, a new chapter in social security opens in the 19th century, not only in Germany but also throughout Europe. The main initiator in this direction was the German chancellor Otto von Bismarck. Although these new laws originally

applied to only a small part of the population and the benefits were far from sufficient to meet most needs, we still refer to the German social security system as a model that many countries later adopted or imitated. We begin to encounter the term welfare state in the mid-20th century during World War II, when the term was first used by the Archbishop of Canterbury William Temple in an attempt to point out the difference between the

military arrangements in Great Britain and Germany, which he classified as warfare state. The highest representative of the Royal Commission, the English Lord William Beveridge, who created the first comprehensive proposal for a social security system in Great Britain after the Second World War, was responsible for the extension and incorporation into a certain module of this concept. This period can also be considered as the period of the beginning of building the European social model, which was formed until the seventies of the last century. This model combined the search for opportunities for full employment, guaranteeing social rights, or a standard of living that will not depend on the real situation on the labor market. Over time, this model has led to the emergence of social policy models in Western Europe, which each country has adapted to its own political culture and economic opportunities.

1. Social state and its models

The welfare state is based on the assertion that the market mechanism alone is not enough to achieve the required level of individual and collective well-being in capitalist society. The aim of the welfare state is therefore to ensure a fair distribution of the social security necessary for democratic societies. (Tranow, Schnabel, 2019). The welfare state is thus recognized in every developed society as a necessary institution whose task is to ensure a relatively decent life for its citizens. (George, 2015). „The role of the state as a subject of social policy is gradually becoming dominant, and the state is limiting in some way, resp. dampens the activity of other social actors“ (Dudová, Stanek, Polonyová, 2018). Such a state is called a welfare state, and is characterized as follows:

1. the state is socially involved and has a dominant position in the given area,
2. the state, through its involvement, takes over the social security of the population,
3. the implementation of this social policy is associated with extensive redistribution, which leads to bureaucracy, centralization and, for beneficiaries, anonymity,
4. the demand for financial resources is growing,
5. the social security system, whether the security of the broadest sections of the population is decisively free of charge or for a minimum fee.

„Today's developed states still have the character of a welfare state, which is agreed by the authors in the field of social policy. However, there are often differences of opinion between the authors on specific issues of the welfare state, concerning the definition of the concept of the welfare state, its perspectives, the dimension of evaluations, its effectiveness in the development of the social structure and social inequalities.“ (Stanek a kol., 2008).

„In essence, the welfare state unites many theoretical and practical positions“ (Baranowski, 2013). However, the economic and political dimensions of the welfare state (such as conceptual or prosocial proposals) seem to be disproportionately repressed on the basis of the scientific reflection and pragmatic approaches used by state institutions. Since 1973 European welfare states have been undergoing a continuous process of adjustment to fiscal austerity and new social, political and economic conditions. (Benda, Fenger, Koster, van Der Veen, 2017). This tendency to think from an economic and political point of view, which has persisted for several decades, is only one side of a complex social problem. The other side of this problem is the so-called reductionism, which leads to the elimination of sociological, cultural, educational, psychological consequences of the functioning of the welfare state. Some authors see the adaptation of social security systems to new constraints, in particular those caused by demographic change and economic globalization, as a challenge to the European social model. On the contrary, „neoliberal“ conceptions have reportedly supported the radical dismantling of the welfare state (Schuster, 2006). In recent years, the EU's common policy has evolved and extended to other dimensions in line with the concept of sustainable and inclusive growth (Creapaldi, 2017).

1.2. Welfare state models in Europe

The model of the European welfare state can be divided into four developmental epochs. The first stage is located between the 16th and 18th centuries. The second era, when the state began to take on a more important role, dates back to the pre-World War II era. The third era, which dates back to the period after the Second World War, led to the emergence of modern welfare states. The fourth, still ongoing era began in the 1970s. (Kaelble, 2004).

We divide European models of the welfare state according to various goals and criteria. Based on this, these models have different characteristics that reflect the customs and cultures of the nation and its legislation. A diversity of welfare regimes were formed on the bases of national varieties of social insurance and redistribution systems. (Kutsenko, Gorbachyk, 2014). The historical, political and economic experiences of individual European countries also play an important role in choosing a given model of social policy. The systems differ mainly in the scope and composition of public expenditure, institutional aspects, the type of services provided and funding mechanisms where “each model of social policy also contains a certain specific understanding of social justice. The fulfillment of social justice in terms of guaranteeing civil and political rights is a necessary condition for democratization processes.” (Geffert, 2018). The mechanisms, methods and extent of securing social and economic rights are an important moment. „Despite all the differences between European welfare states, they have many similarities that justify the European social model.“ (Hoffmann, 2005). In recent years, a common EU policy has evolved and extended to other dimensions in line with the concept of sustainable and inclusive growth..

In the last two decades, the social policy literature proposed by Gøsta Esping-Andersen has dominated the literature on social policy. Andersen showed that clear historical-political developments in capitalist societies resulted in three types of welfare states: liberal, conservative, and social democratic. „Against the conventional functionalist theory of portraying the welfare state in response to social, economic and demographic change, Esping-Andersen suggested that the weak influence of the left should lead to the development of liberal welfare states, especially in the Anglo-Saxon countries with the United States as a prime example. Strong conservative and Christian democratic parties led to conservative welfare states in continental Europe, while strong left-wing parties led to a social democratic welfare state in the Nordic countries. (Emmenegger, et al., 2015). To these three models, Esping-Andersen later added a rudimentary model that connected the southern states of Europe. Because Esping-Andersen's typology is based on two separate dimensions, in some cases, the classification of particular

welfare states is debatable. For example, Belgium exhibited high levels of decommodification (and thus social democratic) but also high levels of stratification (which would suggest a conservative welfare state). Ireland is another example of a difficult-to-classify state, being liberal with regard to decommodification and conservative in terms of stratification.(Curt Pankratz, 2017).

Liberal'Welfare-State

We can also freely translate this expression as a liberal welfare state, ie a state with a liberal social system. This system is characterized by minimal state intervention in the social field. Emphasis is placed on the activity of individuals, their own efforts to improve living conditions, as well as everyone's responsibility for the level and quality of working and living conditions. In this system, the state supports the market (passive or active), guarantees a minimum, subsidy social security system.

Corporatist'Welfare-State

Also called conservative-corporatist model of social policy. It is based on the idea, work = the basic source of livelihood. In states that have this system in place, we see a strong religious background and the influence of the church. This fact is also reflected in the social policy of the state, where social care is linked to traditional parenthood and corporations, ie various associations, associations and churches. In this system, the role of the state is at a medium level, where the state partially replaces market mechanisms, so that social benefits are provided from social insurance funds. The system is based on inter-class solidarity, but the maintenance of status differences is significant here. The rate of redistribution is low and income disparities are maintained, ie the inhabitants who did not contribute to the system are supported from the state budget, but their standard of living is much lower. The role of the state is not to replace existing forms of solidarity, but to support them, so we can say that while the state reduces but does not eliminate market dependence.

Germany is the representative of the conservative-corporate model of social policy. According (Eichner, Wager, 2002) „The tradition of the state care system dates back to the age of industrialization in Germany in the second half of the 19th century and is associated with the then Reich Chancellor Otto von Bismarck“,

which first introduced compulsory health insurance for workers with the corresponding social legislation, which expanded in the following years, thus creating the basis of a systemic social insurance network. The German welfare state has since undergone several changes in the political, economic, but especially the social sphere. „Given the high level of structural change and state-policy discontinuity, we can divide the development of the German social model into four phases:

- constitution (1870/71 až 1914)
- consolidation (1914-1945)
- reconstruction and expansion (1945- 1974/75)
- reduction (1974/75 - present)“ (Hegelich, Meyer, 2008).

Germany has one of the most comprehensive social security systems. Ggovernment in the mid-1960s, for instance, introduced minimum benefits into the state sickness and unemployment insurance programmes, and greatly improved the latter's overall generosity by increasing the duration and level of the benefit. ((Nijhuis, 2019). Today, a tightly woven network of health, pension, accident, nursing and unemployment insurance protects citizens from the consequences of existential risks and threats.

„The Social Democratic regime uses the principle of universality as an objective in the planning of social policy, and therefore aims to protect all fellow citizens without distinction on the basis of their individual needs. A special feature of this regime is the active and often expressed effort and the greatest possible independence from the market. Stripping is very great, because all fellow citizens have equal rights“ (Vogliotti, Vattai, 2014). The basis of this system is a universal social insurance system and a high employment rate. Intheinclusiondimension,universalism includes everyone with welfare needs on the basis of citizenship or residency. (Saikkonen, Ylikännö, 2020). Stability is achieved here through agreements between the social partners. These agreements are aimed at the middle class and guarantee workers full participation in the quality and rights of better placed workers. In this system, the role of the family is not expected, but the state socializes the costs of parenthood. As the state promotes equality at the highest level, there is no dualism between the state and the market. The system is sustainable only with maximum

employment of the population and a high tax and levy load.

An example of such a system is Sweden. One of the main features of the development of the Swedish social model is the political tradition of compromise, which is typical of all Scandinavian countries. The most significant ideological shift towards the welfare state can be traced in Sweden in the 1930s, when the Social Democratic Party of SAP, which ruled in Sweden without a break for 44 years (1932 – 1976), it almost completely abandoned both Marxist and neoclassical economic policies and chose the Keynesian model as its economic program. Sweden, as a country with a deep-rooted welfare state tradition, has become a country with a tax rate that is one of the highest in the world. Nevertheless, we can characterize the Swedish social system as a system that has three main objectives: ensuring full employment, achieving optimal social equality and building a social security system through a general welfare policy.

Rudimentary model

This model was last added to the previous three Andersen models after some time. It is characteristic of the countries of southern Europe. These are countries such as Greece, Italy, Spain or Portugal, where the so-called family social regime, which means that the family is the element that provides its members with a social regime. The state has a secondary role in these countries and acts in accordance with the principles „passive subsidiarity“. Public intervention therefore only concerns residual measures; welfare state protection mechanisms are only activated when primary social networks fail or have no way of helping people in need.

The predecessor of Espring-Andersen and his models of the typology of the three worlds was Richard Morris Titmuss, who, before Espring-Andersen, formulated and introduced the idea of the tripolarity of social models, naming the first of them as a residual model. This model would be equivalent to the liberal model of Espring-Andersen. Titmuss's second model was based on the result of personal success and work and would correspond to a conservative model. Finally, the third model was a redistributive, institutional model that we could associate with a social democratic model. In addition to the two authors mentioned, there are other typologies of welfare

states, or more precisely a typology of welfare states. These are listed in the following table.

Table 1

Liberal regimes (USA)	Corporate regimes (SRN)	Social Democratic Regimes (Sweden, Norway)	Mediterranean regimes (Spain, Portugal, Greece, Italy)	Radical Regimes (Australia)
<i>Esping-Andersen (1990)</i> Liberal Low degree of decomodification, market differences in welfare	Corporate Moderate degrees of decomodification, social benefits mainly depend on previous contributions and status	Social democratic High degree of decomodification, universal benefits and high degree of dose equality		
<i>Leibfried (1992)</i> The Anglo-Saxon Right to Money Transfers, the Welfare State as a Compensator in the Extreme Case and a Strict Enforcer to Work in the Market	Bismarck's Right to Social Security, the Welfare State as a Compensator in the First Place and the Employer in the Extreme Case	The Scandinavian Right to work for everyone, universality, the welfare state as an employer in the first place and a compensator as a last resort	Latin-Roman Right to Work and Welfare Proclaimed, Welfare State as a Semi-Institutional Promise	
<i>Castles a Mitchell (1993)</i> Liberal Low social spending and failure to adopt balancing tools in social policy	Conservative High social spending, but little adoption of balancing instruments in social policy	False hegemony High social spending and the use of several balancing instruments in social policy		Radical Achieving income equality before tax and before transfers, low social spending
<i>Siaroff (1994)</i> Protestant-Liberal Minim. Family well-being, still a relatively egalitarian position in the labor market, family benefits are paid to mothers, but they are quite inadequate	Progressive Christian Democratic Weak initiatives to keep women working, strong initiatives to stay home	Protestant Social Democratic A real choice for women, whether to work or not, family benefits are paid to mothers and are high, the importance of Protestantism	Delayed female mobilization Absence of Protestantism, family benefits are usually paid to fathers, universal women's suffrage is relatively new	
<i>Ferrera (1996)</i> Anglo-Saxon Fairly high coverage of the welfare state, social assistance with needs testing, mixed funding system, highly integrated organizational framework fully managed by the public administration	Bismarck Strong connection between job position and social rights, benefits are proportional income, financing through contributions,	Scandinavian Social protection as a civil right, universal coverage, relatively generous fixed benefits for various risks, financed mainly through taxes, strong	Mediterranean Fragmented income guarantee system, linked to the job position, generous benefits without a clear network of minimum social protection,	

	reasonably large social assistance benefits, insurance schemes are managed mainly by unions and employers' organizations	organizational integration	healthcare as a civil right, specificity in cash benefit payments and financing	
<i>Bonoli (1997)</i> British Small percentage of social expenditure financed through contributions (Beveridge), low social expenditure as a percentage of GDP	Continental High percentage of social expenditure financed through contributions (Bismarck), high social expenditure as a percentage of GDP	Nordic Small percentage of social expenditure financed through contributions (Beveridge), high social expenditure as a percentage of GDP	Latin High percentage of social expenditure financed through contributions (Bismarck), low social expenditure as a percentage of GDP	
<i>Korpi a Palme (1998)</i> Basic security Eligibility based on citizenship, application of the principle - uniform rate of benefits	Corporate Authorization based on the category of employment and labor force participation, application of the principle - income-based benefit	Comprehensive Entitlement based on citizenship and contributions, application of the principle - uniform benefit rate and income-based benefit		Targeted Eligibility based on demonstrable need, use of the principle - minimum benefit

Source: Dudová, et al.2018

As we have said, we can look at models of social policy and at the same time divide them according to several criteria. „The discussion is raised by the question: What needs, what conditions, whose population / parts of the population / are to be satisfied? In what way and who should be responsible for this satisfaction? Different answers to these questions result in different models of social policy. These differ based on:

- social policy actors / or bodies responsible for meeting needs /
 - clients of social policy / addressees of social policy, recipients of social services /
 - scope and type of services
 - objectives and functions of social policy“.
- (Radičová et al., 1998)

2. Objective and methodology

The aim of our work is to identify the tools of social policy and their current problems on the basis of selected models of the welfare state (in Germany and Sweden). To meet the main goal of our work will help us meet the sub-goals. The first partial goal is to define the concept of

welfare state and its currently implemented forms. The second partial goal of our work is the analysis of two selected models of the welfare state in Europe, the first of which will be a representative of the corporate model (Germany) and the second will be a representative of the social democratic model (Sweden). The third goal of our work will be to compare the two models in terms of the cost of public social spending. To determine the current state of research of the problem in the first part of our work, we will use the analysis of the literature. We will use this method in the second part of our work. In the third part we will use the method of comparison to compare selected models of the welfare state on the basis of.

3. Welfare state model – Germany

The social system is an integral part of the German social market economy. It is called the middle ground between free market liberalism and state-centered socialism. This social security system is based on a well-functioning labor force in the market, stable employment and long-term development. In this case, high demands are placed on the family (especially on upbringing

and childcare). The participation of civil society, voluntary work, self-help is also inseparable, without whose solidarity the given system of the welfare state would not work.

3.1 *Federal Ministry of Labor and Social Affairs*

One of the main goals and the continuing social role of the Federal Ministry of Labor and Social Affairs is to combat poverty and social exclusion. Social security means supporting the individual in emergencies that can no longer be managed on their own, and also preventing them with long-term measures - whether in the event of illness, injury, long-term care, unemployment or old age. (Federal Ministry of Labour and Social Affairs., 2009).

Individual social security is organized in individual branches of social insurance on the basis of solidarity: pension insurance, health and long-term insurance or accident insurance. The social security system for artists is specifically responsible for self-employed artists and publicists, and the Center for Mini-Employment will take care of social security issues in the event of marginal employment.

3.2. *Social Insurance Act*

Federal Law of 9 September 1955 on general social insurance (General Law on Social Insurance - ASVG.) č.189/1955 (DFB) is the main law on social insurance. It regulates the general social insurance for persons employed in Germany, including the self-employed, who are equivalent to employees in accordance with this federal law, and the health insurance for pensioners from general social insurance. The purpose of this law is to achieve social justice. „General social insurance includes health insurance, accident insurance and pension insurance. Pension insurance is divided into the following sectors: workers' pension insurance, employees' pension insurance, miners' pension insurance.“ (Federal Ministry of Labour and Social Affairs., 2009).

The social system should guarantee a minimum standard of living in dignified conditions and with social participation by providing income supplements and social services. Social insurance is a key element, which consists of the following types of insurance: • zdravotné poistenie

- long - term care insurance
- old - age pension insurance
- unemployment insurance

- statutory occupational accident insurance
- health insurance

In addition to the mentioned types of social insurance financed from state funds, there are also various types of tax benefits and services. These include various family benefits, social assistance, the benefits of the social right to compensation, rehabilitation benefits and the participation of people with disabilities, or housing allowance.

3.3. Advantages and disadvantages of the German welfare state model

Adverse demographic developments are one of the factors threatening the model. Germany has also long suffered from an increasing number of people in less regulated and low-paid occupations. Child poverty and increasing poverty in old age is an important signal for the creators and movers of this system.

On the other hand, a system of family allowances financed by taxes and social assistance to people in need and for those who have fallen through the imaginary social insurance network is a significant plus today. Charity and church participation also play a more important role in the provision of social services and create adequate conditions for social well-being in Germany.

4. **Welfare State Model - Sweden**

Sweden is the most preferred and cited representative of the social democratic model of social policy. His social policy is considered a model among these policies.

