Analysis to Dynamics of Socio-Economic Development of Regions

Nusret Salaman-Ogly Babayev*

Department of Finance and Financial Institutions, Azerbaijan State Economic University (UNEC), Baku, Republic of Azerbaijan

Abstract: The article analyzes the dynamics of socio-economic development in the regions in recent years, and the factors that have changed the quantitative and qualitative changes in them. Indicators of the impact of the new economic and social facilities on the living standards of different economic regions and Baku city were also given, including the Theil index and Gini coefficient for economic regions. The article uses systematic analysis, scientific logical summarization, economic classification and other research methods. At the end of the analysis, the relevant findings were substantiated.

Keywords: Economic objects, development of regions, State Programs, economic district.

INTRODUCTION

Growth of Gross Domestic Product in the country has led to the expansion of domestic sources for financing economic development and the opportunity to attract foreign loans. Thus, the gross domestic product in the country in 2016 increased by 4.5 times compared to 2000, 3.0 times compared to 2003, and by about 1.1 per cent compared to 2010. As a result, the volume of capital investments in the country in 2016 increased by 12.0 times compared to 2000, by 3.1 times compared to 2003, and by 1.2 times in 2010. Nevertheless, there has been a decline in investments in fixed capital during 2014-2016. This has been the result of a decline in the country's revenues as a result of oil production and decline in world prices. Thus, oil production in the country in 2016 fell by 5.0 percent compared to 2013, and the price of Brent crude oil in the world market decreased from $ 106.4 in January 2014 and down to $ 56.82 in December 2016 (Karmanovskaya *et al.* 2020; Barashkin and Samarin 2005; Khytrova *et al.* 2020).

Improvement of key economic indicators in 2003-2016 led to increased demand in the domestic market and increased social welfare of the population. Thus, the volume of consumer market in 2016 has increased by 5.6 times compared to 2000, by 4.2 times compared to 2003, and by 1.6 times in comparison with 2010. During the mentioned periods, the retail trade turnover increased by 5.0 times, by 3.7 times and by 1.6 times respectively, public catering by 21.8 times, by 13.1 times and 2.3 times respectively, and paid services by 8.0 times, 3 times and 1.4 times respectively (Alieva *et al.* 2020; Barabanshchikov *et al.* 2016; Bayboltaeva *et al.* 2018).

*Address correspondence to this author at the Azerbaijan State Economic University (UNEC), Baku, Republic of Azerbaijan; Tel: +99412 437 10 86; E-mail: nu-babayev@uohk.com.cn

Also, in households, the nominal increase in per capita income compared to 2001 exceeded the consumer price index by 3.3 times in 2016. Thus, as seen, the economic growth in the country in 2000-2016 has had a positive impact on all sides of socio-economic development. Nevertheless, the economic growth being mainly due to the oil factor in the country in 2000-2009, the oil and gas fields being mainly located around the city of Baku, the formation of significant part of country's economic potential in this city has increased the role of Baku in the national economy (Sultanbekov and Nazarova 2019a; Bogaevskaya *et al.* 2020; Bondarenko *et al.* 2018; Koryahin *et al.* 2018; Shandruk *et al.* 2019; Trusova *et al.* 2019).

It should be noted that historically, the differences between the regions in the socioeconomic development level were great, and the differences in the transitional period were slightly increased. After 2000, the rapid development of the oil and gas sector and the growth of state revenues have created opportunities for the financing of socio-economic development of the regions. Under such conditions, the government has prepared and implemented "State Program on Socio-Economic Development of the Republic of Azerbaijan (2004-2008)". According to the State Program on Socio-Economic Development of the Regions of the Republic of Azerbaijan (2004-2008), there are 10 economic regions identified in the country except for Baku. Since 2009, the second state program covering the 2009-2013 regional development has been adopted and implemented (Borisova *et al.* 2020; Daurenbekova *et al.* 2020; Kostruba and Hyliaka 2020; Shormakova *et al.* 2019; Sorokin and Novikov 2019; Sultanbekov and Nazarova 2019b).

Currently, the State Program on Socio-Economic Development of the Regions of the Republic of

E-ISSN: 1929-4409/20

Azerbaijan for 2014-2018 is being implemented by Decree No 118 of the President of the Republic of Azerbaijan dated February 27, 2014. A number of measures have been designed under these programs to effectively utilize existing labor resources, natural and economic potentials in the regions, to accelerate the development of the non-oil sector, to deepen reforms in the agrarian sector, to increase employment, to reduce poverty, to modernize the infrastructure, to establish favorable investment climate, modern enterprises, new jobs and the main part of these measures have already been implemented.

"STATE PROGRAM ON SOCIO-ECONOMIC DEVELOPMENT OF THE REPUBLIC OF AZERBAIJAN": IMPLEMENTATION RESULTS

Recent measures taken in the socioeconomic development of the regions and the increase in the state budget expenditures have resulted in an increase in the overall output of major sectors. The calculations show that average annual growth rate in economic regions in 2004-2016 was 9.3%. Over the period of 2003-2010, the average annual growth rate across the country was higher than in the regions, and since 2011 the regions developed at a relatively high pace. This was mainly due to the dynamics of oil production in the country. Thus, oil production has dropped since 2011, though it has been rising by 2010.

As it is seen from the Table **1**, during 2004-2016 gross product production in economic regions increased more than 3 times. At the same time, except for the economic regions of Nakhchivan and Kalbajar-Lachin, the growth in other economic regions was close to the country level. This factor did not lead to a substantial decrease in the proportion of gross commodity output per capita on major sectors in economic regions across the country. While this ratio was 3.0 in 2003, it was 3.8 in 2008, 3.6 in 2010, and 2.9 in 2016 (Komilova *et al.* 2020a; Komilova *et al.* 2020b; Krasilshchikov *et al.* 2014; Kurbanova *et al.* 2020; Tabachenko *et al.* 2012; Trusova *et al.* 2020a).

It should be noted that in the period of high oil and gas production in the country and rise in oil prices on the world market, Baku has significantly exceeded the economic regions by the volume of gross output per capita. In 2010, oil production in the country was 50838 thousand tons, while in 2011 it was 45626 thousand tons, in 2012 - 43375 thousand tons, and in 2016 - 41050 thousand tons. This factor had a significant impact on the dynamics of the overall output in Baku.

As can be seen in Table **2**, the highest growth in the economic regions in 2003-2016 was in the field of construction. Namely construction has had a significant impact on the development of the construction materials industry in the regions. 12 power plants with a total capacity of 1619 MW were constructed in the regions, 19929.5 km of gas lines were constructed and repaired within the gasification works, 890 km. roads of republican significance, 2172.5 km roads of local significance were constructed and repaired, 790.4 thousand lineal meter of collector-drainage network, 1196.2 thousand lineal meter of irrigation canals, 39,2 thousand lineal meter of stone concrete pavement, 2950.5 km of water and 1738.8 km of sewer line were installed, 13 water and sewage pumping stations and

Table 1: Dynamics of Gross Product Output on Key Industries in Economic Regions (2003=100)

	2004	2005	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Baku city	114.3	130.9	212.4	229.1	250.2	282.0	272.4	278.1	290.4	308.7	314.8	313.9
Total for economic regions	110.3	123.3	162.4	205.9	192.5	214.1	259.7	299.7	317.0	304.7	307.4	316.6
Absheron	136.2	129.3	176.8	256.3	182.8	191.5	236.4	287.9	327.9	367.6	353.2	362.1
Ganja-Gazakh	113.4	134.0	150.5	184.8	180.0	199.4	231.2	273.0	293.5	286.4	284.4	291.5
Sheki-Zagatala	111.7	125.8	190.1	223.9	208.0	229.9	299.3	409.1	378.0	275.2	298.6	305.8
Lankaran	109.9	126.2	156.0	175.6	160.7	176.1	198.5	222.9	242.5	253.9	270.2	296.6
Guba-Khachmaz	103.7	115.1	165.1	280.8	213.1	270.2	304.8	304.2	295.1	277.7	270.7	293.2
Aran	105.0	112.6	145.4	167.7	163.7	171.0	202.8	226.2	247.0	242.8	241.6	234.6
Upper Garabagh	97.3	144.9	219.2	259.4	190.9	229.1	212.6	255.1	251.8	275.2	250.7	314.9
Kalbajar-Lachin	70.6	65.3	66.2	70.6	73.9	84.3	92.5	126.4	149.6	102.3	101.7	94.4
Mountainous Shirvan	109.3	126.6	163.7	213.0	231.3	247.8	247.5	282.4	290.3	295.0	313.3	337.7
Nakhchivan	116.2	149.3	234.5	318.6	388.8	467.7	706.6	821.1	874.5	862.3	899.3	939.8

Table 2: Growth Dynamics of General Product and its Elements in Economic Regions (Excluding Baku) (2003=100)

	2004	2007	2008	2010	2011	2012	2013	2014	2015	2016
Production in the main areas	110.3	162.4	205.9	214.1	259.7	299.7	317.0	304.7	307.4	316.6
Industry	113.0	148.0	165.0	197.2	253.3	293.8	300.7	318.9	302.3	332.2
Agriculture, forestry and fishing	104.6	117.6	124.7	126.2	133.5	142.0	150.8	148.7	158.7	162.4
Construction and installation works	139.8	666.6	1333.9	1264.6	1899.4	2506.5	2686.0	2154.8	1931.8	1909.0
Transportation and storage	106.6	147.3	193.1	234.4	275.2	298.1	298.2	316.8	325.3	368.7
Information and communication	120.4	208.1	257.6	353.1	371.1	404.9	430.7	490.1	521.9	568.6
Trade services	112.7	176.8	207.4	247.9	277.2	300.0	318.1	341.8	363.5	375.1

76 water reservoirs were built and reconstructed, and 39.3 km of heating lines were laid, 59 boiler-houses were built and repaired, 239 post offices were built, 175 electronic ATSs were commissioned, 113,426 numbers have been increased and other measures have been implemented in 2004-2012 (Alimbayev *et al.* 2020; Degtyarev *et al.* 2019; Komilova *et al.* 2019a; Komilova *et al.* 2019b; Kostruba and Vasylyeva 2020a; Kostruba and Vasylyeva 2020b; Magsumov *et al.* 2019a; Magsumov *et al.* 2019b; Trusova *et al.* 2020b).

Large-scale investments were also implemented in the social sphere. Thus, 663 school buildings, 83 therapeutic and diagnostic centers, hospitals, polyclinics, doctors and other medical institutions and 17 Olympic sports complexes were constructed and repaired in 2009-2012 (Report of the Cabinet of Ministers... 2013) process continued in the years to come. Thus, the Aluminum Plant complex in Ganja, Azerbaijan Steel Production Complex Closed Joint Stock Company, Sumgayit Chemical Industrial Park, Gazakh and Nakhchivan cement production, Gold and Copper Processing in Gadabay and other facilities were put into operation in 2013-2016 (Komilova *et al.* 2019c; Kostruba 2018a; Kostruba 2018b; Molchanova *et al.* 2019a; Molchanova *et al.* 2019b; Trusova 2016; Trusova *et al.* 2017; Ushakov and Ermilova 2020).