The Swedish constitution defines how the country will be governed. It contains provisions on the relationship between decision-making and executive power and the fundamental rights and freedoms of citizens. Sweden has four basic laws that make up the constitution: an instrument of government, an act of succession, a law on freedom of the press, and a basic law on freedom of expression.

4.1 *Ministry of Health and Social Affairs*

The Ministry is responsible for social security issues. This means promoting human health and ensuring that sick people are provided with the care they need. The ministry's area of responsibility includes insurance schemes that provide people with financial security when they are ill or elderly or when their children are young. Issues such as individual and family care, support for people with disabilities and care for the

elderly are also included. The Ministry is also working on the rights of people with disabilities and on issues related to the premium pension system. Disability policy is based on the UN Convention on the Rights of Persons with Disabilities. This policy protects the rights and interests of people with disabilities in society. This policy covers several areas, including labor market policy and education policy. (Government Offices of Sweden, 2020)

4.2 *Social Insurance Act*

Socialförsäkringsbalk 2010:110 in his §2 states, that social insurance is administered by the Swedish Social Insurance Agency and the Swedish Pension Agency, as well as the Swedish Tax Agency. Furthermore, provisions on the financing of social insurance can be found in - the law on social insurance (2000: 980), - the law (1994: 1744) on general pension contributions, - the law (1998: 676) on state contributions for old-age pensions, and - the law (2000: 981) on the distribution of social benefits. Furthermore, this Act regulates in its chapters the following: (Title A), the provisions on family benefits of Chapters 8 to 22. (Title B), sickness or occupational accidents in Chapters 23 to 47. (Section C), Special benefits for the disabled in Chapters 48 to 52. (Title D), old-age benefits in Chapters 53-74. (Section E), survivors' benefits in Chap. (Section F) and housing assistance in Chapters 93-103. (Title G). Some common provisions on benefits, administration and organization can be found in Chapters 104-117. (Section H). Financing of social insurance 3§ Provisions on financing of social insurance can be found in - the Act on Social Insurance (2000: 980), - the Act (1994: 1744) on General Pension Contributions, - the Act (1998: 676) on State Contributions to Old-Age Pensions and - the law (2000: 981) on the distribution of social contributions. Social insurance shall also be financed by the proceeds of certain contributions referred to in the first paragraph. (SFS 2010: 110).

The Swedish social model focuses on the types of contributions and benefits in the following areas:

1. Health and disease
2. Family support
3. Pensions

Health and disease - medical care includes measures taken to ensure the care of the sick and the development of medical and health services.

Care should be fair, gender-equal and accessible and, where necessary, provided under the same conditions.

Family support is provided by types of benefits such as: monthly payment to parents for each child without tax (single parents receive an additional payment for each child), parents have the right to take a total of 12 months paid leave from work at almost full pay to care for each child up to the first year of school, subsidized child care at home or in a government day care center, one year in a subsidized kindergarten.

Pensions - Social services, including care for the elderly, refer to the support and assistance that society provides to people who are particularly vulnerable or in difficulty. This area includes individual and family care, support for people with disabilities and care for the elderly. Disability policy is based on the UN Convention on the Rights of Persons with disabilities. Several other types of aid are provided only to those on low incomes. The most important of these are housing subsidies for poor families and old-age pensioners.

4.3 *Advantages and disadvantages of the Swedish welfare state model*

While there is no doubt that the Swedish model is generous to citizens, they have one of the heaviest tax burdens in the world. According to the OECD, government spending currently stands at around 60 percent of Sweden's gross domestic product. The unbearable growth of the tax burden is reflected in the loss of work initiative, a decline in the propensity to save and capital flight abroad.

However, the model is one of the most progressive social justice projects ever implemented by a particular country. According to all empirical research, Sweden has one of the most galitarian systems of distribution among capitalist states and at the same time one of the lowest poverty rates in the world. In addition, the Swedish social system, which relies heavily on the puritanical mentality of the Swedish nation, is rarely decentralized and has the value of subsidiarity. The significant influence of Swedish trade unions is illustrated by the picture of a country in which one of the highest social goals is social reconciliation.

5. Comparison of selected indicators of the German and Swedish model

To compare the German and Swedish welfare state models, we chose indicators in the area of

public social spending, where we focused on public spending on pensions, unemployment and family support spending. We monitored data from 1990 in five-year cycles until 2018 (for public

social spending) and until 2015 (in selected areas). We present the data as % of gross domestic product. The compared data are shown in Table 2.

Table 2 Public social expenditure, % of GDP

		1990	1995	2000	2005	2010	2015	2018
Social spending	Sweden	27,2	30,6	26,8	27,3	26,3	26,3	26,1
	Germany	21,4	25,2	25,4	26,2	25,9	24,9	25,1
Pension spending	Sweden	7,3	7,9	6,9	7,2	7,3	7,2	
	Germany	9,5	10,3	10,8	11,1	10,6	10,1	
Public unemployment spending	Sweden	0,8	2,2	1,31	1,1	0,6	0,33	
	Germany	0,8	1,5	1,31	1,8	1,5	0,91	
Family benefits public spending	Sweden	4,0	3,6	2,8	3,2	3,4	3,5	
	Germany	1,8	2,1	2,0	2,0	2,2	2,2	

Source: Own processing according to OECD

In the area of public social expenditure, Sweden ranges from 26% of GDP to more than 30% of GDP, which was only once in the reference period, in 1995. Over the last eight years, the observed value has been just above 26%. German public social spending is more balanced over the period under review, hovering around 25% of GDP. It follows that Sweden has averaged one% of GDP on average over the last 28 years in public social spending.

In another comparison of selected indicators, we compared the indicators of the area of public expenditure on pensions, where we found that in the Swedish model they are balanced over the period and are around 7% of GDP. Germany achieved the highest expenditure in this area in 2005, at 11.1% of GDP. Then, in 2010, it fell to 10.6% of GDP, which, with a small decline, remained five years later. We can therefore state that Germany has on average three% of GDP higher public expenditure on pensions than Sweden.

The percentage of public expenditure on the unemployed in the period from 1990 to 2015 is rarely balanced in some years and remains above 1% of GDP (except for 1990), but in the last observed year (2015) in both models it fell below 1% of GDP, where in the Swedish model, public

expenditure on unemployment is 0.33% of GDP and in the German model it is 0.91. Through this comparison, we found that public expenditure on unemployment benefits is 0.58% of GDP higher in Germany than in Sweden.

The last area of our comparison is the area of public expenditure on family support. In this case, the indicators in the Swedish model are mostly above 3% of GDP. In the German model, this is a value of around 2% of GDP. It follows that the Swedish model is more generous in terms of public spending on family support by an average of 1.5% of GDP than the German model.

Based on an examination of public social spending, we have come to the conclusion that the Swedish welfare state model has higher public spending in the area of family support. The German model, in turn, is more generous in terms of public spending on the unemployed and pensioners.

Conclusion

Many authors dealing with the welfare state point to the importance of the welfare state and its validity in the past, but especially in the present. However, there are no fundamental criteria that would characterize the welfare state, e.g. based on

the definition of the concept, its perspective, the dimension of evaluation, its effectiveness in the development of social structure and social inequalities. There are also several directions and divisions when examining the typologies of the welfare state. These directions are fundamentally influenced by the historical, political and economic experiences of European countries, which play an important role in choosing a given model of social policy for a particular model of the welfare state.

The existence and functioning of the welfare state are closely linked to political decisions, but also to the economic and financial sector, which determine the quantity and quality of resources available. These aspects create the conditions for the emergence of social risks in the state. The level of maturity of the welfare state depends on the degree of elimination of these risks and also on the associated relationship between the elements of the process. These elements are the market, the state and the family, the relationships between which are the basis of many theories in the field of welfare state typology and at the same time create criteria for discussions about their interconnectedness or level of importance.

By analyzing the models of social policy of selected states, we have approached from an empirical point of view the structure of the social system of the given states. In Germany, which is the representative of the corporate model of social policy, this system is based on the so-called the middle ground between free market liberalism and state-centered socialism. The tightly woven network of health, pension, accident, nursing and unemployment insurance is conditioned by the participation of the citizen, the family and the state with the help of civil society, volunteer work, without which solidarity the given welfare state system would not work. The role of the church is also very important in this regard.

The supervisory and administrative body of social insurance in Germany is the Federal Ministry of Labor and Social Affairs, which relies mainly on the laws and regulations of the Social Insurance Act. Social insurance consists of: health insurance, long-term care insurance, old-age pension insurance, unemployment insurance, statutory occupational accident insurance and sickness insurance.

The German social security system is based on a well-functioning labor force in the market, stable employment and long-term development.

Sweden, as a representative of the social-democratic model of social policy, is considered a pioneer and bearer of this policy in the world. It is strongly linked to employment and income, as more than half of the income goes to the state budget, from which it is then possible to maintain free education or health care.

The Swedish Ministry of Health and Social Affairs oversees the conduct of social policy in Sweden. The ministry's area of responsibility includes insurance systems that provide people with financial security. The Ministry relies mainly on the Social Insurance Act (Socialförsäkringsbalk) 2010: 110, which regulates in its chapters provisions on family benefits, sickness or work accidents, benefits for the disabled, old-age benefits, survivors' benefits and housing assistance. The disadvantage of the Swedish model is one of the heaviest tax burdens in the world. However, this is offset by countless benefits in the social sphere, in most cases free of charge. Comparing selected models of the examined countries, we came to the conclusion that there is only a minimal difference between the German and Swedish welfare states in the area of public social spending, namely 1% of GDP.

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YOUTH WORK IN REGIONAL CONTEXT

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Abstract

The term youth development as a way of defining the efforts of youth workers and youth service organization and their acceptance in practice is relatively new. In the past two decades there has been a great deal of interest and attention focused on development principles and strategies to be used in the practice of youth work. The main aim of the paper is focused on the evaluation of the system of youth work development in Trenčín self-governing region. Therefore, we offer a brief overview of the system of youth work, stating the basic characteristics and emphasis on the activities of the Regional Leisure Centre in Trenčín - the Regional Youth Centre.

Key words

youth, youth work, participation, regional and youth policy, cooperation

JEL Classification: J13, I20, I28

Introduction

The term “youth work” has become popular in policy discourses in many countries including the Slovak Republic as well as international organizations. The main goals of youth work are determined in many European Union and European Council politics documents, for instance, Conclusions of European Council about the contribution of quality youth work, development, contentment and social integration of youth (213/C 168/03) Agenda 2020, Resolution CM/Res (2008) 23 about politics of European Council in the youth area, Recommendations of European Council about youth work (CM/Rec(2017)4), to integrate and join youth, strengthen their status. The new strategy of European union for youth COM/2018/269. On the one hand the youth work is based on a dual focus, on individual psychosocial development and collective critical consciousness and the promotion of social justice on the other (Watts & Flanagan, 2007; Lavie-Ajayi & Krumer-Nevo, 2013). Youth work represents an opportunity to bring young people and adults together – collaborative efforts that provide meaningful and insightful experiences for both groups. The youth work represents the process of learning not only for youth, but for the whole society. It is a bilateral good convenient investment. An important attribute of youth work according to Mortimer (2003) is not only the youth work, but the quality

of the work. The term “youth work development” and the ideas and practices associated with it have emerged from the field of youth work, but they have extended beyond practice to influence local, state, and national decision-makers in the public and private sectors (Edginton et al., 2005).

Currently there are big demands on youth regarding the area of qualification, enforcement in life and free-time activities. The obstacles that youth experience is a socialization of youth, school and spending free time. In principle young people are interested in support of democracy, but they do not trust institutional structures. (European Commission, 2007, p. 14). Right now, the main goals of organizations and institutions for youth work are to create bridges between distrust of youth and their big desire to express their opinion.

Youth is a priority of the European Union's social vision (Európska komisia, 2009). Youth workers and youth service organizations also have begun to play an important role in the Slovak republic. As well, in this field we can observe the shift in practice from comprehensive strategies that provide broad supports in youth work with focusing on their needs and competencies to programs elaborated at the regional level. The Trenčín region having a big impact for youth work. The Trenčín region creates conditions for education of students via 41 organizations in its founding competence, of

which 39 are secondary schools out of a total 55 secondary schools in the region, 1 language school and 1 school facility – Regional Youth Centre in Trenčín. Within the Trenčín region, there is a focus on versatile, continual and systematic support of youth development, improvement of their life, spending the free time, education, increasing employability youth and information access.

This paper brings together the theory and practice of youth work development and utilizes the real experiences. The text below is organized as follows: the section “literature review” provides a brief view on theoretical issues related to youth work development; the section “methodology” describes the way of realized research focuses on findings toward assessment of the effectiveness of youth work in Trenčín region; the section “results” provide except the results of realized research also the overview of youth work in the observed region and the last section of the paper is a conclusion.

1. Literature review

Youth reflects and mirrors many of our most cherished beliefs, values and ideals. Yet, at the same time, today's youth creates and advances fresh new perspectives that dramatically influence our culture (Edginton et al., 2005). Young people are and have been working alongside adults for decades as change agents in cutting edge of community development and organizing efforts around the world (Yohalem & Martin, 2007). Although young people are major stakeholders in the society, their voices are absent from community building processes, deepening the gaps of miscommunication and contributing to community exclusion (Blanchet-Cohen & Salazar, 2009). The role of practitioners and principles of participation goes to the forefront.

Youth work has undergone a continual evolution, rearranging and shaping its services to form the body of knowledge and practitioners that currently exists. Youth work is a way of working with young people that has been thought up and practiced by human beings – in all their diversity (Batsleer & Davies, 2010). Nowadays, there are thousands of people involved in youth work, in both paid positions and in voluntary roles. Youth work, a value and

relationship based practice, that relies on young people's voluntary engagement in such relationships, is an international phenomenon with diverse roots (Nolas, 2014). According to Delgado (2004), youth development in urban areas of the country may look different (programs and use of activities) than it does in suburban, exurbia and rural areas. The principles guiding youth development in these four geographical areas may be similar, but the activities may look dramatically different and so will the sociodemographic characteristics of their youth and employees. Youth work ensures 'complementary communication' which allows the development of a relationship because youth workers consistently and reliably engage with the young person in an adult to adult way. Importantly other professionals do not ensure an 'adult to adult' relationship, because they often either treat young people as if they were children (for example in assuming that they are without the capacity for autonomous decision making) or operate in such a way that a young person will perceive them as authority figures which inevitably results in young people feeling as if they are being treated like children (Ord, 2009).

As Hope et al. (2011) stated, participation is a categorical term for citizen power. He adopted Arnstein's (1969) ladder of citizen participation as a framework for exploring young people's participation. The participation in the redistribution of power that enables them to be included presently excluded from the political and economic processes, to deliberately include in the future. It is a strategy by which the have-nots join in determining how information is shared, goals and policies are set, tax resources are located, programs are operated and benefits like contracts and patronage are parceled out. According to Mahoney et al. (2006), participation in organized activities is a common developmental experience for young people. Youth development theory and research in organized activities suggest the increasing of participation is linked to the incremental benefits in a variety of positive developmental experiences such as physical and psychological safety, supportive relationships with peers and adults, opportunities for belonging, positive social norms, support for efficacy and mattering, opportunities for skill-building, and integration of family, school, and community experiences.

Borden et al. (2006) pointed on fact that a variety of factors, including community conditions, family and peer influences, culture, and the availability of programs influences a young person's choice to participate in youth programs. Barriers to involvement in youth programs may vary depending on such characteristics as age, family structure, ethnicity, and cultural and socioeconomic background.

Another aspect of youth work is youth workers and agencies focused on youth work development. Understanding of agency as the exercise of direct control through an opportunity for individuals to make their own free choices, the decision to make such choices, and finally the achievement of the desired result when doing so, constructs young people as rational social actors. Other aspects of agency that affect decision making such as feelings, past knowledge and skills, and prospective thinking are underplayed (Tsekoura, 2016). Those involved in the development of youth work came from a range of religious, philosophical and political traditions. These traditions shaped the practice of organizations and individuals but above all melded to bestow upon youth work unique essence. Five overlapping responses to industrialization, percolated practice creating a discrete entity - youth work (Jeffs & Smith, 2002). All youth organizations must navigate an institutional setting defined by organizational structures, funding arrangements, local, political economy, and the other agencies and interests that work with youth, such as schools, justice, and health. The institutional landscape of youth organizations contains fundamental challenges to a youth development agenda (Deschenes et al., 2004).

The body of knowledge related to youth work development in Slovakia comes to the forefront in the last decades. The integrative research focused on youth work development has been conducted. Young people under the age of 30 belong to a substantial part of the population of the Slovak Republic. At the same time, they are a very valuable source of development for the society. They have specific goals and needs that need to be taken into account in the process of preparing for social and working life. It is also one of the most vulnerable groups and these reasons considered we place great emphasis on youth work in the self-governing Trenčín region. The regional policy aims to create conditions and opportunities for children and young people to improve the quality of life for young people living and working in the Trenčín self-governing region. In the next section of the paper we provide general information about the youth work system in the self-governing Trenčín region.

2. Research methodology

This paper is based on an evaluation of case study of youth work development in Trenčín region. The study evaluation consists of analysis of basic documents and qualitative data collection to conceptualize the system of youth work. The research procedure consists of the description of institutional ensuring of youth work, the description of regional documents ensuring youth work and the results of the survey. The survey was conducted among three groups of respondents in Trenčín region: (1) 89 youth, (2) 33 professional youth workers and (3) 12 local politicians responsible for policy creation and realizations. The structure of respondents presents Figure 1.

Figure 1 The structure of respondents



Source: own research

3. Results and discussion

There is a description of the institutional ensuring of youth work, the strategic document that is necessary for the future development of youth work in Trenčín region and the results of research.

The youth represents 37,4% of the whole Slovak population, which is about 2 million people up to age 30. It is a community with specific needs, which requires to prepare for life and labor market. On average, a young person in Slovakia ends the education process as 17 years old. In comparison to different European Union members in Slovakia, there are fewer young people (only 5%) who have not finished mandatory school attendance. However, there is an absence of competition for youth to be able to apply on labor market, so often they ensure competitions with the help of foreign study mobility for which they mainly pay from their resources (57%). The state grant covers only 13% and European Union resources cover only

15% from whole expenses. The rest 15% is covered by employers. To be able to use youth potential for economic and social growth of the country, it is needed to expend more resources for developing political area, which influences youth in daily life, improving quality of youth life, contributing the decreasing youth social dependence and for supporting autonomy of youth. Only with the help of matters mentioned above Slovakia would be able to be a country where the youth wants to live. Currently, more than 70% of youth in Slovakia prefers life in a different country. One of the tasks of European youth policy is strengthening position of youth reflected in the Strategy of the Slovak Republic for the years 2014 – 2020. There were determined 3 general goals: 1. to create more opportunities for youth in education and employment, 2. to improve the approach of youth to the decision processes and improve their participation, 3. to support mutual solidarity. The stated above is summarized in the Figure 2 that presents the essence of a unified youth policy.

Figure 2 The unified youth policy



Source: Európske centrum mládeže (2004)

3.1 Institutional ensuring of youth work in Trenčín region

The Regional Leisure Time Centre in Trenčín – Regional Youth Centre is the bridge for developing the key competencies for youth and workers with youth, for developing cooperation between all institutions, organizations, informal groups and youth. The Regional Youth Center in

Trenčín became a specialized school facility in the founding competence of Trenčín region in 2002 after its extending of Regional Leisure Time Centre. Regional Leisure Time Centre in Trenčín is separated into sections of knowledge, spare-art and sports competitions and Regional Youth Center. Regional Youth Centre was founded in 2005. Generally, the main goal of the Regional Youth Center is to work with youth

policy on different levels in the Trenčín region, Slovakia and abroad.

There is big cooperation between Regional Youth Centre in Trenčín and Regional government of Trenčín region, mayor of cities and villages in the Trenčín region area. The main tasks of the Regional Youth Centre:

- to coordinate the leading of state policy into a relationship with children and youth in the region,
- to act like an interface between Trenčín region and other parts, which meet the conception of state policy,
- to focus on educational activities in relationship of voluntary and professional workers with children and youth,
- to create an information database of leisure time centers and further subjects focused on unformal youth education,
- to map the needs of youth in Trenčín region,
- to create conditions for cooperation with the subjects focused on children and youth problems in the region,
- to support the active participation of youth in the preparation and realization of activities.

Since January 2016, there exists a coordinator of youth work in Trenčín region who works in the Regional Centre in Trenčín in the

section of Regional Youth Centre. His main tasks are:

- to coordinate the development of youth work in Trenčín region,
- to coordinate goals keeping according to the conception of youth work development in the Trenčín region,
- to map the needs and interests of youth in the city,
- to submit suggestions and proposals defending the interests of youth – their needs and to prepare materials for decision,
- to create analyses for needs concerning the youth of Trenčín region
- to help to develop the activities and events in the Trenčín region and others.

The activity of the Regional Youth Centre also consists of looking up the organizations, unformal groups, institutions working with children and youth. The Regional Youth Center also proposes, coordinates and maps city partnerships with various institutions, private sector, civil associations, unformal groups and helps to develop these relationships. The next tasks of the Regional Youth Centre are actively looking up the possibilities of project realizations focused on children and youth, youth financing and many other activities.

Table 1 The overview of activities provided by the Regional Youth Centre

Activity/project	The aim of activity/project	Number of participants	Year of realization
Region and cities together for youth/young people	activation and involvement of young people to the city life, support, and development of structured dialogue and cooperation of self - governments on the local level	880	2018 – 2019
AKTIV	to create a main sustainable system of support for youth work on the territory of Trenčín region and Zlín region from Czech republic, to motivate the youth to volunteer and active involvement in the community life, create cooperation between youth workers from youth organizations, Leisure Time Centres with personal responsibility for youth politics in cities and communities as well as in the region level	884	2017 – 2019
Participation on practice	long term active cooperation of the target group (orphans and youth with fewer	611	2018 – 2019

	opportunities) with the representatives of public institutions, where they will be inserted to the activities in communities and the city		
With the craft to the world	aim of this project for selected young people from special primary schools from Czech and Slovak Republic were to learn and show how to sell their art, how to visualize their work, to know to reach and ask for the possibility to realize themselves in public events	38	2019
Interculturality in action	to direct children from orphanage to more independent decision making, more healthy self-confidence and to stand by their origin	36	2019
Democracy school	the project came from the initiative and needs of the students, who have identified the main topics such as democracy, functioning and increasing the competences in the school councils, volunteering or civil participation	66	2018

Source: own research based on the documents of Regional Youth Centre

3.2 School boards

The school board is an important, but especially appropriate means, as at a young age can create awareness of democratic society in pupils. It is a representative body of a secondary or elementary schools and represents their interests concerning the headmaster and the school management. It promotes the development of a free and civil society in which individuals become active and participate in public life and have an overview of what is happening around them. In Slovakia, the functioning of the School Board is governed by Section 26 of Act No. 177/2017 Coll. Of Laws amending and supplementing Act no. 596/2003 Coll. on state administration in the education and school self-government.

Another stage of the development of pupil school councils is their mutual association at the local, regional or even national level. The Trenčín self-governing region revived the idea of the Secondary Parliament as an advisory body to the President of TSK. Twice a year, the representatives of the pupils' school councils meet with the president of the region in the discussion forum of the Secondary Parliament. It should also encourage young people to participate in public affairs, to activate and encourage them to learn to think critically and to participate in activities that help develop their personality

The Youth Council of the Trenčín Region, through support from the national level through the subsidy schemes of the Ministry of Education, Science, Research and Sport of the Slovak Republic - Youth Programs 2014 - 2020. The instrument to support the implementation of the Strategy of the Slovak Republic for Youth; 282/2008 Coll. on promoting youth work and the European Youth Strategy. The implementing body of the programs is IUVENTA - Slovak Youth Institute. The Trenčín Region has signed a Memorandum of Cooperation with this civic association and within this cooperation, they jointly plan and implement support activities in the territory of the Trenčín Region, which at the same time fulfill the objectives of the "Strategy of Youth Work Development in the Trenčín Region 2020".

One of the support tools is the development of coordinators of pupil school councils through training and meetings. Coordinators of pupil school councils are teachers who help develop pupil school councils at their school. The coordinator's activities include overseeing the election process, assisting in the first contact with school management, teaching staff, directing the school board to act following legislation, etc. In the case of a fully developed school board with rich competences, he is in the position of a coach, leaving as much responsibility and work as possible to the pupils. In the case of a new school board or new

members, it interferes with its activities in a more significant way. (Štefániková, 2018, p. 17)

3.3 Cross-sectoral Youth Working Group of the Trenčín Self-Governing Region

To open up the cooperation of several actors in the area and to more effectively fulfill the goals set in the Concept of Development of Youth Work in the Trenčín Self-Governing Region, an Inter-Sectoral Working Group for Youth in the Trenčín Self-Governing Region was established. Cross-sectoral cooperation in youth policy is a relatively new topic in Slovakia, but it has been gaining ground in the European Union since the 1990s. (Juventa, 2010, p. 3)

The initiator of the establishment of the inter-sectoral working group for youth at the regional level was the Trenčín self-governing region. The cross-sectoral group has 50 members in total. The intersectoral working group meets twice a year in round tables. At the beginning of the year, it approves the evaluation of the action plan for the previous year as well as the draft action plan for the next year. Subsequently, for the second time in June, round tables are held for each key area. These meetings discuss in depth the situation and development of individual areas in the lives of young people and propose further support activities and solutions.

The Trenčín self-governing region realizes that the future and development of young people must be synergistically in cooperation with all actors. This is the importance of the Inter-sectoral Youth Working Group of the Trenčín Region.

3.4 Strategy of Youth Work Development in Trenčín Region by 2020

Youth work within the Trenčín region is defined in the document entitled "Strategy for the development of youth work in the Trenčín region by 2020". It is a strategic document that specifies the main areas of youth work, defines the starting points, principles, objectives and priorities of the region and other entities in the key areas of development of youth work in the Trenčín region. However, it is not only a formal document but a living document, fully applicable in practice. It was approved in 2016 at XXI. meeting of the Trenčín Region Assembly and

consists of three main parts: (1) strategic framework, (2) key areas of youth work development, (3) implementation.

The strategic framework sets out the foundations, principles and objectives of regional policy concerning children and youth. The key areas of youth work development are divided into thematic areas:

- education,
- employment,
- creativity and entrepreneurship,
- participation,
- youth work,
- volunteering,
- mobility,
- environment,
- health and a healthy lifestyle.

The "*need to foster diverse learning opportunities*" in the field of education is confirmed by the adoption of the Declaration on Recognition of the Benefits of Non-formal Education in Youth Work (Trenčín self-governing region, 2016, p. 9). This declaration was signed by more than 40 employers and representatives of educational institutions. Creating a unified lifelong learning system, linking formal and non-formal youth education, is both a great need and a challenge for the future.

In the area of *employment*, the concept presents a challenge for improving the quality of vocational education, the dual education system and, in particular, the issue of professional practice, which would enable young people to be better prepared for entering their first job (Trenčín self-governing region, 2016, p. 10). Equally important is the improvement of the quality of career guidance - cooperation between actors involved in preparing and educating young people for entry into the labor market. Creativity and entrepreneurship are among the key competences of young people. They should learn independence, correct values and *creative thinking* during school.

Participation, namely the involvement of young people in public decision-making on all areas of the city's life that affect the quality of life of young people, is of great importance for the life of the municipality or city. Their participation increases the visibility of young people and their concerns, as well as the

visibility of decision-making bodies in youth policy in the eyes of young people (Official Journal of the European Union, 2018, p. 6). The availability of up-to-date and relevant information to young people is a prerequisite for participation. "Schools and school facilities, non-governmental organizations and other entities are a place where young people have suitable and natural conditions to acquire and apply the corresponding competences." (Trenčín Self-governing Region, 2016, p. 12).

Youth work is a learning process not only for young people but also for society as a whole. In essence, it is a two-way and very profitable investment. The basic objectives of youth work are set out in many policy documents of the European Union and the Council of Europe, such as the Council Conclusions on the contribution of quality youth work to the development, well-being and social inclusion of young people (213 C 168/03) Agenda 2020, Resolution CM/Res (2008) 23 on the Council of Europe Youth Policy, Council of Europe Recommendation on Youth Work (CM / Rec (2017) 4), Engaging, Connecting and Empowering Young People: A New EU Strategy for Youth COM / 2018 / 269th. The Trenčín self-governing region is fully aware that young people should not only be the engine of their own lives, but should also contribute to a positive change in society.

Volunteering has a great benefit to society. It is a form of social participation, educational experience and a factor of employability and integration. (European Commission, 2007, p. 25) It is essentially a 'multidimensional dynamic social phenomenon that is present in every society. It is closely linked to the social structure of society, its morality and culture, which co-create the form of volunteer participation and give it a specific character and social significance.' (Brozmanová - Gregorová, Šolcová, Siekelová, 2018, p. 4. Activities are regulated in Slovakia by Act No. 406/2011 Coll. on volunteering and amending certain acts.

The *mobility* of young people motivates them to gain intercultural experience. Well-designed and implemented action in the field of youth mobility reinforces values such as knowledge of human rights, suppression of intolerance, racism and xenophobia, development of solidarity,

recognition and understanding of the values of different cultures.

In the field of the *environment*, it is important that young people learn to use important skills that will enable them to actively participate in decisions that also concern nature conservation. The concept of the development of youth work includes the intention to increase the environmental awareness of young people through both formal and non-formal education. At the same time, TSK is also called the "Green County". This relates to the direction and support of many activities in the area, such as cycle paths, or the Green Eyes grant program, which can be used by anyone for educational or direct activities to support environmental protection.

The last area is a *health and a healthy lifestyle*. This area is one of the most important values for the future. "The lifestyle of children and youth has changed in recent years. Today's young generation does not give him much respect. The basics of a healthy lifestyle should be laid in the family. However, the family does not always have enough information, resources and possibilities for its implementation. That is why schools and facilities where children spend a substantial part of their time must be devoted to this issue." (Trenčín Self-Governing Region, 2016, p. 14)

The concept was developed in a participatory way with the broad involvement of all actors. The Trenčín self-governing region commissioned the Regional Leisure Center in Trenčín - the Regional Youth Center to implement some specific measures aimed at fulfilling this concept. Other stakeholders such as local government, non-governmental organizations, employers, schools and school facilities, student school boards, the student parliament, and other institutions have been involved as well.

3.5 The results of implemented survey

The survey was focused on findings related to youth work development in Trenčín region. The core of youth work development is the participation of youth on development of region where they live. Three groups of respondents answered on following questions: Q1-Are young people informed about events realized in the region? Q2-Are young people interested in

participating in activities done by region? Q3- Are young people interested in participating in volunteer activities? Q4- Are young people interested in creating a space for youth activities

in the region? Q5- Are young people interested in youth policy of the region? Table 2 provides percentage of answers of three groups of respondents.

Table 2 The opinion of target groups towards development of youth work in region (%)

Question	Q1			Q2			Q3			Q4			Q5		
Target group	Y	PW	LP	Y	PW	LP	Y	PW	LP	Y	PW	LP	Y	PW	LP
yes	49	72	80	60	53	56	59	50	30	80	77	78	35	42	0
no	51	28	20	40	47	44	41	50	70	20	23	22	65	58	100

Source: Own research , Y-youth, PW-professional workers , LA-local politicians

The results showed: Q1- While 51% of youth thinks that young people are not informed about important events realized in the region, the professional workers and local politicians have opposite opinions. Q2- In this case, 60% of youth thinks, that young people are interested in participating in realized activities. The positive view of this type of participation is confirmed by 53% of professionals and 56% of local politicians as well. Q3 - 70% of local politicians think that young people are not interested in volunteering, but 59% of young people surveyed want to participate and benefit the society through volunteering. Q4- This question was focused on findings related to the interest of young people related to the creation of space for their activities. The positive answers among the three groups of respondents are very similar. Q5- In this question, respondents should provide their opinion, if they are familiar with a statement related to the participation of young people on youth policy in the region. The most answers within three groups of respondents were negative. According to them, young people are not interested in youth policy in the region.

The results clearly show the lack of information of local politicians about the needs and opinions of young people. For example, less than half of young people feel uninformed about what is happening in the region, and conversely, up to 80% of local politicians think they are informing young people well enough. This fact is also due to the way by which the local government informs its citizens in general. The way of communication is clearly incomprehensible and unattractive for young people. The agreement of all 3 groups of respondents that it is necessary to create a space for work with youth is also interesting. Another

interesting fact that the research found was also in terms of volunteering activities. Young people in general have an interest in benefiting the society through voluntary activities.

The results of this research also point to the fact that representatives of cities in the region are fully aware of the need to develop cooperation in the field of youth work. This is also supported by the fact that they participated in the research and approved the results of the analysis and its recommendations at the council as a basis for the development of youth work. Overall, the research in the Trenčín Region reflects and also confirms the results of research at the national level in Slovakia and European level. If a system of support for youth work is created at the local level, a quality and positive benefit and impact on all those involved in the area is a prerequisite. Investing in youth work has an impact not only on a positive change in the environment, but also on a significant impact on increasing young people's competences and on improving community life and activating young people in the future.

4. Conclusion

In conclusion we can say that the youth work in Trenčín region is characterized by diversity – not only by the way how is realized, but also how it is organized and controlled. The system of development of youth work in Trenčín region is based on undoubtedly close cooperation between Trenčín region and other organizations. Big emphasis lays not only in cooperation development, but also on permanent reflecting of the needs and on development of youth competences. The current findings of youth needs are subsequently transferred to action

plans of youth work development, which are validated by the Intersectional workgroup for Trenčín region youth.

The same focus is on coordinating all actors in the area of youth work and on increasing the awareness for all areas which are included in "Strategy of development of youth work in Trenčín region". With the intensive problem reflecting which youth meets in their environment and with the follow-up analyses, the Regional Youth Centre in Trenčín informs The Ministry of education, science, research and sport of the Slovak Republic and the Department of Children and Youth about the needs of youth on the national level.

There exists a lot of areas where a youth needs support from the state side, self-government side or other institutions and organizations to be able to fully develop their potential and key competences. The youth has a lot of problems, they live in a society which is still changing and has bigger demands. Right now, the Regional Youth Centre of Trenčín region is trying to prepare them for life, to open opportunities for them, to develop their knowledge, skills and attitudes towards values. By coordination of all actors, it is trying to reach a multidisciplinary approach to issues of youth work development and to create a space for the cooperation of all actors in the determined area. Only by common cooperation of all actors and by knowing the real needs of youth living and operating in our region, we are able to create support activities and regional policy which can contribute to the improvement of the situation, can support youth development and can prepare youth for future life.

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ANALYSIS OF THE EXPECTED DEVELOPMENT OF DEMOGRAPHIC FACTORS AND THEIR ADAPTATION TO THE LABOR MARKET IN SLOVAKIA

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Abstract

The research subject of our work is demographic development as a factor of labor market development in the Slovak Republic. The aim of this paper is to point out the topicality of the researched issue, which is the demographic development of the population in terms of age, birth rate and mortality and their impact on the labor market in Slovakia. In the first part, we will approach these factors fundamentally influencing the labor market from a theoretical point of view with the help of an analysis of the literature on the given issue. In the next part of the paper we will focus on statistical indicators of demographic development. Also in this section we will focus on indicators of the age of the population of the Slovak Republic and the economically active population by age groups. We will point out the measures taken by the government to eliminate the risks posed by possible developments. Every advanced society strives to create the conditions now for sustainable social and economic development in the future. Economic and social development is closely linked to the labor market. Migration can alleviate the process of population decline in Slovakia, but it will have only a minimal impact on the process of population aging. The contribution can be the use of the post-productive population, migration as the primary source of absent labor and preparation for labor shortages.