Apparently, large-scale work has been done to develop both social and production infrastructure. Implementation of these activities, along with direct investment in the regions, has also contributed to the growth of employment and income. As a result, the volume of trade turnover in the regions in 2016 increased by 4.3 times compared to 2003, and the volume of trade services increased by 3.8 times.

As can be seen in Table **3**, economic regions have a significant share in the three regions of the country. These are agriculture, construction and trade services. Agriculture has been developed in the economic regions as it is linked to land plots and natural factors. Thus, most of the economic regions are rural areas. Moreover, the opportunities for the development of agriculture are limited in Baku city. In recent years, the increase in the volume of construction works in the economic regions has been mainly due to the investment activity of the state. As a result of this

Table 3: Share of Economic Regions in Product Output in the Country (by Percentage)

	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Product output in major areas	25.4	20.4	19.8	20.5	22.0	22.8	24.0	26.1	27.7	26.9	29.7	28.3
Industry	12.6	8.0	6.6	5.9	6.0	6.3	7.0	7.9	8.4	9.8	12.2	13.1
Agriculture, forestry and fishing	99.6	99.4	99.4	99.4	99.5	99.4	90.8	90.3	99.5	99.6	99.6	99.5
Construction and installation works	9.3	19.4	29.4	37.2	27.6	38.2	40.3	44.1	47.9	35.1	34.2	32.3
Transportation and storage	11.6	8.5	6.6	7.6	7.6	7.4	8.3	8.2	8.4	8.9	8.0	6.7
Information and communication	7.7	6.7	5.3	7.1	7.4	6.7	6.4	6.2	6.0	6.2	6.3	6.8
Trade services	53.4	55.2	55.8	55.0	55.8	56.6	57.3	56.6	54.4	53.0	50.8	50.7

activity, the volume of investments invested in the economic regions has sharply increased. As a result, the share of economic regions in total capital investment in the country increased from 5.5% in 2003 to 34.5% in 2013 and amounted to 25.4% in 2016. The partial increase in the share of economic regions in trade services has been affected by the increase in the income of the local population as a result of the increase in this investment activity as well as the increase in pensions and social benefits (Konurbayeva *et al.* 2015; Konurbayeva *et al.* 2018; Kostruba 2019a; Kostruba 2019b; Magsumov *et al.* 2018; Molchanova *et al.* 2020).

DEVELOPMENT OF INDUSTRIAL POTENTIAL OF BAKU

However, Baku has surpassed the economic zones by increasing the trade turnover rate in 2003-2016. As a result, there was no significant rapprochement in the per capita trade turnover. The role of the economic areas in other fields is limited in the country's economy. Thus, the industrial potential of the country is mainly concentrated in Baku. In recent years, the state has been implementing measures to establish industrial enterprises in the economically-vulnerable regions (Alpysbayev *et al.* 2020; Ashikbayeva *et al.* 2018; Denissova *et al.* 2018).

Thus, the construction of power plants in the economic regions has been carried out, and non-ferrous and ferrous metallurgy plants are being constructed in Ganja-Gazakh economic region, construction materials, food and light industrial enterprises have been established, and so on. However, the share of oil and gas production in industrial production is high. Thus, in 2016, this figure was approximately 62.1 percent. This factor has also increased the share of Baku in the industrial production. In 2016 the volume of agricultural production in the economic regions increased by 1.6 times in comparison to 2003.

In our opinion, it is possible to increase the volume of production by strengthening the material and technical basis of the agricultural sector, as well as the improvement of the structure of the produced products. The number of the minority agricultural producers reduces their interest in the outcome of the consumption, and limit the effectiveness of building productive relationships with processing facilities. Despite the high development rates of transport and warehousing areas in economic regions, big role of Baku in these areas is due to the fact that significant part of economic activity in the country is concentrated in this city (Astapov *et al.* 2019; Molchanova *et al.* 2018; Montaev *et al.* 2020; Zhukovskyy *et al.* 2019).

Transport and warehousing are mainly service areas (especially service for production) and the demand for these services is high in regions with high economic activity. The share of economic resources in information and communication services is low in the

Table 4: Structure of the General Product Output on Key Areas in Economic Regions of the Country (Total by Percentage)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total countrywide	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Baku	74.0	74.6	77.5	79.6	80.2	79.4	76.0	77.2	76.0	73.9	72.2	73.1	70.3	71.7
Total for economic regions	26.0	25.4	22.5	20.4	19.8	20.6	24.1	22.9	24.1	26.1	27.8	26.8	29.7	28.3
Absheron	2.0	2.7	2.1	1.9	2.0	2.2	1.8	1.6	1.8	2.0	2.2	2.4	2.7	2.9
Ganja-Gazakh	4.6	4.5	4.2	3.9	3.5	3.5	4.2	4.0	4.0	4.3	4.6	4.3	4.8	4.5
Sheki-Zagatala	1.8	1.7	1.6	1.3	1.4	1.4	1.8	1.7	1.9	2.5	2.3	1.7	1.9	1.8
Lankaran	2.4	2.3	2.0	1.8	1.9	1.6	2.0	1.8	1.8	1.9	2.1	2.2	2.5	2.5
Guba-Khachmaz	2.2	2.0	1.9	1.7	1.7	2.4	2.3	2.4	2.3	2.2	2.2	2.1	2.1	2.0
Aran	9.4	8.5	7.1	6.5	6.2	6.0	7.2	6.5	6.8	7.2	8.0	7.9	8.7	7.8
Upper Garabagh	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.7	0.6	0.7
Kalbajar-Lachin	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
Mountainous Shirvan	0.9	0.9	0.8	0.7	0.7	0.8	1.0	0.9	0.8	0.9	0.9	0.9	1.0	1.0
Nakhchivan	1.9	2.0	2.0	1.9	1.8	2.1	3.1	3.2	4.0	4.5	4.8	4.6	5.3	5.0

country. Thus, the total number capacity of ATSs in economic regions in 2016 increased by 1.8 times compared to 2003, while the share of economic regions in this period decreased from 51.2% to 50.1%. Also, according to the number of apparatus falling to each 100 families in 2016, the economic regions fall behind about 2 times comparing to Baku city.