Keyword

demographic development, labor market, economically active population, age group, productive age, birth rate, mortality

JEL classification: J1, J6, F01, J11

Introduction

Since the 1960s, the rate of population growth has been declining. In an increasing number of countries, demographic scissors are closing. Despite the influx of migrants, some developed countries are experiencing depopulation - a decline in population. Eastern Europe is beginning to approach the West with its reproductive behavior and is demographically aging approximately the same. Theoretical demography creates models of the development of demographic systems and seeks universally valid laws. In this article we discuss the issue of the aging population in the Slovak Republic and

the associated birth rate, mortality and migration. In the near future, strong post-war years will start to retire, weak post-revolutionary years are entering the labor market, more and more people are studying at universities and migration for work to other EU countries is very high. There is a risk that in the course of several years there will not be enough workers on the Slovak labor market (Employment Institute, 2013). The number of people over the age of 80 should almost triple to 12%. In Slovakia, we can expect a similar scenario as in the EU, and even some analysts assume that the number of older people of retirement age will be 30 years higher than the European average. Among the basic factors

influencing the labor market we can include the education of the population, labor migration, the introduction of new measures and also the demographic development in the given society in the conditions of the Slovak Republic. The phenomenon of demographic development affects society not only from a social point of view, but at least to the same extent from an economic and economic point of view. The Slovak labor market is characterized by a weak link between economic growth and employment, respectively unemployment, which represents a certain barrier to recovery from previous employment declines. If we start from the assumption that economic growth needs a labor force for its creation, then a higher growth rate will be associated with employment growth and at least a partial reduction in unemployment (Lubyová, M. – Štefánik, M. et al. 2015). In our paper we will focus on the factors of this phenomenon and the intensity of their influence on the development of the labor market. We will outline the problematic aspects of the situation, and examine what the government's steps are in this issue.

1. Theoretical background

Demographic change is taking place throughout society and its consequences are increasingly being reflected in employment policy. The objectives of the Europe 2020 strategy in the field of employment policy should take into account demographic change and strive to build a work environment adapted to the age of workers and a massive expansion of further education and training opportunities (Strunz, Vojtovič, 2014). In particular, there is a need to increase the employment rate of workers over the age of 50, to prevent older workers who are interested in remaining in the labor market from being excluded from the labor market, thus guaranteeing them a decent pension and at the same time feeling socially needy. (Páleník, 2014). In the future, the process of demographic aging will also affect the structure of the workforce, as confirmed by (Punch, Pearce), when they claim that the „European workforce will age as well as the entire population“. In the labor market in the Slovak Republic, a situation has developed in recent years where more and more people are reaching retirement age. At the

same time, there are fewer and fewer younger people who are at the age of leaving education and entering the labor market. This is due to historical developments (mainly the decline in birth rates in the 1990s and its more favorable development in earlier periods). In addition to economic growth and employment, this phenomenon is an important explanatory factor in the current mismatch between supply and demand in the labor market and the observed shortage of suitable potential employees. The flow indicators show that in one year, approximately 50,000 people currently enter the labor market (employment or unemployment) after graduation, and approximately 1,000 more people retire from the labor market (whether old-age or disabled).

The very fact that we are among the EU countries with the fastest aging population (second place among EU countries) is a fact that unequivocally confirms the need to forecast additional labor needs by 2040. It is precisely labor replacement that makes up the bulk of labor market needs already in medium term. This is compensation caused by the departure of employees from the labor market, especially into old-age retirement. It is assumed that strong population years - persons born in the period 1953-1958 will form a substantial part of people leaving the labor market by 2024. We can assume that in 2040 the number will double, perhaps even triple (MPSVR, 2019).

1.1 Demographic development in Slovakia

The basis for the development of the supply side of the labor market is demographic development. The population and its age and gender structure are the basic determinants of labor supply. In addition, the working age population (15 to 64 years) has immediate potential for the number and structure of the workforce, as the labor force is a subset of the productive population.

One of the most serious, but nevertheless not so popularly solved problems today is the aging population. As in the whole of the European Union, problematic indicators regarding birth rates are being recorded in Slovakia, which raises reflections on the future of our country. The evolution of the demographic structure of the age group speaks of

a serious impending problem. In Slovakia and in other European countries, there is a very small number of children born compared to the past (Bleha, B. et al. 2003).

From 1980 to 2000, there was a decrease of almost 50 percent in Slovakia (from 95 thousand children per year to 55 thousand children). On the graph of the prediction of the age structure, we see a large imbalance in the age structure of the population. This imbalance is mainly due to two important indicators - fertility and mortality, and to a lesser extent migration is added to this situation. Fertility refers to the average number of children born to a woman during their lifetime. Currently, this indicator is at 1.45. While in the late 1980s there were about 2 children per woman in 1995, it was only 1.5 children. This declining trend continued until 2002, when a record low fertility rate of 1.19 was recorded in Slovakia. The phenomenon of declining fertility is caused by the so-called demographic and economic paradox. He talks about the connection between economic changes in the country and the development of fertility. With the country's growing GDP, increasing education and women's independence, fertility is declining at the same time. This trend can often be observed in developed countries. However, the paradox is valid only to a certain extent, when fertility has stabilized and is slowly beginning to increase (Dennison, T., & Ogilvie, S. C. 2016). Birth rates have risen slightly since 2002, currently reaching 1.45 children per woman. However, the longer such low fertility persists, the greater the age gap between the population. The predictions are slightly increasing, but only to a small extent, a roughly linear increase from the current 1.45 to 1.65 in 2060. The long-lasting low birth rate will result in a reduction in the number of children born each year from the current 55,000 to about 32 thousand in 2060. While a large number of the population will enter retirement age, an ever smaller number will be classified as the economically active population (Radvanský, M. 2010).

Another important indicator is mortality. It speaks of the average life expectancy of the population at birth, while declining mortality causes the population to age, and high mortality causes its decline. Mortality in Slovakia has been developing steadily since 1989 and can be

predicted with a relatively high probability. As Vaňo et al (2002)“ write regarding the structure of mortality, in all five variants of mortality development (very high, high, medium, low, very low) the largest decrease is expected in those age categories in which the situation is least favorable and lagging behind developed countries is the largest. These are mainly middle-aged and older men and older women. Only a small reduction in the difference in mortality between men and women is expected“. As Vaňo further states „The development of migration in Slovakia will largely depend on the course of integration processes in Europe and on the migration situation in the world. In any case, the relocation of people from less developed countries to more developed ones is a global trend that Slovakia will not do without. It is assumed that the migration balance of the Slovak Republic in the future will be influenced mainly by a group of inhabitants (citizens of the Slovak Republic) who will seek employment in developed countries and a group of immigrants from developing countries“. This statement is supplemented by Krajňáková (2019), when she claims that foreign, international migration is also considered one of the fundamental civilization challenges of the 21st century, because it has serious economic, social, population, cultural, political, security, environmental and other impacts.“.

Population aging is a global demographic process that is most prevalent in developed countries. This state of demographic development of the population is the result of the previous economic and social development of society. Technological and scientific progress and the growth of work efficiency have created conditions that have led to a reduction in mortality, an increase in average life expectancy and better health care for the population (Vojtovič, S. - Krajňáková, E. 2017). The simulation for countries shows that the aging of the population causes a decline in the growth of labor supply and an increase in the growth of capital stock, which leads to a deepening of capital. Population aging can significantly weaken growth potential. However, the result is sensitive to the mode of intergenerational transfer of human capital. The study shows that the method of social transfer of human capital is

quite important for the long-term growth of the economy (Choi, K. –Shin, S. 2015).

A significant upward shift in the age structure of the population is mainly caused by the first two previous factors, which are birth rates and mortality. This creates the structure of an inverted pyramid, which speaks of a problematic demographic situation. The largest part of today's population will move into retirement age, and the ever-decreasing number of children born, which is expected by 2060, is causing the pyramid to narrow further. At today's mortality, the upper part of the pyramid would start to narrow rapidly around the age of 75, but with a decrease in mortality in 2060, this narrowing will not begin until around the age of 85. This causes an even greater increase in the economic dependency index. Thus, a situation arises where an ever-increasing part of the population receives a pension and fewer and fewer people have to work for these pensions. There is a significant imbalance, the solution of which must come as soon as possible, otherwise there may be an inability to provide these pensions. Fertility and fertility in Slovakia has undergone a significant and historically unique transformation in the last two decades or so. The period of relatively easy-to-read trends in reproductive behavior, which stemmed from the considerable stability of the mechanisms, thus ended in the early 1990s and was replaced by a period characterized by considerable dynamics and a range of changes with much more difficult to predict developments. Moreover, the transformation of the model of reproductive behavior is so fundamental that the information obtained from analyzes of the nature of birth and fertility after the Second World War lost much of its informative value. This is one of the reasons why fertility is a very problematic component in the current conditions (Šprocha – Vaňo –Bleha 2013).

1.2 Current and expected demographic trends

Mortality is likely to continue to decline and more immigrants from non-EU countries will arrive in Slovakia. Combined with the age structure of the population, this will mean a reduction in the number of births since about 2020 and, starting with the current, a continuous

increase in the number of deaths. The result will be depopulation beginning shortly after 2021 and a significant acceleration of the aging process after 2020. Migration can alleviate the depopulation process, but will have only a minimal impact on the aging process. A number of theoretical models have been proposed to explain why international migration is beginning, and although each ultimately seeks to explain the same, it uses radically different concepts, assumptions, and reference frameworks. The neoclassical economy focuses on differences in wage and working conditions between countries and on migration costs; he generally understands movement as an individual decision to maximize income. In contrast, "The new economy of migration" considers conditions in different markets, not just labor markets. Perceives migration as a household decision taken to minimize risks to family income or to overcome capital constraints on family formation activities (Massey, D. S. a kol. 1993). Due to the problems of finding a job on the labor market, the population aged 50 to 64 is of special interest. This part of the productive population is currently at an all-time high, mainly due to strong generations born during the period of increased birth rates after World War II and in the 1950s. (Štefánik, M. et al., 2018). The aging of the population in Slovakia will be a universal process until 2050, which means that it will take place continuously and in all regions. As already mentioned, the process of population aging in Slovakia is mainly related to the development of birth rates. That is why we have a region with a younger population in Slovakia, which consists of regions with a higher birth rate, such as the Prešov, Žilina and Košice regions. All others have regions with older populations. The current changes in demographic development have already been reflected in the development of the workforce. Labor force growth is slowing down resp. they are turning into a decline and the workforce is aging. Demographic developments will continue to affect the number and structure of the workforce in the future. It is generally assumed that a smaller, older and more ethnically diverse workforce will be involved in achieving economic results than at present. People aged 50-64 currently make up almost a quarter of the economically active population in Slovakia, while at the beginning of the 21st century it was

only about 14%. In addition to the demographic impact on the population in this age group, raising the retirement age also plays an important role in relation to the labor market. People are living longer - with average life expectancy over the last two decades in almost all regions. The populations of many regions are aging rapidly. The aging process is a major achievement that did not begin to develop until the end of the twentieth century. Demographers define an aging population as an increasing middle age of the population or a change in the age structure of the population, so that older people are increasingly represented in the overall age structure of the country. (Shrestha, L. B. 2000).

2 Aim and methods of research

The main goal of the paper is to evaluate and identify the impact of population aging, birth rates and mortality on employment in the Slovak Republic. When examining demographic development as one of the main factors that affect the labor market, we will use the analysis to approach the demographic development in Slovakia, focusing mainly on three indicators of the object, which are birth rate, mortality and population migration. (Lisenkova, K., Mérette, M. and Wright, R., 2013). The main benefit of addressing this issue should be the ability to prepare for future labor shortages in the labor market or to use the possibility of migration as a source of absent labor. In order to fulfill the main goal, we have also defined partial goals, which:

1. They analyze the current state of the population,
2. They characterize the demographic development in the Slovak Republic,
3. They will detect the development trend of the economically active population according to age groups,
4. They examine selected indicators and find out their direction.

2.1 Methodology

In order to fulfill the main goal and sub-goals, which we set out in the previous part of the paper, it is necessary to proceed in accordance with the predetermined

methodological procedure contained in the theoretical and analytical part.

1. The elaboration of the theoretical part of the paper requires a detailed study of the issue through monographs, scientific articles and relevant legislation.

2. The elaboration of the analytical part of the work must be divided into several steps:

a) The introduction of the analytical part of the paper is devoted to a survey of the current state and development of the population with a priority focus on the population of age category 50. In this part, the statistical method is applied as an analysis

b) The next step for the fulfillment of the main goal is a survey of the current state and development of birth rates, mortality and migration.

In this case, we again apply the basic statistical method-analysis.

c) On the basis of the obtained and processed data, we will prepare data for the assessment of the dependence between the aging of the population and the development of the labor market by means of regression analysis.

d) In the final part of the work we summarize the results and identified problems, for which we will try to suggest potential measures.

3 Labor market and employment on the basis of age

The workforce will age and there will be a shortage of young workers in several countries, so it is necessary to focus on the older age group of employees in working age, ie to design strategies that will eliminate the shortcomings of older workers and exploit its full potential. . Population aging, the decline in birth rates, but also other demographic trends can be considered threats that can significantly threaten the situation on the labor market and the overall economic growth in the country. The following chapter is devoted to the analysis of the development and situation on the labor market in the Slovak Republic. Even according to available statistical data, the demographic development in

Slovakia is moving towards an aging population, which confirms our statement.

Since 2014, the average age of the population has been above 40 years. In 2016, it reached a value of 40.4 years and according to the update from 2019, this indicator is approaching 41 years, more precisely 40.8 years in 2018. Half of the population of Slovakia is currently older than 39.8 years. The year 2018 is a turning point in the monitoring of the aging of the population, because the number and share of seniors in Slovakia for the first time in history exceeded the number and share of children. In 2018, for the first time, there were 102 people aged 65 and over for every 100 children. Population aging is mainly affected by the aging of the so-called post-war generation and weak fecundity (physiological fertility) of the generation born in the 90s of the 20th century. Although the manifestations of the aging of the Slovak population are not so noticeable today, the development of the age structure points to the acceleration of the aging process of the population in Slovakia. Demographic development in Slovakia is characterized by:

- gradual decrease (since 2003 a slight increase, stagnation) of the birth rate
- reducing (stagnation) mortality
- by increasing life expectancy
- the growth of a group of very old people over the age of 80

The population of the Slovak Republic has been aging since the end of the 1950s, but this process has gained significant intensity since the 1990s. Despite the fact that in 2016 most children were born in the last 5 years and the birth rate is rising, its values are still low. The manifestation of the aging of the population is changes in the structure of the population, increasing the average age of the population, increasing values of synthetic indicators.

We will approach the indicators of the age of the population in the period from 2007 to 2016 in the following table, from which we will find out the average age, media age, aging index, as well as the index of economic burden of selected groups of the population in the given period.

Table No.1 Age indicators of the population of the Slovak Republic, 2007 - 2016

Ukazovateľ	Pohlavie	Rok									
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
priemerný vek	muži	36,34	36,61	36,84	37,09	37,41	37,68	37,96	38,24	38,50	38,74
	ženy	39,54	39,81	40,05	40,28	40,61	40,87	41,15	41,43	41,68	41,91
	spolu	37,99	38,25	38,49	38,73	39,05	39,32	39,60	39,87	40,13	40,37
mediánový vek	muži	34,60	35,00	35,40	35,80	36,30	36,70	37,10	37,60	38,00	38,40
	ženy	38,00	38,30	38,60	38,90	39,40	39,70	40,10	40,60	41,00	41,40
	spolu	36,20	36,50	36,90	37,20	37,70	38,20	38,60	39,00	39,40	39,80
index starnutia *	muži	55,25	56,93	58,23	59,06	60,89	63,16	65,68	68,23	71,06	73,75
	ženy	97,83	100,67	102,94	104,07	106,20	109,07	112,20	115,34	118,62	121,39
	spolu	76,00	78,26	80,01	81,01	82,96	85,51	88,34	91,17	94,22	96,96
index ekonomického zaťaženia **											
	spolu	38,37	38,00	38,09	38,23	39,25	39,81	40,57	41,39	42,41	43,77

* počet osôb vo veku 65 rokov a viac na 100 detí vo veku 0 – 14 rokov

** počet detí vo veku 0 – 14 rokov a osôb vo veku 65 rokov a viac na 100 osôb vo veku 15 – 64 rokov

Zdroj údajov: ŠÚ SR

The table shows that the average age of men is approximately 3 years lower compared to the average age of women. Women have averaged almost 42 years, men less than 39. The median age of the population is also increasing, the total

population of Slovakia has increased from 36.2 years in 2007 to 39.8 years in 2016. In terms of gender, half of the female population is already older than 41.4 years and half of the male population older than 38.4 years. The aging

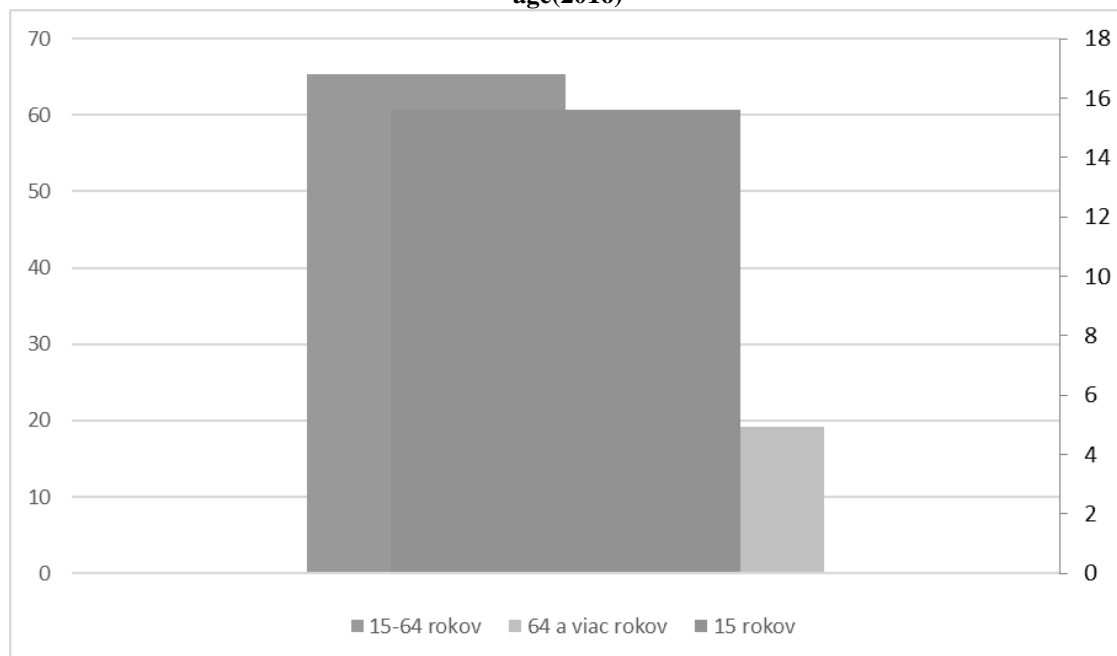
index increased by approximately 21 points in the observed period (2007 - 2016), so that in 2016 there were almost 97 persons aged 65 and over per 100 persons aged 0-14. In the female population, the value of the aging index has been above 100% since 2008. In 2016, the aging index was 121.4% for women and 73.8% for men. Within the female population, the post-productive component has predominated over the pre-productive component since 2008.