As can be seen from the Table **4**, the share of economic regions in the total output of the last two years has increased significantly. Nevertheless, the main part of production in the country is concentrated in Baku. One of the key factors that attracts Baku city to the private sector is the high density here. So, 1049 people fell to 1 sq. km in Baku by the end of 2012, whereas in economic regions this figure was 89 people, 1 sq. km., the retail trade turnover was AZN 7750.2 thousand and AZN 161.1 thousand correspondingly. In addition, the volume of retail trade turnover per capita of Baku city, exceeded the figure of the economic regions by 4.1 times in 2016 (Aubakirov *et al.* 2019; Dychkovskyi *et al.* 2018; Dychkovskyi *et al.* 2019).

Apparently, the market density in Baku is relatively high compared to economic regions. This factor reduces sales costs of products produced relative to economic regions. Also, while 2.5% of the country's territory and 23.0% of the population fall to part of Baku, in 2016, 52.5 percent of automobiles in the country, including 42.7 percent of freight cars, 41.6 percent of freight traffic, 90.0 percent of the country's information and communication services fell to this city. These factors make it ideal to place production in Baku. The idea behind Krugman's prices level, which is expected to be relatively low in the region where there are many industrial enterprises compared to the regions with less industrial enterprises, was not justified in Azerbaijan (Krugman 1991; Galamandjuk *et al.* 2017; Galamandjuk *et al.* 2019; Mykhyda *et al.* 2019).

Thus, the prices for consumer goods and services in the country in 2016 increased by 71.6% compared to 2007, while in Baku this figure was 76.3%. In our view, this is due to the structure of consumption of the population. Since, the prices of products and services (light, water, gas, transport, etc.), which are directed to other significant consumption costs, are regulated by the state and are largely determined by the same level throughout the country, food prices have a significant impact on the consumer price index. In these regions, the prices were relatively low, as the agricultural sector, which is the main source of food supply, is located in the economic regions.

As can be seen in Table **5**, the volume of gross output per capita in both Baku and in economic regions has increased dramatically over recent years. Thus, in 2016, this increase was 5 times higher in Baku than in 2003 and 5.8 times in the economic region. Taking into account that in the period under review the deflator of the GDP was 2.6 times, we conclude that the real increase exceeded 2 times. In addition, the city of Baku has significantly exceeded economic zones by the volume of gross product per capita per capita. Thus,

Table 5: Gross Product Output Per Capita on Key Areas in the Economic Regions (AZN)

	2003	2004	2007	2008	2010	2012	2013	2014	2015	2016
Total countrywide	1301.5	1544.4	4084.4	5453.6	5428.6	6792.1	7058.4	7104.8	6446.5	7223.2
Baku	4261.3	5015.7	14652.3	19253.2	16981.6	19888.3	20755.1	20528.8	18200.9	21163.1
Total for economic regions	436.9	509.8	1013.1	1438.8	1520.6	2226.2	2354.9	2295	2331.7	2519.7
Absheron	543.6	786.1	1609.4	2374.9	1331.6	2255.6	2504.6	2794.8	2805.6	3407.1
Ganja-Gazakh	437.1	511.7	1007.6	1375.8	1547.9	2109.6	2258.4	2179.8	2200.6	2371.8
Sheki-Zagatala	353.2	399.6	926.6	1257.9	1373.1	2529.1	2355.7	1718.9	1876.3	2007.2
Lankaran	328.8	373.1	679.2	918.1	998.8	1302.8	1434.7	1515.1	1618.8	1793.3
Guba-Khachmaz	506.4	552.5	1170	2294.8	2229.2	2595.3	2528	2388.1	2294.9	2511.5
Aran	585.5	639.4	1186.7	1561.2	1631.5	2309.9	2542.8	2520.8	2509.6	2566.1
Upper Garabagh	165.4	180	413.3	565	537.4	708.7	706.3	772.5	688.7	855.7
Kalbajar-Lachin	34	45.3	79.4	92.8	119.3	364.3	434.1	298.6	296.9	277.5
Mountainous Shirvan	370	432	879.8	1248.3	1505.6	1794.5	1853.5	1821.9	1925	2104.2
Nakhchivan	534.1	703.3	1651.8	2421.9	3607.6	6336.4	6661.9	6517.4	6842.6	7371.8

the volume of gross output per capita in Baku was 9.8 times more compared to economic regions in 2003, 11.2 times in 2010 and 8.4 times in 2016 respectively.

USING THE THEIL INDEX TO MEASURE INTER-REGIONAL INEQUALITY IN A COUNTRY

The Theil index is used to estimate the inter-regional disparity in the country. This indicator is calculated as follows (Raevneva and Bobkova 2010, Feng *et al.* 2016):

$$T = \sum_{i=1}^{N} \frac{Y_i}{Y} \ln \frac{Y_i / P_i}{Y / P} \quad (1)$$

where, Y – country's total product; Y_i – total product of region *i*; P – population of the country; Pi – population of region *i*.

The Theil index is equal to zero if the total production output per capita in different regions of the country is similar to each other (Chen *et al*. 2018, Wu *et al*. 2018). If all the product output in the country is implemented in a region having least population, the Theil index will reach its maximum level $T \ln\left(\frac{P}{\min\limits_i P_i}\right)_{\max}$. Below is the dynamics of the Theil index throughout the country.

As can be seen from Figure **1**, the Theil index has grown steadily in 2003-2007 and has started to decline since then. Changes in the value of this index have been affected by the volume of oil and gas production and the price of oil, as well as the volumes of funds directed to the regions in recent years. It should be noted that in 2003-2016, if the total product in the country had been concentrated in Baku, then the value of the Theil coefficient would have ranged from 1.339 to 1.489. Apparently, this indicator remains high in the country. However, the inequality between economic regions (excluding Baku) is relatively low by socio-economic development level compared to the country's indicator (Bakashbayev *et al.* 2020; Haiduchok *et al.* 2020).

As can be seen from Figure **2**, the level of inequality between economic regions is very low. In 2016, the Theil Index for economic regions was about 4 times

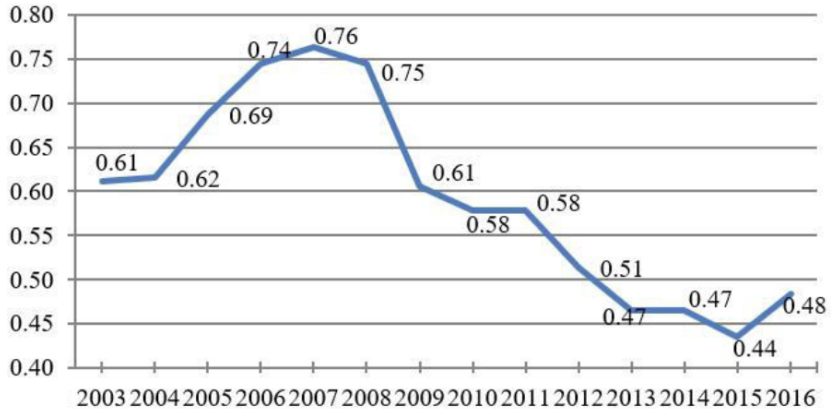

Figure 1: Dynamics of country Theil index.

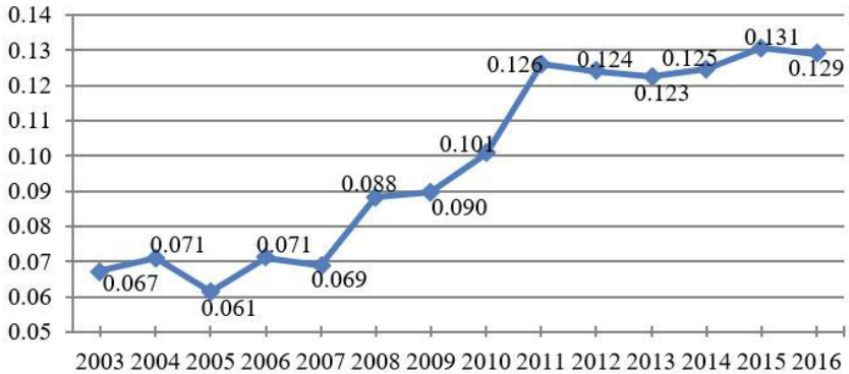

Figure 2: Theil index for economic regions (excluding Baku City).

less than the national average. Also, the Theil Index shows an increase in inequality in economic regions in 2007-2016 (Regions of Azerbaijan... 2017).

While the maximum level of Theil index, which reflects the inequality between the economic regions according to the level of socioeconomic development, depends on the interregional distribution of the population, the maximum indicator of Gini coefficient is equal to one. From this point of view, analysis of regional inequality based on Gini coefficient is also important. Gini coefficient (G) is based on Braun's formula as follows:

$$G = \left|1 - \sum_{k=2}^{n} (X_k - X_{k-1})(Y_k + Y_{k-1})\right| \quad (2)$$

where, X_k – the cumulative share of the regions, with revenues revamped in the increasing range, in the country's population; Y_k – share of revenues from X_k. Yk – share of revenues from Xk.

As can be seen in Figure **1** and **3**, both the Theil Index and the Gini Index show that there is a tendency in the dynamics of interregional inequality. The Gini Index also shows the high level of regional inequality in the socio-economic development level in the country.

According to Gini coefficient, despite little difference between the economic regions, it was changeable. While investment in the country is one of the key factors of economic growth, investment is the most volatile element of the overall product. In particular, the possibility of continuously maintaining economic activity through state investment is limited. Thus, the fact that public investment is mainly focused on the construction of social facilities and the limited financing of private sector development is a factor that adversely affects the development of the region. For example, in 2012, the number of small entrepreneurship subjects per 1000 population in Baku was 34, while this figure was 16 in economic regions (Bakhmat *et al.* 2020; Kalchenko *et al.* 2018; Natolochnaya *et al.* 2020;

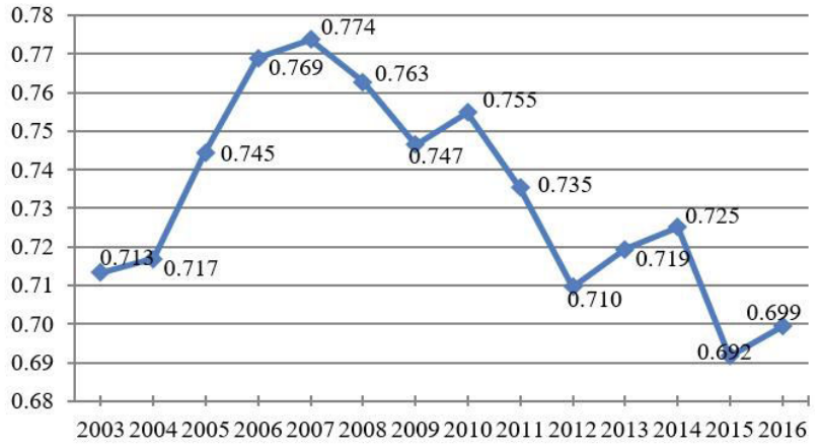

Figure 3: Dynamics of Gini coefficient on Azerbaijan's economic regions (including Baku city).