The economic burden index is also constantly increasing; in 2016, there was a year-on-year increase of 1.4 points. During the monitored 10 years, its value increased from 38.4 (2007) to 43.8 in 2016. This means that per

100 inhabitants of working age (15-64 years) there were 44 inhabitants of non-productive age (0-14 -year and 65 and more years).

As can be seen from the following graph, at present in Slovakia the ratio between the number of persons of working age, it means. 15 - 64 years (65.3% in 2016) and the number of persons in pre-productive age, i. birth - 15 years (15.6% in 2016) and post-productive age, i. 64 and more years (19.1% in 2016) still relatively favorable. However, this is only a temporary situation, which will change in the near future to the detriment of the productive age, as demographically strong years will gradually move into the post-productive age.

Graph 1 Comparison of the number of persons in pre-productive, productive and post-productive age(2016)



Source: Own processing

In table no. 2 we compared the economically active population by age groups. We focused on the years from 2008 to 2018. We noticed that in the youngest age group of 15-19 years, a decrease in the number of active population has been recorded since 2008, but the number has started to rise again in the last three years. In the age groups from 20-34, a decrease in the number of active population was recorded.

The number of economically active population aged 20-24 decreased the most, which may be due to the ever-increasing number of people studying at universities. On the contrary, in the age groups from 55 years and more the number of active population increased, which is caused by the aging of the population. In the age group 65 and over, the increase between 2008 and 2018 was more than 300%, which is the largest

increase in the number of economically active population. Another almost 300% increase was recorded in the group from 60-64 years. We also recorded an increase in the number of active population in the age group 40-44 years, where the number of active population has increased by almost 56,000 people since 2008, which in 2018

represented 406,000 economically active inhabitants.

The total number of economically active population increased to 2,746,000 in 2018, compared to 2,691,200 in 2008, so it is on an upward trend.

Table 2 Economically active population by age groups

AGE GROUP	ROK										
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Together	2 691,20	2 690,00	2 706,50	2680,00	2706,5	2715,3	2721,8	2738,3	2758,1	2754,7	2746,3
15 - 19 years	28,7	25,3	23,4	22,8	22,2	19,4	19,2	18,4	20,7	20,7	21,9
20 - 24 years	241,1	229,9	222,4	203,5	199,8	197,7	182,1	190,7	185,4	181,9	167,9
25 - 29 years	384,6	374,6	371,5	354,5	360,2	352,3	341,1	341,1	337,1	321,5	314,0
30 - 34 years	388,2	397,9	393,9	385,5	381,3	376,9	369,9	363,2	365,1	354,8	349,8
34 - 39 years	337,6	350,8	369	374,4	388,8	399,6	407,0	403,3	404,3	396,7	384,1
40 - 44 years	350,2	340,4	336	329,0	327,6	341,3	360,1	374,3	384,1	395,8	406,0
45 - 49 years	351,8	346,8	344,7	342,0	339,6	333,8	329,6	324,0	320,4	323,1	337,4
50 - 54 years	346,9	343,3	338,5	339,9	330,1	323,8	321,0	322,1	323,3	317,8	316,3
55 - 59 years	206,7	224,9	246,3	258,8	278,1	285,2	289,3	294,4	293,0	293,3	292,3
60 - 64 years	45	46,3	50,2	57,1	66,8	73,3	77,8	87,4	103,9	119,9	123,0
65 and more	10,5	9,9	10,7	12,4	12,2	12,2	14,8	19,5	20,9	29,1	33,7

Source: Statistical Office of the Slovak Republic, 2018

Provided that the direction shown in the table is maintained in the near future, the transition of the population from productive to post-productive age will have an increasing tendency in the near future, which confirms the example with the strongest age group 40-44, which in 2040 will be the group which moves to a group of 65 or more. If we add to this the age group 45-49 years, which is the third strongest in terms of economically active population according to age groups in our table, we assume that after 2040 more than 700,000 economically active population will retire from work (Statistics Office). , 2019). The above research shows us the fact that Slovakia has taken the direction of an aging population. This statement is confirmed by the very fact that we are among the EU countries with the fastest aging population (second place among EU countries).

The important fact that we are among the EU countries with the fastest aging population (second place among EU countries) is a fact that unequivocally confirms the need to forecast additional labor needs by 2040. It is precisely labor replacement that makes up the bulk of labor market needs already in medium term. This

is compensation caused by the departure of employees from the labor market, especially into old-age retirement. It is assumed that strong population years - persons born in the period 1953-1958 will form a substantial part of people leaving the labor market by 2024. We can assume that in 2040 the number will double, perhaps even triple (MPSVR, 2019). Based on these findings, we can assume that Slovakia expects a significant decline in the workforce in the horizon of twenty years, which is also confirmed by Páleník et al. (2014) when they claim that „In present, Slovakia is still one of the younger populations in the European area, the initial situation in the form of the nature of the age structure predisposes it to dynamic aging in the next 10-15 years.“.

4 Active labor market policies and the impacts of selected factors

Since 2011, the implementation of the National Project for the Development of the Labor Market in the Slovak Republic has led to a new era of monitoring the needs of the labor market, which were clearly defined and quantified for the first time. Since then, the

comprehensive apparatus for monitoring the needs of the labor market has been regularly updated, innovated and expanded due to the wide-ranging use in the societal context. The first indicator developed in 2013 was the additional need for employees, which expressed the future number of job opportunities that will not be satisfied from the currently employed persons. It consisted of an expansion demand expressing the difference between the number of jobs created and lost and a replacement demand expressing the number of vacancies due to the exit of employees from the labor market. The additional need of employees in companies, the additional need of employees in natural persons - entrepreneurs and the society-wide need of natural persons - entrepreneurs together form an additional need of manpower, which is a final and comprehensive view of additional demand for work in the Slovak Republic. Based on these facts and visions, the Ministry of Labor, Social Affairs and Family, together with representatives of employers and employees, agreed to develop a strategy that will respond to the arrival of these changes in the labor market.

Another document from the workshop of the Government of the Slovak Republic including demographic development and also including the labor market, but without their interconnection is the document National Program of Active Aging for 2014-2020. With this document, Slovakia addresses the issue of active aging as a political priority in all its complexity. „It is a new and comprehensive programming document aimed at promoting the human rights of older people through their activation through public support policies. It is not just about employment policies and the employability of older people (what is the primary focus of the Active Aging Strategy), but also on policies to promote their lifelong learning, civic and social activities outside the formal labor market, to promote their independence, dignity, economic and social security, including protection against ill-treatment in all spheres of society and relations“ (National Program for Active Aging for years 2014 – 2020, www.employment.gov.sk)

From the European workshop, this issue is addressed in a document entitled - Green Paper: „Facing demographic change in Europe: a new solidarity between the generations“, this

document is a response to fundamental changes in demographic developments in Europe (European Commission, 2005). In this document, the European Commission declares that it is aware of the consequences of this development and that it considers population aging and migration to be very serious problems today. It also outlines possible solutions for increasing the fertility and integration of migrants, which includes the term new intergenerational solidarity (social integration of young people, global approach to the productive population, active aging, solidarity with the very old population). Regional and world rates and percentages are weighted averages of countries for which data are available; regional averages are displayed when data are available for at least three quarters of the region's population. According to this criterion for comparison with the Slovak Republic, Japan ranks first with the highest life expectancy in the world (84 years), while Burkina Faso is at the bottom of the list (60 years), (Pison, G. 2009).

Two other components are needed to achieve the goal of social equality: an individual attempt to improve one's life, for example by changing jobs, migrating or adjusting reproductive behavior; or collective attempts through social movements. Historical demography, comparative historical life-cycle studies and the history of migration have contributed to our understanding of the ways in which people have tried and are still trying to improve their situation and climb the social ladder, especially in Europe. (Lucassen, L. 2016).

Conclusion

It follows from the above that when looking at the demographic structures of the unemployed population in the Slovak Republic, it is clear that demographic development will not significantly affect the solution of the problem of long-term unemployment as one of the most significant problems in the labor market in the Slovak Republic. Demographic development in Slovakia is evolving towards an aging population. This statement is not the most positive, and if we add to it the fact that the economically active population will, over time, move radically into the sphere of post-productive age, the question

arises before us how to deal with this situation. This phenomenon will affect many aspects of social as well as economic life in Slovakia in the future. Examining the demographic development until 2060, we found that this year, due to the aging population in Slovakia, approximately 21% of the labor force will be missing in the labor market. Although the government has taken several measures (programs) to mitigate the impact of the problem, it is uncertain today whether these will be effective and sufficient to address the issue in the future. In the near future, therefore, it will certainly be important to monitor developments in this area and address the issue as seriously as possible. Solutions in the form of employing older people, raising the retirement age, but also migrating in the labor market, or even the emerging phenomenon of industrial robotisation and the advent of IT, can, under certain circumstances, have a broad spectrum impact on demographic developments. However, these are questions and topics for other research. Estimates threatening overpopulation have not been confirmed, quite the opposite. The world's population is in a situation where fewer and fewer countries will have population growth (Divinsky, B. 2004). The Slovak Republic is currently facing an aging population. Because aging is, to a certain extent, irreversible, society must prepare to operate in changed conditions. This is a situation with which humanity has no experience so far, as human society has never experienced aging to the present extent in the past. The functioning of society needs to be adapted to the increasing number and proportion of older people. The aging of the population has serious economic, social and political consequences. The high cost of caring for and securing the elderly, on the one hand, and the lower number of the productive population, on the other, will increase the pressure on public finances.

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REVIEW OF SCIENTIFIC MONOGRAPH: EU AND SLOVAK CLUSTER POLICIES INTERACTIONS WITHIN THE REGIONAL DEVELOPMENT ENHANCEMENT (PERSPECTIVES, CHALLENGES, ISSUES)

Eva Koišová

KORDOŠ, Marcel: EU AND SLOVAK CLUSTER POLICIES INTERACTIONS WITHIN THE REGIONAL DEVELOPMENT ENHANCEMENT (PERSPECTIVES, CHALLENGES, ISSUES), Centre of Sociological Research, Szczecin, 2019. 209 p. ISBN: 978-83-952923-3-0. DOI: 10.14254/978-83-952923-3-0/2019

Clusters are an important element in regional economy that contributes to the development of regions and their competitiveness. From a regional policy perspective, they have become a driving force for social and economic strategies of regional development. Author of monograph Kordoš, M. (2019) "EU and Slovak Cluster Policies Interactions within the Regional Development Enhancement (Perspectives, Challenges, Issues)" based on EU cluster and regional policies is trying to find out how these policies are implemented in regional development in Slovak Republic and whether they contribute to increasing the competitiveness and social and economic development of Slovak regions.

According to the author, the cluster is an element of regional economy, it is the result of development and resources in region resulting from the close proximity of the site and intensive cooperation. Author draws attention to the fact that companies that are clustered can, on one hand, compete but on the other hand they can cooperate. Then, the success of the cluster depends mainly on its links with the region, resources, investment activities, which are stimulated through various projects and legislation. Cooperation and competition are potential tools for increasing the value of a region, as a combination of knowledge, skills, knowledge and know-how of several separate entities is used, thus achieving the desired synergy effect. One of the aims of the monograph was to find out whether clusters could be implemented in regional development strategy as tools that could help to overcome regional differences and ensure the social and

economic development of entire national economy.

The monograph is elaborated in the extent of 209 pages and divided into 3 main chapters. The chapters are processed in a logical sequence and are characterized by content coherence. The textual parts of the monograph are supplemented with 12 pictures and 11 tables, which illustrate the text of the monograph and support the author's analyzes and statements. The high level of the monograph is underlined by the quality and current literary sources being used by the author. His work was based on up to 222 foreign and domestic articles, publications, reports from the European Commission, the European Central Bank and other institutions. The work is published in English language.

The structure of the publication is logical. The first theoretical chapter analyzes and defines the terms clustering and cluster. It deals with its typology in the context of regional policy. Within this chapter, the author introduces and defines regional policy, its tools and implementation mechanism. He highlights that political approaches, typology, clustering, as well as symptoms, must be analyzed and defined in terms of cluster characteristics. Within the second chapter, there is a discussion on how EU cluster policy is implemented in EU regional programs by assessing their synergies and parallels. Author also discusses the roles that this policy plays in ensuring sustainable economic growth in European Communities and in increasing the EU competitiveness in international economic environment. The third chapter presents the issue of Slovak cluster policy and its implementation in Slovak cluster environment. According to the author, the key

issue is the way in which clusters contribute to increasing Slovakia's regional competitiveness. In conclusion, we can find a proposal to support the emerging of Slovak clusters with an emphasis on mutual synergies and clustering within regional competitiveness enhancement.

According to the author, when implementing and enforcing the cluster policy, it is important to realize that policy interventions can play an important role in supporting clusters, but should be limited to clusters with high and innovative potential. It is necessary to build on the symbiosis of cluster and regional policies of the EU and Slovakia, which lead to cluster activity processes within the Slovak regions, where clusters can act as one of the main regional instruments for increasing the competitiveness of regions. It is necessary to take into account the fact that competitiveness and innovation are also influenced by other

factors contained in the competitiveness pillars. At the end of the work, the author assumes that Slovak economy is built on the basis of production factors and is not enough driven by innovation yet.

The scientific monograph is a welcoming current scientific publication covering the latest trends in the field of clusters and cluster policy.

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PSYCHOLOGICAL FREEDOM TO FEAR WHEN DEFENDING A THESIS IN PORT TECHNOLOGY MANAGEMENT

Saulius LILEIKIS

Abstract

There are situations when employees of port companies studying at the maritime academy write good-quality theses but, as undergraduates, they are too afraid and worried when preparing and defending their theses. Therefore, the persons involved in the preparation of the thesis usually advise the undergraduates using clichés “don’t worry”, “don’t stress”, etc. The advice mentioned is a disservice because they do not explain how not to be worried and not to be stressed. At that time, the persons involved give additional fear to the undergraduates who may be afraid of their natural fear – the fear of defending the thesis. Therefore, their fear multiplies. The support system should be the main academic key to the success of undergraduates. It is important to give them the freedom to be, live and naturally fear, if necessary, because it allows the person to meaningfully experience his/her individual authenticity, wholeness and integrity from the anthropological point of view. This experience can reduce his/her fear.

Key words

Undergraduates, theses, fear, freedom, seaport

JEL Classification: H00, H53, E26.

Introduction

Seaport companies are characterized by intensive technological activities of cargo handling, warehousing, ship agency, forwarding, etc. A person feels the call to work in a port company and goes there to be hired. Vocational training for work in the port is held at the maritime academy, where students study and finally defend their theses. Natural stress, fear, anxiety and excitement characterizes work in the port and the defense of a thesis – this is a test-phobia.

Mental phenomena in society are interpreted differently, especially because of the difference between popular and scientific psychology.

Popular psychology is based on things such as:

- Primitive pragmatism and social cliché of the approach to the person’s behavior and traditional folk sayings and advice;
- Ignorance of the specific direction of psychology when making decisions;
- Ignorance of anthropological laws of personality, and of the principles of the person’s integrity, expression and development.

The representatives of scientific psychology do as follows:

- Carefully assess mental phenomena and consistently take into account the specific

direction of psychology in accordance with scientific epistemology;

- Do not follow social clichés and do not give any advice;
- Know the anthropological laws of personality, and the principles of integrity, expression and development of personality, which are based on theoretical and empirical research.

There are situations when employees of port companies studying at the maritime academy write good-quality theses but, as undergraduates, they are too afraid and worried when preparing and defending their theses. Therefore, the persons involved in the preparation of the thesis usually advise the undergraduates using clichés, for example, “don’t worry”, “don’t stress”, etc. Inadvertently, the advice mentioned is a disservice because they do not explain how not to be worried and not to be stressed. At that time, the persons involved give additional fear to the undergraduates who may be afraid of their natural fear – the fear of defending the thesis. Therefore, their fear multiplies.