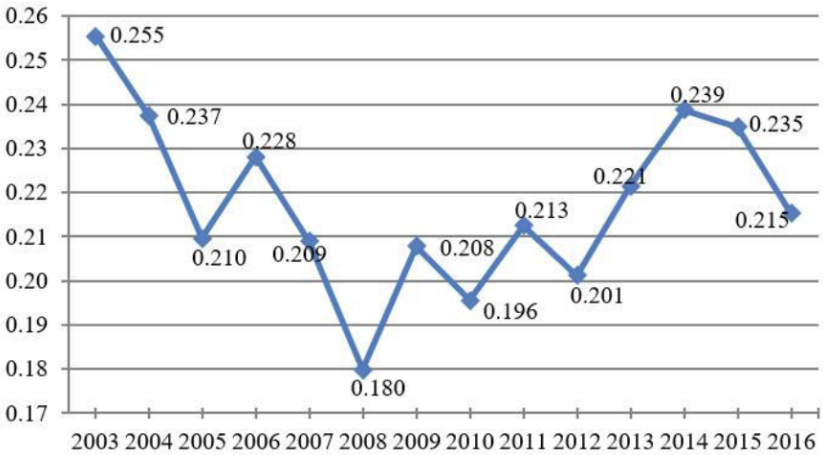

Figure 4: Dynamics of Gini coefficient on Azerbaijan's economic regions (excluding Baku city).

Polyakova and Balanyuk 2018; Zhusupbekov *et al.* 2020).

As a result, in 2015, 50.3 percent of small businesses and 61.2 percent of their production fell to Baku. In our opinion, the shortage of jobs in the economic regions leads to the country-wide migration of the economically active population, which in turn causes the society to meet some of the losses. In such circumstances, ensuring the sustainable growth of production in the economic regions and increasing the number of constant jobs are one of the most important issues ahead (Seisenbayeva *et al.* 2020; Shakbutova *et al.* 2020; Zykova *et al.* 2021).

It should be noted that, in addition to the high share of Baku city in the economy, its share of the social sphere also remains high. Thus, 26.5% of the country's hospitals, 41.6% of hospital beds, 17.0% of the outpatient clinics, 62.1% of the employed doctors, 37.7% of the middle medical workers in the country fell to the share Baku city in 2016. In recent years, the measures taken for the development of secondary education have led to the distribution of educational institutions to the needs of the population across the country. In secondary schools, the proportion of the pupils of the first shift to the total number of pupils was 85.4% in 2016-2017, which is 20.1 percentage points more than in 2000-2001 academic years. This indicator was higher in the economic regions than in Baku. However, the number of pre-school educational institutions does not meet the requirements. So, about 14.2 per cent of children were covered in preschool education in 2016. In addition, 33.4 per cent of children attending pre-school education in the country in 2016 fell to the share of Baku city.

CONCLUSIONS

Provision of sustainable economic development in the country implies the provision of socioeconomic development on the basis of full and effective use of economic potential of the regions and reduction of inter-regional differences in this area. Therefore, one of the main directions of the economic reforms being implemented in Azerbaijan is to ensure the socio-economic development of the regions. In recent years, the measures taken in the socioeconomic development of the regions and the increase in the state budget expenditures have resulted in an increase in the overall output of major sectors (industrial, construction, agriculture, trade, transport and warehousing, information and communications) in the economic regions.

The conducted analysis shows that the share of economic regions in the total output of the recent years has increased significantly. However, despite this, the high economic growth in economic regions in recent years has not significantly increased their role in the national economy. The main part of production in the country is concentrated in the capital city of Baku.

REFERENCES

Alieva, Baglan, Abdizhapar Saparbayev, Gaukhar Zhanibekova, Myras Noiyanov and Valeriy Kim. 2020. “Methodology for managing financial risks of Kazakhstan enterprises”. E3S Web of Conferences 159(60): 04018. https://doi.org/10.1051/e3sconf/202015904018

Alimbayev, Aslan, Laura Daurenbekova, Kayrbek Kemenger, Saule Imanberdiyeva and Nurbol Bashirov. 2020. “The idea of eternal country in the first epic poems of the Turkic people”. Rupkatha Journal on Interdisciplinary Studies in Humanities 12(4): 1-11.

Alpysbayev, Kaisar, Yulia Gridneva, Galina Kaliakparova, Anatolii Saparbayev and Sara Assanova. 2020. “Economic security management at industrial enterprises: A case study”. Journal of Security and Sustainability Issues 9(4): 1165-1176. https://doi.org/10.9770/jssi.2020.9.4(4)

Ashikbayeva, Asem, Nazira Gumar and Gaukhar Zhanibekova. 2018. “Setting up individual indicators of economic efficiency for environmental protection in oil refineries”. Espacios 39(18): 1-9.