Generally, this is a very sensitive area in people’s relationships with themselves. The mentioned advice can reduce the undergraduate’s self-esteem and self-confidence because he/she starts to think, for example: “If I am afraid of defending the thesis, is there something wrong with me?” Additional and

unnecessary psycho-emotional experiences begin to occur. The undergraduate's natural fear increases instead of being reduced, allowing him/her to experience his/her natural fear and encouraging him/her to learn, i.e. recognize this fear, perceive its causes and look for ways to cope with it if its level is too high.

Sometimes it is necessary to learn to live with fear, for example, there is a saying in medicine: "Make friends with your disease".

Literature overview

If the undergraduate is advised to deny his/her fear, he/she is encouraged to deny his/her psycho-emotional state as an integral part of his/her personality. However, it is appropriate to confirm the undergraduate's personality by strengthening him/her as a *human factor*, because the quality of the activity mainly depends on this factor. Self-positioning of the undergraduate in the process of preparing the thesis must be socially supported at a holistic level, including all the powers of his/her personality, i.e. physical, psychological and spiritual ones from the anthropological point of view. This is relevant, even if some pathologies appear. They are not necessarily harmful, according to studies (Alloy, Abramson, 1979; Ghaemi, 2014), and have to be recognized.

Nevertheless, some pathologies in extreme conditions can be very helpful, so that a person could act purposefully, insightfully and decisively. The defense of a thesis is characterized by natural fear due to extreme conditions, which include control, unexpected questions and criticism. Human fear and sensitivity should not be considered as unacceptable because its meanings depend on a particular situation and personal approach (Petronienė, 2018).

The behavior of advisors mentioned shows a psychological defense mechanism called *projection*, i.e. they project their fear experience onto the undergraduates, by advising them to give up their fear. The people in the marine industry, i.e. on board and in port companies, are characterized by frequent psychological defense mechanisms, when taking into account the investigations undertaken (Лебедев, 2001; Jonutyte, 2007; Malinauskienė, Jonutyte, 2008; Lileikis, 2018).

We should consider both – management of excessive fear, and lack of fear as investigative issues:

- The management of excessive fear is a mass phenomenon in science worldwide. In addition, empirical research by the author of this article shows that fear is a very obvious problem in the marine industry, especially when employees are young adults (Lileikis, 2018);
- The lack of fear as an issue and part of professional activity and of psychological self-management is studied, but not as much and not systematically (Marks, 1987; Becker, 1999; Kahn, Doctor, 2000; Лебедев, 2001; Saul, 2001; Clarkson, 2005; Ghaemi, 2014; Jeffers, 2018; Petronienė, 2018). The lack of fear is a task of scientific psychology because it is not popular or directly clear and it requires professionalism, methodical consistency, insight, a discursive approach and scientific communication.

It is appropriate to note that, thanks to fear, a human being is more careful, vigilant, attentive, safe and active (Clarkson, 2005). Fear is closely related to cognitive dissonance, which is the basis for creativity (Sacks, 2000).

Fear, especially excitement, includes short-term psycho-emotional stress, which is a very important gift of nature because it helps the person in an extreme situation to pay attention, decide quickly and act creatively (Лебедев, 2001).

It was found that employees of the marine industry, who are characterized by lower self-esteem, usually compensate for this with excessive self-confidence. This means a lack of natural fear, which is a necessary basis for care and security, in accordance with the maritime principle – *safety first*.

Before becoming employees of the marine industry or upgrading their skills, they study at the maritime academy and finally defend their theses. When defending the theses, the undergraduates *inter alia* must demonstrate their ability of psychological self-management as a mental self-regulation. Therefore, it is necessary to help them professionally to keep their self-esteem and personal integrity associated with

mental health and ensure the conditions for their freedom of expression.

It is appropriate to analyze this specific issue of the psychology of management and self-management, taking into account the psychological projection, nature of criticism and leadership in regard to a thesis in port technology management. At the levels mentioned, this issue is almost unexplored.

Goal and Methodology

The goal of the research is to conduct a theoretical heuristic investigation of giving undergraduates the freedom to fear as a psychological opportunity for them to speak fearlessly when defending their theses in port technology management.

The object is the psychological and anthropological discourse of fear in the context of defending a thesis in port technology management.

The subject is the freedom of expression of the undergraduate's personality in terms of his/her authenticity, wholeness and integrity.

The objectives are as follows:

1. Revelation of the manipulative nature of the thesis management in accordance with the psychological projection.
2. Characterization of the nature of the thesis criticism.
3. Presentation of the importance of leadership managing fear.

The type is theoretically descriptive. The main *method* is heuristic, anthropological and psychological analysis.

The basic *methodological principles* are as follows:

- Existentialism and humanism, which emphasizes the freedom of personality and his/her noble activities, including psychological self-management; despite many stressful situations that arise when studying at the maritime academy and/or working in the seaport, a skilled employee is able to base his/her life on the values of personal freedom, authenticity, wholeness and integrity and perceive the meaning and apply the skills of psychological self-management;

- Gestalt-psychology is based on the wholeness and integrity of personality, allowing the person to experience natural feelings and emotions, understand himself/herself and see the meaning of not only positive emotional experiences and characteristics but also negative ones for the individual development of a unique personality.

1. Management of a thesis and psychological projection

Undergraduates defend their theses in port technology management in front of a panel composed of representatives of port companies. Together with supervisors and reviewers and other persons of the maritime academy, they feel professional responsibility, which psychologically affects the undergraduates. A tense psychological climate leads to a natural psycho-emotional stress and natural fear of the undergraduates and other participants in terms of defending the thesis. The undergraduates usually experience psychological defense mechanisms, especially regression, repression and avoidance.

Some persons involved are characterized by the projection mechanism when they advise the undergraduates not to be afraid because the persons involved are themselves afraid and they are semi-consciously projecting their fear onto others.

Human anthropology, scientific psychology and leadership is characterized by flexibility, reduced control, adequate benevolence and confidence in order to achieve goals. The issue that we focus on arises in a relationship between popular and scientific psychology of management, as well as of self-management, when advisers, who advise not to be afraid, are quasi-benevolent, but their activity is based on traditional clichés of popular psychology.

The psychological defense mechanisms work semi-consciously. These mechanisms are natural and important because they help survive. However, at the same time they disrupt smooth collaboration and the person's self-esteem. Therefore, it is necessary, as much as possible, to use psychological self-management resisting the defense mechanisms in stressful situations that are natural when working in the seaport or defending a thesis at the maritime academy.

The projection mechanism can manifest itself in the marine industry and in some academic situations. Usually, a weak and inadequately responsible person, for example, a boss may be inclined to apply excessive control to his/her subordinates, especially under extreme conditions. Therefore, he/she semi-consciously projects his/her weakness onto others.

The boss of an organization, who enriches his/her personality, does not allow himself/herself to accuse others (even if others are really guilty) or deny the existential and individual self-concept of others. He/she applies leadership, creates a scientifically-based adequate relationship with his/her subordinates and solves problems together with them in terms of a positive psychological climate, which is characterized by natural creative tension in the free expression of personality but not by his/her excessive fear.

In general, we can consider projection as defensive and semi-conscious manipulation. Usually, the strategy of manipulation consists of aspiration to increase a sense of guilt of the subordinates by convincing the people that they are guilty because of all their problems and misfortunes due to a lack of their intellect, talent and efforts. Thus, the individuals experience remorse and guilt, instead of being methodically resisting. Finally, they feel depressed and limited (Chomsky, 2002). In case of defending a thesis, an undergraduate can feel guilty, because he/she is afraid and has not been taught how not to be afraid and how to recognize the extent of fear in order to act effectively.

Therefore, the activity of preparing and defending the thesis should not be manipulative. Benevolence of the people involved in managing the thesis should be justified. Giving the undergraduates freedom is more important than restricting their expression by semi-consciously applying projection as a psychological defense mechanism. The undergraduates should be given real freedom and feel free, i.e. their feeling that the people involved believe in them, helps them very much at the initial ontological level to freely express themselves and creatively resist criticism regarding their theses. The feeling of freedom is the ontological basis for creative fear management.

Nevertheless, when undergraduates defend their theses, this means the following – they are

on their own, nobody else can help them and nobody else can do their work for them.

The undergraduates can rely only on the competency they have acquired, i.e. professional, intellectual and especially psychological skills. This competency is characterized by the tools they have acquired in educational processes, thanks to their authorities who contributed to their free expression.

2. Nature of thesis criticism

If undergraduates get freedom, i.e. freedom of personal expression, freedom of self-motivation, freedom of creativity, freedom to experience natural emotions (including fear), an opportunity opens for them up to be freely interested in criticism and know it and its nature. Advisers usually say: “Don’t worry, everything will be fine”. Okay, but what about criticism? It is a mandatory part of the defense of a thesis, and it is important that undergraduates are ready for it.

Therefore, it is inappropriate to avoid the natural fear and free knowledge of criticism. It is necessary to enable the undergraduates to be free, fear naturally and freely, if necessary, be prepared to defend their theses and defend them in an original and creative way. A person is not and should not be perfect or insensitive. However, it is appropriate to be well prepared. A hero is different from a coward. The coward does not dare to do something because of fear. The hero is afraid but does it anyway. Being allowed to express himself/herself freely, an undergraduate is more self-confident and can freely generate his/her ideas from the subconscious. What has been learned will be remembered in one way or another, especially if undergraduates like and are interested in what they have studied.

In order to adequately accept criticism, it is necessary to teach the students to know its nature and develop their valuable attitude towards criticism, for example, a positive, as well as comprehensive approach to criticism and that studies, employment and life in general need criticism. Students should be aware of the nature of criticism, because it is considered in scientific psychology as a factor associated with the fear of the “I” of the person. Thus, this is an area of his/her particular sensitivity.

Undergraduates should perceive the ontological nature of criticism, where does it come from, why it is so necessary, what types of criticism are there, and how to respond to it in an appropriate way. All this helps to understand that not only criticism itself but also its fear is useful, since it promotes self-criticism and purposeful academic and professional activity (Paulauskas, 1999). The nature of enisophobia, which is a fear of criticism, has been revealed in psychological theories (Hubbard, 1999; Weisinger, 2000; Clarkson, 2005, etc.).

The ontological nature of criticism is characterized by the fact that there is no other way how to check the competency acquired. A colloquium, exam and defense of a thesis has so far been invented as the forms of educational criticism.

On the one hand, human life in a society partially limits subjectivity through objectivity. A person must be objectively and professionally useful to the society, and the examination of his/her professional identity is a very natural process. Furthermore, there is a law – the more a person has reached in his/her life, the more he/she has been criticized. Criticism is a sign that a person and his/her activities or ideas are the object of someone's attention (Clarkson, 2005). This is also some kind of recognition of a person, although it can be a jealous one, because losers are very dissatisfied with the success of other people.

On the other hand, a person can avoid criticism at all, if he/she says nothing and does nothing in the public sphere, because he/she chooses to be nobody in the society (Hubbard, 1999). This extreme is unacceptable for a person as a healthy member of the society due to his/her self-esteem. Nevertheless, the lack of criticism in an organization can mean that the boss ignores his/her subordinate and does not believe in his/her ability to act professionally and progress.

It is necessary to realize that the panel for the defense of a thesis in port technology management consists of representatives of port companies who are naturally interested in the thesis and have some questions. They have no purpose to harm, but their right and duty is to understand the thesis and evaluate it according to their own understanding. It is necessary to discuss in order to evaluate adequately. It would also be impossible to answer a question that was

not asked at the time when defending the thesis. Undergraduates must demonstrate their understanding of their theses. All this requires questions and critical comments. The undergraduates can hope for a higher grade only by answering the questions and adequately responding to the critical comments.

Furthermore, the reviewer of a thesis is committed to criticize the text of the thesis. His/her mandatory activity is to find some inconsistencies, as well as dubious places in the text or places to be corrected, and ask questions.

Criticism in an organization is defined as help, when the boss helps his/her subordinate, so that he/she can regulate himself/herself independently in his/her professional activity from the point of view of humanistic psychology. Personal, nihilistic and destructive criticism is unacceptable. Constructive and business criticism is acceptable because it does not offend the employee and helps him/her to understand work issues. The types of criticism mentioned must be differentiated and identified. The employee should be well oriented how to react in situations due to criticism. His/her appropriate response is based on flexibility, humor and understanding of the perspective of his/her reputation and long-term cooperation with his/her boss and colleagues.

Frequent and destructive and personal criticism usually characterizes an expression of people who are unhappy in their lives. We can understand them and their psychological situation. Their psychological defense mechanism works by expressing socially unacceptable criticism. They do not directly want to offend others, but firstly they psychologically compensate for their negative psycho-emotional state, applying excessive control over others and rudeness.

Moreover, elementary emotionality of a person should not be regarded as criticism. A raised voice, while defending a thesis, can be a natural reaction of the panel member. A representative of a port company reacts very naturally, when he/she hears a strange idea of an undergraduate. It is important for students to learn to tolerate this form of reaction. A representative of a port company responds loudly not in bad faith but because he/she is interested in the topic being discussed, is limited by his/her personality and relies on his/her

cognitive, academic and professional life experience. Therefore, he/she reacts individually. Representatives of port companies do not want to insult students, but they naturally ask questions, say something louder or laugh spontaneously. This is a natural anthropology that an undergraduate, who has entered the 3rd decade of his/her life, should understand.

Thus, it is very useful to participate in the defense of a thesis at the department level. Nevertheless, it is helpful to rehearse the defense of a thesis in front of a rigorous critic, for example, the supervisor or another person, who would spontaneously ask the questions in accordance with the contents of the thesis.

All this requires the freedom of personal expression and activity of an undergraduate, when he/she defends his/her thesis. When a person is free, he/she can be himself/herself and naturally excited, if he/she is more sensitive. Natural excitement can help successfully defend a thesis, for example, like the excitement of a job interview helps a person to become hired. If a person is excited, he/she seeks, is careful and not sluggish or without enthusiasm and energy (Clarkson, 2005). Being sensitive, the students of port technology management are more responsible and have the intended result in mind. Such undergraduates work well during their professional practice. The mentors and employers notice that and sometimes offer them to take a position in the port company where they have their professional practice.

3. Leadership of the maritime academy and marine industry

At the level of aspiration, since 2010, the marine industry has been characterized by leadership as a politically recognized commitment worldwide, issued of the International Maritime Organization. Modern science and business forums reveal leadership, which is characterized by the support of the boss in business processes, the promotion of work motivation and perseverance, taking into account the individual experience of employees. At present, almost all business areas are politically introducing leadership and creating an organizational culture on its basis.

The main purpose of leadership is the principle that the self-leadership of employees should prevail in the professional activity with

less control over them. Self-leadership must be based on freedom and professional identity in order to achieve a higher level of organizational culture, which does not require much control in terms of the 4th industrial revolution and the importance of high technology in the activities of the port and the entire marine industry.

Thus, on the one hand, the marine business professionals, who are free and creative people, unlimited by various advisers, should be trained in terms of wholeness, expression and development of their personality. These professionals should not have a narrow competency, but a broad profile, i.e. personal, social and specific skills.

On the other hand, for nearly 80 years, gestalt-psychology has emphasized, *inter alia*, the integrity of personality, as well as the wholeness of the person's powers, processes, states and characteristics, and their special significance for his/her physiological, psychological and social expression and development.

The defense of a thesis in the context of the marine business requires an appropriate approach to the personality, whose academic career in terms of the port professional is considered. That is the freedom, which bases responsibility and does not mean to do everything. However, this freedom is the ontological basis for inspiring a person for his/her creative expression, even if it is associated with creative stress or fears. A person is alive and dynamic, and as long as his/her fears do not harm him/her, it should not be seen as a problem. If fears harm the person, he/she should not deny them but learn to recognize them, understand their genetic, psycho-social and cultural causes, as it was mentioned.

We need a positive social correction that would affirm the person and not divide him/her, in the case of preparing and defending a thesis in the field of port technology management. The persons involved should develop their leadership and carefully communicate with undergraduates, because they are not things. A person is brought up by his/her parents, teachers in kindergarten, at school and then at the academy, and later by managers in the workplace. The basic social correction should be expressed as support.

Therefore, the supportive leadership in the marine industry is considered because it is defined as a phenomenon, when the boss interacts with his/her subordinates, taking into account their experience. This is also relevant to the academic community.

All persons involved should strengthen the individuality of an undergraduate, instead of denying it while preparing a thesis. It is noticed, that the *human factor* is often criticized, and people would like to eliminate it. However, this factor must be strengthened, because it is the personality, as well as the individuality of the employee or student, i.e. his/her sensory and motion characteristics and abilities, which need to be developed, so that they are able to ensure the academic and professional expression of the person and the quality of his/her activity.

Popular psychology should be replaced by a scientific one, which is more sensitive and insightful and not misled by clichés, and the process of preparing and defending a thesis could be more sensitively, insightfully and responsibly managed, taking into account its frequent defensive nature. All persons involved, including students, especially those who investigate the human resource management of a port company, should learn that.

The support system should be the main academic key to the success of undergraduates. It is important to give them the freedom to be, live and naturally fear, if necessary, because it allows the person to meaningfully experience his/her individual authenticity, wholeness and integrity from the anthropological point of view. This experience automatically reduces his/her fear. A free undergraduate chooses meaningful activities that are interesting to him/her, and he/she is calmer and less worrisome. A person is happy about his/her inner integrity and external social support in the form of supportive leadership.

If an undergraduate is confused and afraid more than it is required to successfully defend a thesis, he/she cannot express as he/she could. If the support system of the maritime academy works well, an undergraduate focuses more on activities than on his/her fear, can adequately know his/her fear in the totality of his/her personal powers, is not too afraid of criticism, does not feel like a victim of circumstances and can enjoy his/her free academic development and especially the originality of his/her purposeful

defense speech. It is also appropriate to take into account the young age of students, their inexperience and possible dependence on mobile phones, from the psychoeducational point of view.