Astapov, Aleksey, Elena Kuznetsova and Lev Rabinskiy. 2019. “Operating capacity of anti-oxidizing coating in hypersonic flows of air plasma”. Surface Review and Letters 26(2): 1850145. https://doi.org/10.1142/S0218625X18501457

Aubakirov, Yermek, Larissa Sassykova, Zhaneta Tashmukhambetova, Faty Akhmetova, Subramanian Sendilvelan, Kamalidin Sharipov, Sholpan Kubekova, Aigul Batyrbayeva, Ryskul Azhigulova, Roza Ryskaliyeva, Aisulu Zhussupova and Tamila Abildin. 2019. “Thermo-catalytic processing of polymer waste over catalysts on the basis of natural zeolite from the tayzhuzgen field (Kazakhstan) modified by molybdenum”. Rasayan Journal of Chemistry 12(4): 1701-1709. https://doi.org/10.31788/RJC.2019.1245435

Azerbaijan regions. Statistical summary. 2017. Retrieved July 14, 2020 (https://www.azstat.org/MetaDataInd/)

Bakashbayev, Azatbek, Aliya Nurgaliyeva, Nazira Gumar, Zhanat Khamidullina and Markhabat Saduakassova. 2020. “Examining the trends in bank deposits through internal and external factors based on the supply chain strategies: A primary and secondary data survey”. International Journal of Supply Chain Management 9(2): 526-536.

Bakhmat, Nataliia, Lyudmila Kotliar, Tetiana Zhytomyrska, Volodymyr Slabko, Viktoriia Zhurian, Oksana Pilevych and Iryna Smyrnova. 2020. “Pedagogical principles of training specialists in public administration and management in the system of vocational education”. Systematic Reviews in Pharmacy 11(10): 203-207.

Barabanshchikov, Yury, Tatiana Belkina, Anna Muratova and Andrii Bieliatynskyi. 2016. “Heat liberation of barium cements as a background of their application in mass concrete structures”. Solid State Phenomena 871: 9-15. https://doi.org/10.4028/www.scientific.net/MSF.871.9

Barashkin, Roman and Ilya Samarin. 2005. “Computer system of simulating operating duty of a gaslifting well”. Pp. 161-162 in 11th International Scientific and Practical Conference of Students, Postgraduates and Young Scientists; "Modem

Techniques and Technologies", MTT 2005 – Proceedings. Tomsk: IEEE. https://doi.org/10.1109/SPCMTT.2005.4493238

Bayboltaeva, Nesipkul, Abdizhapar Saparbayev, Aygul Ismailova, Aiymzhan Makulova and Aliya Imatayeva. 2018. "Problems of accounting and reporting of small agricultural businesses in the Republic of Kazakhstan". Journal of Social Sciences Research 3: 67-75.

Bogaevskaya, Oksana, Irina Batrakova, Olga Slyusar and Vladymyr Talismanov. 2020. "Pharmacogenetic testing: Effectiveness of the use of the indirect anticoagulant warfarin". Journal of Global Pharma Technology 12: 160-169.

Bondarenko, Natalia, Ruslan Allalyev, Mikhail Smirnov, Ann Dudchenko and Ekaterina Strizhova. 2018. "History and main trends in the development of copyright". Journal of Advanced Research in Law and Economics 9(1): 41-47. https://doi.org/10.14505//jarle.v9.1(31).06

Borisova, Alena, Madina Rakhimberdinova, Elvira Madiyarova, Inna Riazantseva and Natalia Mikidenko. 2020. "Staffing search and recruitment of personnel on the basis of artificial intelligience technologies". Entrepreneurship and Sustainability Issues 7(3): 2456-2469. https://doi.org/10.9770/jesi.2020.7.3(66)

Chen, Hongwei, Qihong Feng, Xianmin Zhang, Sen Wang, Wensheng Zhou and Chen Liu. 2018. "Well placement optimization for offshore oilfield based on Theil index and differential evolution algorithm". Journal of Petroleum Exploration and Production Technology 8(4): 1225–1233. https://doi.org/10.1007/s13202-017-0403-6

Daurenbekova, Laura, Saule Imanberdiyeva, Barbara Dautova, Galina Rainbekova and Galina Toktymanova. 2020. "Translation and interpretation of Abay's politikal – Social lurics into Turkic languages". Opcion 36(Special Edition 26): 1849-1868.

Degtyarev, Sergey, Lybov Polyakova, Leonid Balanyuk and Jasmin Gut. 2019. "Justice system of Northeastern Ukraine and the influence of Russian judicial practice (middle XVII - XVIII centuries)". Bylye Gody 52(2): 491-501. https://doi.org/10.13187/bg.2019.2.491

Denissova, Oxana, Marina Kozlova, Madina Rakhimberdinova, Yevgeniy Varavin and Mainur Ordabayeva. 2018. "International experience in the development of green economy". Journal of Environmental Management and Tourism 9(3): 564-575. https://doi.org/10.14505//jemt.9.3(27).16

Dychkovskyi, Roman, Oleg Vladyko, Dmitrii Maltsev and Edgar Cabana. 2018. "Some aspects of the compatibility of mineral mining technologies". Rudarsko Geolosko Naftni Zbornik 33(4): 73-82. https://doi.org/10.17794/rgn.2018.4.7

Dychkovskyi, Roman, Vasyl Lozynskyi, Pavlo Saik, Yurii Dubiei, Edgar Cabana and Ivan Shavarskyi. 2019. "Technological, lithological and economic aspects of data geometrization in coal mining". Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu 2019(5): 22-28. https://doi.org/10.29202/nvngu/2019-5/4

Feng, Chao, Bin Lu and Zhiqiang Xu. 2016. "A weighted Gini coefficient and Theil index-based approach for estimating the spatial disparity in energy efficiency in China". International Journal of Global Energy Issues 39(1-2): 4–17. https://doi.org/10.1504/IJGEI.2016.073994

Galamandjuk, Lesia, Aleksandra Siedlaczek-Szwed, Gennadii Iedynak, Myroslav Dutchak, Ivan Stasjuk, Mykola Prozar, Valerii Mazur, Nataliia Bakhmat, Taisiia Veselovska, Olena Kljus and Daniil Marchuk. 2019. "Evaluation of the physiological characteristics of girls with different handedness using various types of physical training". Journal of Physical Education and Sport 19(Supplement issue 4): 1386-1390.