Thus, the application of supportive leadership is one of the most important factors reducing a person's fear and gaining his/her self-confidence in terms of organizational culture, for example, when socializing in the port company and the maritime academy. Supportive leadership is useful because this activity is based on mutual subsidiarity and recognizes personal freedom and experience of an employee or student, and provides freedom not only benevolently but also professionally and develops a creative approach, personal activity and professional self-esteem thanks to the purposeful freedom.

The increased self-esteem of students or employees and the development of their positive attitudes towards themselves and the environment can naturally reduce their fear and increase their productivity (Clarkson, 2005).

Conclusion

Giving undergraduates the freedom to fear is a psychological opportunity for them to speak fearlessly when defending their theses in port technology management. The manipulative nature of the thesis management is based on the psychological projection. Giving the undergraduates freedom is more important than restricting their expression. Their feeling that the people involved believe in them, helps them very much at the initial ontological level to freely express themselves and creatively resist criticism regarding their theses. The feeling of freedom is the ontological basis for creative fear management. When undergraduates defend their theses, they are on their own, nobody else can help them and do their work for them. The undergraduates can rely only on the competency they have acquired, i.e. professional, intellectual and especially psychological skills. This competency is characterized by the tools they have acquired in educational processes, thanks to their authorities who contributed to their free expression. In order to adequately accept criticism, it is necessary to teach the students to know its nature and develop their valuable attitude towards criticism. Studies, employment and life in general needs criticism, if students are

committed to the personal development and their professional life of full value in a society. Supportive leadership is very significant for the management of fear. The support system should be the main academic key to the success of undergraduates. It is important to give them the freedom to be, live and naturally fear, if necessary, because it allows the person to meaningfully experience his/her individual authenticity, wholeness and integrity from the anthropological point of view. This experience automatically reduces his/her fear. A free undergraduate chooses meaningful activities that are interesting to him/her, and he/she is calmer and less worrisome.

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COMPARISON OF NEURAL NETWORKS AND REGRESSION TIME SERIES IN ESTIMATING THE DEVELOPMENT OF THE AFTERNOON PRICE OF GOLD ON THE NEW YORK STOCK EXCHANGE

Veronika MACHOVÁ, Tomáš KRULICKÝ, Jakub HORÁK

Abstract

Gold is a very important commodity in today's global world. Therefore, the price of gold and its development is a fundamental question for many researchers. This paper aims to perform a regression analysis of the development of the afternoon price of gold on the New York Stock exchange using artificial neural networks and linear regression. Data from a period longer than ten years are used. This is a total of 2,578 pieces of data. We use linear regression with the linear, exponential, polynomial, logarithmic, numbers of weighted distances, multiple negative-exponential extermination and spline function. Multilayer perceptron neural networks and neural networks of the radial basis function are generated. A total of 1,000 neural structures are generated, 5 of those with the best characteristics are retained. Regarding simple linear regression, the curve obtained via the spline function mirrors the development of the gold price best. However, better results are achieved by all 5 preserved neural networks.

Key words

artificial neural networks, regression time series, prediction, gold price, commodity, future price development

JEL Classification: C22, C45, C53

Introduction

Gold is a chemical element, the atomic number of which is 79 and the mark of which is Au (Latin name Aurum). It is located in the rocks or in the floodplains of many rivers. The color of gold is bright yellow. Gold features include density, softness and shine. Gold is highly ductile and its content is measured in carats. Gold is traded in Troy ounces (Ferry, 2016). Gold has several functions in the world economy as well. It is used in industry and can be converted into jewelry. In the current economic sphere, it works as security against inflation and a safe haven during crises (Ghazali, Lean and Bahari, 2013).

Gold also has other distinctive features. Its supply become accumulated over the years, and its worldwide annual physical output can be as high as 2% of its total supply, so unlike other commodities, its annual output does not necessarily influence its price too much (Reboredo and Ugolini, 2017; Vochozka et al., 2019). In addition, unlike the prices of shares and bonds, the price of gold depends on future supply and demand and is therefore promising (Aye et al., 2015). The conditions of gold market can also affect the balance between the prices of silver and gold where countries are specified by

the comparing of current gold price with historical prices. Competitive coefficients appear in particular on the market with high gold prices, suggesting a new long-term balance (Zhu, Peng and You, 2016).

Literature overview

According to Hauptfleisch, Putninš and Lucey (2016), the gold price is influenced by several factors, which are namely the following: changes within the structure and liquidity of markets and macroeconomic announcements. On the base of these findings the authors have discovered that the Futures Market in New York plays the most important role in setting the prices of gold. This center is known as the main gold trading center. Gangopadhyay, Jangir and Sensarma (2016) argue that the factors that affect the gold price include namely inflation, exchange rates, bond prices, market performance, seasonality, revenues, oil prices, and business cycles.

Artificial neural networks, among other tools, can also be used for the purpose of determining, tracking, and predicting the prices of gold. According to Sánchez and Melina (2015), artificial neural networks are currently widely used and can be potentially used in many areas. The analysis of the time series, which this paper

deals with, is an area where neural networks are really widely in use.

Neural networks try to capture the behavior of time series and predict individual data points in the best possible way (Sheikhan et al., 2013). In order to predict outputs of the systems with high precision and velocity, it is possible to design the models of time series that are based on neural network processes.

Hu and Hwang (2002) argue that for proper work with the time series, it is essential for neural networks to learn the right way. The effectiveness of the proposed time series and the learning process seems to be a very useful tool for predicting a very complex nonlinear time series (Chen, Yang and Dong, 2006). Neural networks are able to analyze complex patterns very quickly and with high precision and are flexible in their own use (Santin, 2008; Vochozka, 2017). They can be used not only to solve time series but also to understand and generate languages, recognition of texts, etc. (Boguslauskas, 2009). The disadvantage of neural networks is their demand for large sample data because a lot of test observations are needed to create such large data, which is very uncomfortable for users (Stehel, Vrbka and Rowland).

Goal and Methodology

The aim of the paper is to perform a regression analysis of the development of the afternoon gold price on the New York Stock Exchange using artificial neural networks and linear regression. Both methods will be subsequently professionally compared in order to select a more appropriate one to predict the future development of the afternoon gold price.

The data needed for the analysis are obtained from the websites of the New York Stock Exchange or the World Bank (World Bank, 2017). There are specifically used the afternoon gold prices, i.e. London Fix Price PM, which occurred between 3 January 2006 and 15 April 2016. This is a total of 2,578 pieces of data. London Fix Price is the key value for determining the gold reference price. It is also often referred to as London Golden Fix or London Fix. This value is usually announced twice a day, which is in the days when gold is being traded. Morning prices are referred to as London Fix AM and are announced at 10:30. Afternoon prizes announced at 15:00 are referred to as London Fix PM. The pricing has been in place since 1919 in cooperation with the five largest traders on the stock market: Scotland-Mocatta, Barclays Capital, Deutsche Bank, HSBC and Société Générale. The London Fix process itself starts by proposing an opening price, which is close to the spot price, by the chair of the committee. The individual members of the Commission then contact their sales departments and decide who will participate in the selling and purchasing of gold bars at a given price and what quantity it will be. The members may slightly adjust the price so that the supply and demand for gold, the process of which involves the five traders mentioned above, were balanced and there was no overlap between demand and supply. The next step is a determination of London Fix. It usually takes 10-20 minutes, the price is determined in US Dollars (USD), British Pounds (GBP) and Euros (EUR) per troy ounce (Oz is equivalent to 31.1034807 grams). The largest traders trade an estimated 20 tons of gold at the determined price. However, there is no official quantity available. The descriptive characteristics of the data set are given in Table 1.

Table 1. Characteristics of the data set

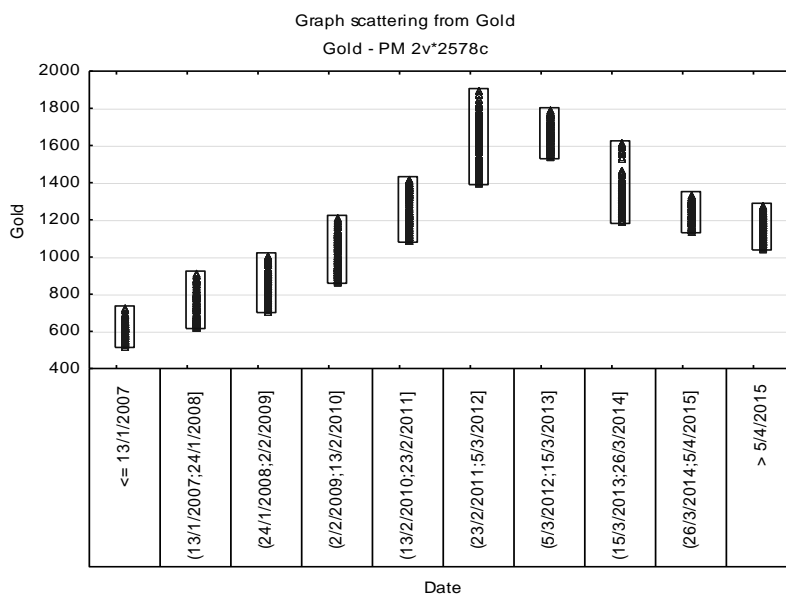
Descriptive Characteristics	Value at USD
Minimal Value	524.75
Maximal Value	1,895.00
Mean Value	1,145.87
Dispersion	119,220.87

Source: Own processing

The difference between the minimum and maximum value was relatively large in the monitored period. This is also due to the world economic crisis and instability in the financial world. For these reasons, the price of gold has grown significantly. It is well known that the price of gold grows in economic crises,

instability, and negative announcements. The average price of gold was nearly USD 1,146 per troy ounce in the monitored period. The price development over time is interesting, of course. Figure 1 therefore provides a view of the dispersion of values in the individual periods of the observed time period.

Fig. 1. Graph of the dispersion of gold price (London Fix PM)



Source: Own processing

The data processing will be done using DELL's version of Statistica, version 12. In the first step, linear regression will be performed, while the following functions will be used:

- linear,
- exponential,

- polynomial,
- logarithmic,
- numbers of weighted distances,
- multiple negative-exponential extermination,
- spline.

The correlation coefficient will be calculated. It corresponds to the dependence of the gold price on time. Furthermore, the level of significance will be at 0.95.

The regression will follow with the help of artificial neural networks. Multilayer Perceptron Networks (MLP) and radial basic functions (RBF) will be generated. The independent variable will be time, the dependent variable will be the price of gold. The time series will be divided into three sets – training (which includes 70% of input data), test (15% of input data) and validation (15% of input data). Based on the training set of data, neural structures will be generated, the test and validation groups will be available to verify the reliability of the identified neural network, or discovered model. The delay of the time series will be set at the value of 1. A total of 1,000 neural structures will be generated, 5 of those with the best characteristics will be retained. The hidden layer of multilayer perceptron networks will contain at least two neurons, but not more than 50. In case of a radial base function, at least 21 neurons, at most 30, will be hidden in the hidden layer. These distribution functions will be in the hidden and output layers:

- identity,

- logistics,
- atanh,
- exponential,
- sinus.

Other settings will be left default – ANS, an automated neural network. In conclusion, the results of linear regression and regression will be compared using neural networks. The comparison will not take place in the form of residue analysis (minimum values, maximum values, dispersion of residues, etc.), but at expert level and experience of the evaluator, economist.

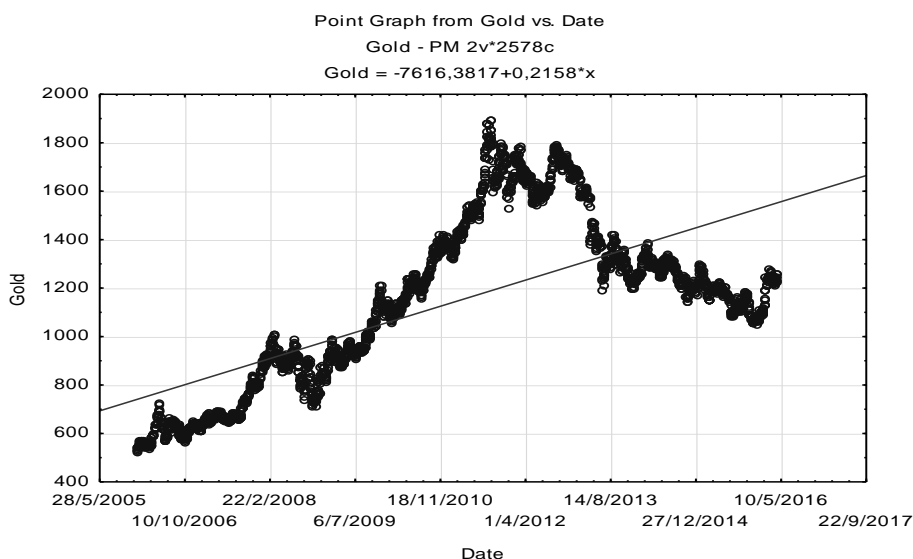
Results and Discussion

As it has been suggested several times, the results will include a part devoted to linear regression and a part dealing with regression using neural networks.

1 Linear regression

The correlation coefficient is set at 0.6781, which means a significant statistical dependence of gold on the development over time. Figure 2 is a scatter plot where the points are fitted with a regression curve, in this case linear. The line parameters are shown in the figure.

Fig. 2. Scatter plot of gold prices fitted with regression curve – linear function



Source: Own processing

Here, the logistic function has a following form:

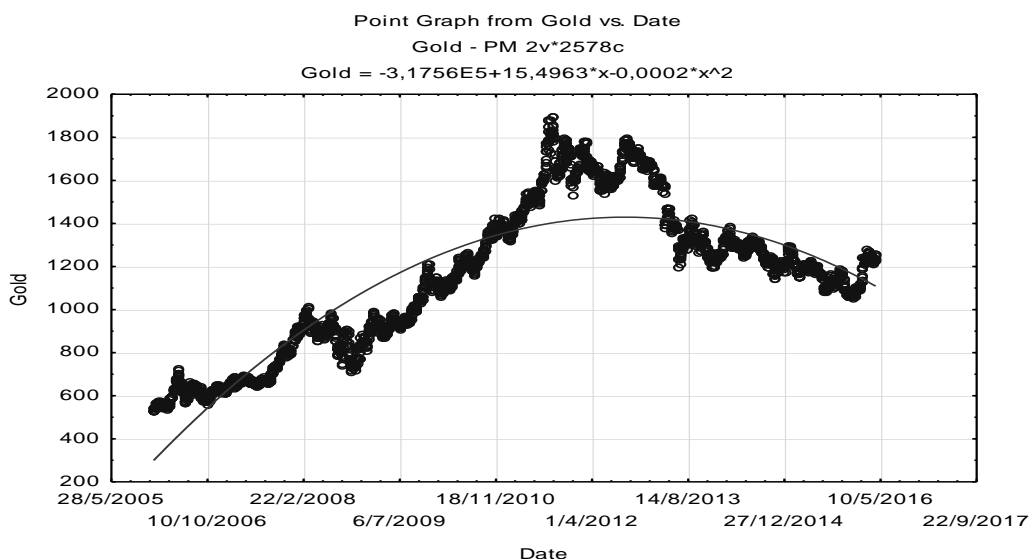
$$y = a + b(x) \quad (1)$$

The actual development of the price of gold is represented by blue points, while the red curve is a regression curve, which is the linear function in

this case. The figure shows that the linear function is not able to capture the development of the price of gold at all. Therefore, for forecasting the prices of gold, the logistic function is totally unsuitable.

Figure 3 refers to the interleaving of a scatter plot by polynomial function.

Fig. 3. Scatter plot fitted with regression curve – polynomial function



Source: Own processing

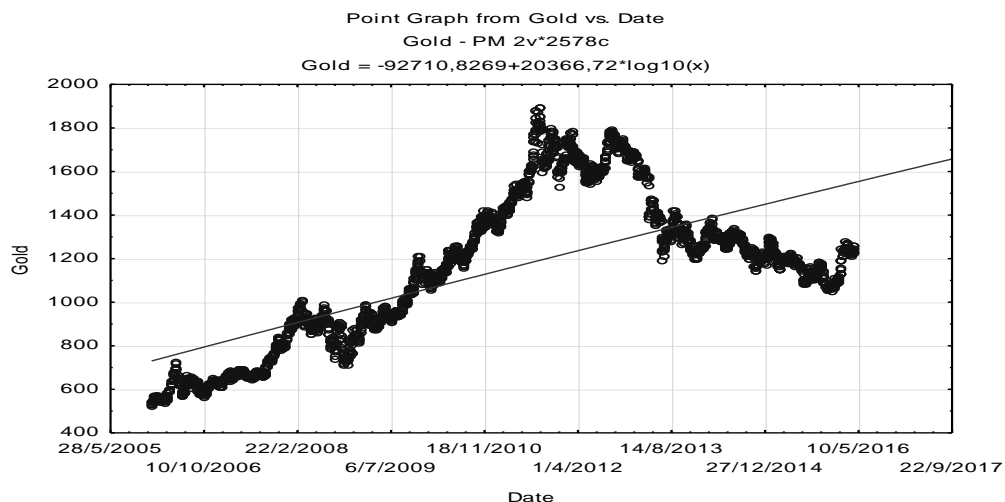
In linear regression, polynomial function represents fitting the values entered by a polynomial, where the coefficients of the polynomial sought are calculated using the method of least squares so that the sum of the square power of the original values deviations from the polynomial obtained are minimal:

$$y = a + b(x) + \dots + nx^n \quad (2)$$

The figure clearly shows that in the case of regression analysis, polynomial function is not able to follow the development of the price of gold in the monitored period.

Figure 4 shows a scatter plot fitted with the logarithmic function.

Fig. 4. Scatter plot fitted with regression curve – logarithmic function



Source: Own processing

In this case, it is a linear regression, where the dataset was fitted by logarithmic function:

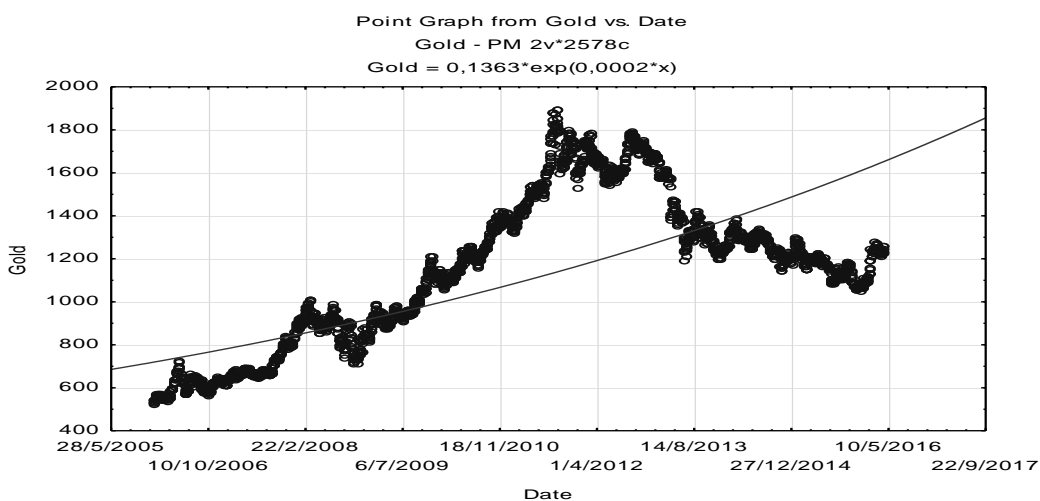
$$y = a + b * \ln(x) \quad (3)$$

The course of the curve fitted with a logarithmic function is very similar to the course of the linear function. It is therefore a completely

inadequate expression of the price of gold development. This function is thus insufficient for forecasting the future development of the price of gold as well.

Next figure 5 shows the scatter plot of the afternoon price of gold fitted with an exponential function.

Fig. 5. Scatter plot fitted with regression curve – an exponential function



Source: Own processing

It is a linear regression where the dataset was fitted with the exponential function in the following form:

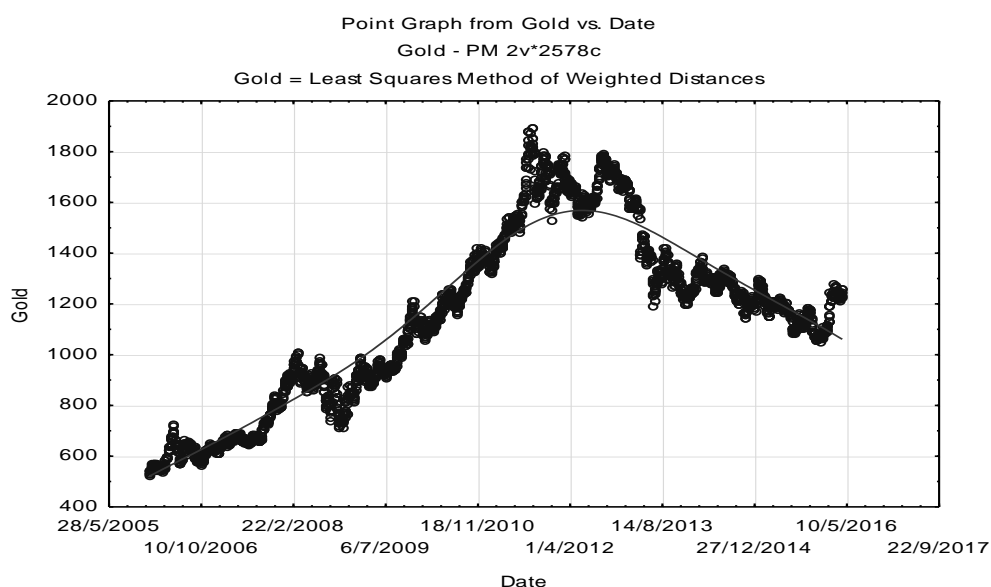
$$y = ab^x \quad (4)$$

However, it is not linear in terms of its parameters but by a suitable transformation, it can be converted into a form that it is linear in its parameters. Even the exponential function cannot follow the development of the price of

gold for the given period of time; this function is thus unsuitable for forecasting the price of gold, and can only be used as a starting point for an iteration algorithm.

Figure 6 offers a London Fix Price PM dotted by a function obtained by the least squares method of weighted distances.

Fig. 6. Scatter plot fitted with a regression curve – a function of the smallest squares of weighted distances



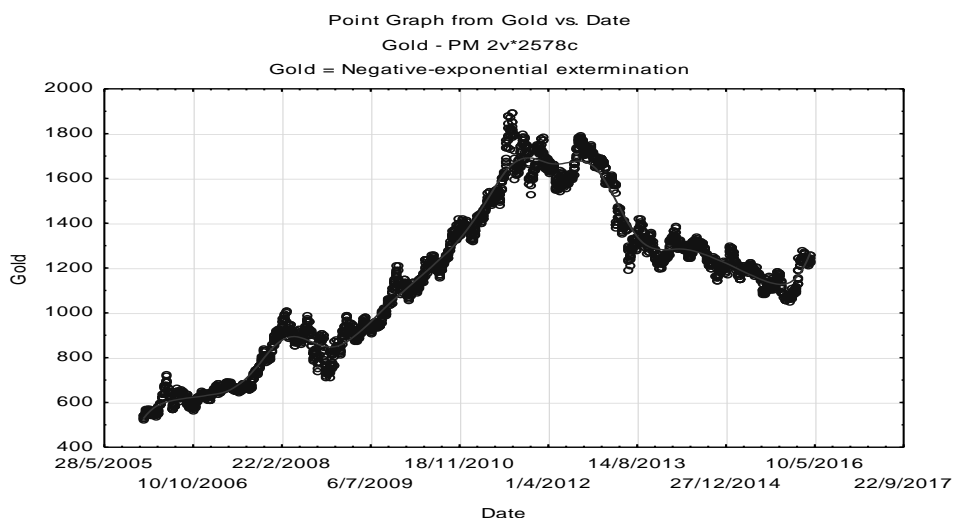
Source: Own processing

The method of least squares provides sufficient estimations of parameters only when all conditions on the data and regression model are met. If these requirements are not met, the results of the method of least squares lose their properties. The method of least squares is generally a mathematical-statistical method for the approximation of solving systems of equations where there are more equations than unknown variables. Least squares mean that the result shall minimize the sum of deviation squares to each equation.

The figure shows that the function of the method of least squares of weighted distances only roughly follows the actual development of the stock price. However, it shows the best results from the curves observed so far. Still, it is not applicable in practice.

The scatter plot fitted with the function obtained by the method of least squares by negative-exponential smoothing is shown in Figure 7.

Fig. 7. A scatter plot fitted with a regression curve – a function of the method of least squares by a negative-exponential smoothing



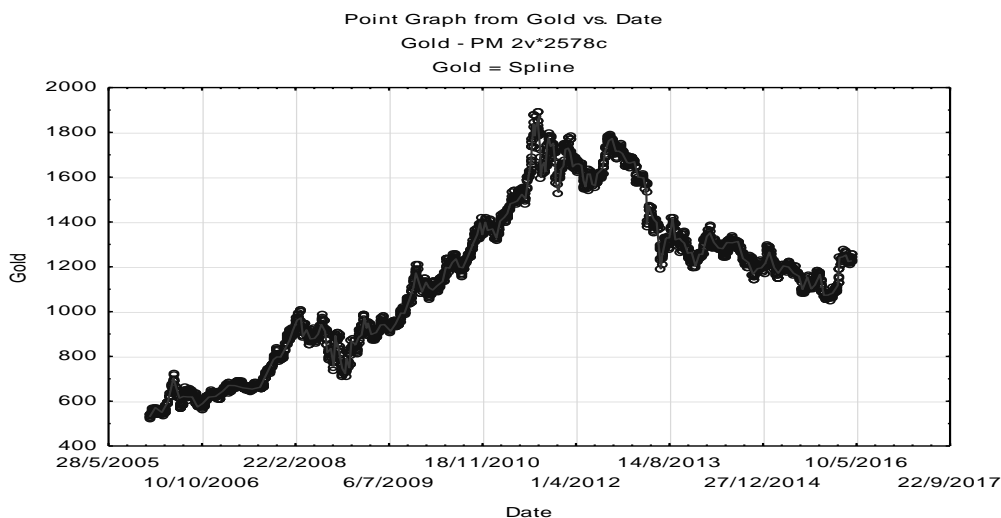
Source: Own processing

The method of least squares through negative exponential smoothing is very similar to the previous method, as it works on a similar principle. There is a slight difference in the compilation of the curve on the basis on the mathematical derivation. The figure shows that this function is able to follow the actual development of the price of gold in the given

period of time very roughly, but it is not able to capture the local minimum and maximum of the time series. In practice, the application of the method of least squares through negative exponential smoothing in regression analysis is very limited.

The scatter plot fitted with the spline function is the subject of figure 8.

Fig. 8. Scatter plot fitted with a regression curve – spline



Source: Own processing

The spline function is generally used for fitting almost any regression curves with the measured data with a one-dimensional independent variable x and one-dimensional random dependent variable y in the following form:

$$S_1(x) = \frac{y_i + 1(x - x_i)}{h_i} + y_i(1 - \frac{(x - x_i)}{h_i}), x \in (x_i, x_{i+1})$$

where the linear function spline is the function $S_1(x)$, which is continuous at the interval of (x_0, x_n) and at each interval $(x_i, x_{i+1}), i = 0, \dots, n$ $S_1(x)$ is a first degree polynomial. As evident from the figure, it is the best model from the linear regression analysis carried out. The spline function is able to follow the development of the price of gold in the monitored period relatively precisely, and is able to capture the local minimum and maximum of the time series rough. It appears to be definitely the best model from the linear regression models used.

It has already been stated above that the correlation coefficient indicates a significant statistical dependence of the target variable on the development over time. If we want to

evaluate the results only by comparing the development of the London Fix Price PM and the shape of the regression curve (assuming a simple linear regression), we can safely say that the curve obtained by the spline is closest to the development. A curve obtained by the method of least squares by a negative-exponential smoothing is quite appropriate, followed by a curve obtained yet again by the method of least squares, this time by weighted distances. All of these curves quite reliably copy the basic development of the gold price. The curve obtained by the spline function even tracks not only the global extremes of London Fix Price PM but also the local extremes of this development as well. Optically, this function appears to be effective, given the possible prediction of the gold price development.

2 Neural structures

Based on the methodology, 1,000 neural structures were generated, 5 of which were retained. These networks have the best parameters. Their overview is shown in Table 2.

Table 2. Overview of the retained neural networks

Net work name	Tr aining perf.	Te sting perf.	Va lid. perf.	Tr ain. error	Te st. error	Va lid. error	Train. algorithm	E rror function	Activ ation of hidden layer	Out put activation layer
MLP 1-6-1	0.99117	0.99279	0.998911	106.8757	79.99031	128.8157	BFGS (Quasi-Newton) 20	S um. of square	Expo nential	Ide ntnity
MLP 1-8-1	0.99112	0.99281	0.998912	108.0174	79.21815	129.9734	BFGS (Quasi-Newton) 11	S um. of square	Atan h	Ide ntnity
MLP 1-7-1	0.99116	0.99282	0.998911	107.0119	79.77784	128.8021	BFGS (Quasi-Newton) 20	S um. of square	Expo nential	Ide ntnity
MLP 1-6-1	0.99113	0.99282	0.998912	107.3197	79.70958	128.9285	BFGS (Quasi-Newton) 13	S um. of square	Atan h	Ide ntnity
MLP 1-8-1	0.99109	0.99281	0.998912	107.8812	79.62574	129.4264	BFGS (Quasi-Newton) 14	S um. of square	Atan h	Ide ntnity

Source: Own processing

The table above shows that these are only multi-layer perceptron networks with one hidden layer. There is a single variable in the input layer, while the hidden layer contains neural structures from 6 to 8 neurons. The output layer contains logically only one neuron and one output variable – London Fix Price PM. The Quasi-Newton training algorithm has been applied to all preserved networks. Mutually, the neural networks differ in the type of activation functions used in the hidden layer of the neurons.

If we focus on training, testing, and validation performance, we generally look for a network that will have the performance across all data sets, (note the partitioning of data into sets was done randomly), ideally the same, with the error as small as possible. This performance of individual sets of data is given in the form of a correlation coefficient. The values of individual data sets according to specific neural structures are shown in Table 3.

Table 3. Correlation coefficient

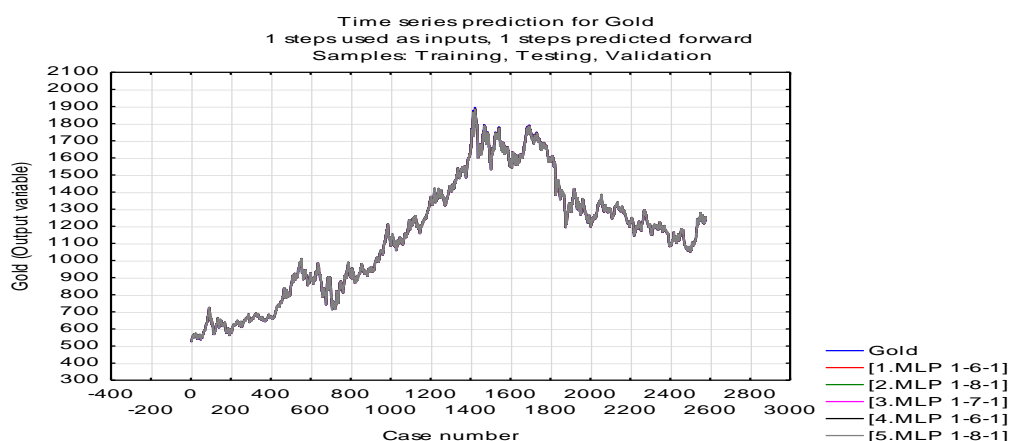
	Palladium Training	Palladium Testing	Palladium Validation
1.MLP 1-12-1	0.999117	0.999279	0.998911
2.MLP 1-4-1	0.999112	0.999281	0.998912
3.MLP 1-7-1	0.999116	0.999282	0.998911
4.MLP 1-3-1	0.999113	0.999282	0.998912
5.MLP 1-6-1	0.999109	0.999281	0.998912

Source: Own processing

Consequently, the performance of all conserved neural networks is approximately identical. Slight differences do not affect network performance at all. Figure 9 shows a conjugal graph showing the true development of London Fixed Price PM (note in the figure it is indicated as 'Gold') and the development of predictions using individual generated networks (note these are indicated by the order number given in Table 2 and the number of neurons in each layer). On closer examination of the image, it is clear that all generated neural networks predict the afternoon gold price development

very similarly, although deviations can be registered at first glance (e.g. for networks 3 and 4 for 600 observations). However, it is not the similarity of the forecasts of individual networks, but the similarity, i.e. the degree of consistency, with the real development of the gold price that really matters. Even in this respect, preserved neural structures appear to be very interesting at first glance, as they respect the global extremes of the curve assessing the development of the afternoon gold price on the New York Stock Exchange. However, they also tend to register the local extremes of this curve.

Fig. 9. Conjunctural chart – Gold price trend predicted by neural networks compared to actual price in the reference period



Source: Own processing

Conclusion

Generally, every prediction is given by a certain degree of probability with which it is to be filled. At a time when we predict the future development of any variable, we try to predict the future development of this variable based on previous years' data. Even though most of the factors influencing the target quantity can be included in the model, there is always a certain simplification of reality. So, we always work with a certain degree of probability that the predicted scenario will be fulfilled. The article used linear regression and regression using neural networks to meet the target. Even in these two cases, however, there is a relatively simple simplification. The author works only with two variables – input (time) and output (gold price). It is more than clear that there is a disregard for other input quantities, which undoubtedly influence the final price of gold. These are, for example, the development of the national economy, the political situation of the state, the legal environment, market barriers etc. In spite of, or precisely because there are a number of factors influencing the price of gold, we have to think whether working with time series does not simplify the development of the target variable too. Or, on the contrary, the other variables are so insignificant that the input quantity (in this case time) and the output value (London Fix Price PM) are sufficient. To predict the emergence of extraordinary situations and their

influence on the price of gold is almost impossible. In the short term it is possible, but in the long run certainly not. Simplification and the creation of a relatively simple model are therefore appropriate and therefore the result is useful.

The commodity price – gold – can be determined on the basis of statistical methods, causal methods and intuitive methods. This paper was devoted to the comparison of individual statistical methods. However, we have only provided a possible framework for the development of the afternoon gold price. It is very important to work with information on the possible future development of both the economic and the political or legal environment. If it is possible to predict its future development, it can then be reflected in the gold price. At the same time, however, the personality of the evaluator, an economist who, on the basis of expert knowledge and experience, corrects the price determined by the statistical methods and specified on the basis of causal links.

The aim of the paper was to perform a regression analysis of the development of the afternoon gold price on the New York Stock Exchange using artificial neural networks and linear regression. Then the intention was to compare the two methods more appropriately in order to predict the future development of the afternoon gold price. From the results described, it appears that the curve obtained by the spline

function appeared to be optically best from the linear regression. Artificial neural networks all proved to be useful in practice. If we look at performance from a correlation coefficient point of view, only neural networks are left to use, with virtually no difference in terms of practical use. Certainly, it would be interesting to analyse residues that would certainly help to determine the best of preserved neural structures. This, however, was not the aim of the contribution, and may be the subject of further research.

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