Galamandjuk, Lesia, Mykola Prozar, Ivan Stasjuk, Nataliia Bakhmat, Gennadii Iedynak, Olena Kljus, Michajlo Guska and Tetiana Dokuchina. 2017. "Physiological characteristics and physical fitness of girls at the beginning of classes at the volleyball sports school". Journal of Physical Education and Sport 17(4): 2467-2471.

Haiduchok, Tetyana, Inna Sysoieva, Stanislav Vasylishyn, Alona Lysiuk, Oksana Kundrya-Vysotska and Alla Kostyrko. 2020. "Accounting and control of settlements with counterparties under the conditions of quarantine measures". International Journal of Advanced Research in Engineering and Technology 11(5): 141-152.

Kalchenko, Sergei, Natalia Trusova, Diana Hrybova and Biliaiev Serhii. 2018. "The small and large business interaction within national economy's gross added value reproduction in Ukraine". Oeconomia Copernicana 9(3): 403-417. https://doi.org/10.24136/oc.2018.020

Karmanovskaya, Natalya, Anastasiia Smirnova, Vladimir Litovchenko and Svitlana Efa. 2020. "Automated systems of ecological control in Norilsk". IOP Conference Series: Materials Science and Engineering 734(1): 012175. https://doi.org/10.1088/1757-899X/734/1/012175

Khytrova, Olga, Inna Sysoieva, Hanna Dolha, Vadim Peniuk and Oleg Motuzenko. 2020. "Ensuring the growth of enterprises and organizations through the motivation of managerial staff". International Journal of Economics and Business Administration 2: 219-228. https://doi.org/10.35808/ijeba/454

Komilova, Nilufar, Husan Oblakulov, Umriniso Egamberdiyeva, Shaxnoza Mirzayeva and Nigora Shadieva. 2020a. "Some theoretical issues of social geographical research". Asia Life Sciences 22(2): 157-170.

Komilova, Nilufar, Lolakhon Karshibaeva, Umriniso Egamberdiyeva, Zulfiya Abduvalieva and Shuxrat Allanov. 2020b. "Study of nozogeographic situation and its study on the basis of sociological survey". Indian Journal of Forensic Medicine and Toxicology 14(3): 2093-2098.

Komilova, Nilufar, Nazokat Mukhammedova, Zulxumor Tojiyeva, Mamadkhodir Nazarov and Umriniso Egamberdiyeva. 2019a. "Territorial definitions of population mortality in Uzbekistan". Astra Salvensis 1: 619-640.

Komilova, Nilufar, Rukhsora Hudayberganova, Isabek Murtazaev, Hidoyathon Abdinazarova and Zafarjon Madaminov. 2019b. "Economic and geographic problems of improvement of industrial sectors and local structure of Uzbekistan". Journal of Advanced Research in Law and Economics 10(6): 1916-1928.

Komilova, Nilufar, Suraya Haydarova, Ahmadjan Xalmirzaev, Shukhrat Kurbanov and Furkat Rajabov. 2019c. "Territorial structure of agriculture development in Uzbekistan in terms of economical geography". Journal of Advanced Research in Law and Economics 10(8): 2364-2372.

Konurbayeva, Zhadyra, Madina Rakhimberdinova and Elvira Madiyarova. 2015. "Algorithm for generating competitive potential of engineering within the regional economy". Actual Problems of Economics 6(168): 236-247.

Konurbayeva, Zhadyra, Oxana Denissova, Madina Rakhimberdinova and Alfiya Zakimova. 2018. Food security as a formation factor of the import substitution potential of the economy. Journal of Applied Economic Sciences, 8(62), 2251-2260.

Koryahin, Victor, Oksana Blavt, Nataliia Bakhmat, Michajlo Guska, Tatyana Ludovyk, Mykola Prozar, Alina Bodnar, Svetlana Kravets and Elena Bezgrebelnaya. 2018. "Differentiated correction of attention abilities of students with chronic diseases during physical education". Journal of Physical Education and Sport 18(4): 2278-2283.

Kostruba, Anatoly and Oleh Hyliaka. 2020. "Designing of legal model of legal relations cessations". Astra Salvensis 1: 69-86.

Kostruba, Anatoly and Valentina Vasylyeva. 2020a. "International regulation of termination of rights in the field of civil and intersubjective state relations". Astra Salvensis 1: 131-153.

Kostruba, Anatoly and Valentina Vasylyeva. 2020b. "Termination of right in the mechanism of civil legal relations". Rivista di Studi sulla Sostenibilita 2020(1): 287-300.

Kostruba, Anatoly. 2018a. "Aspects of civil rights and their integration into international social and environmental legislation". Journal of Environmental Management and Tourism 9(5): 995-1002. https://doi.org/10.14505//jemt.v9.5(29).11

Kostruba, Anatoly. 2018b. "Legal regulatory mechanism of social relations for ensuring dynamics in civil relationship". Journal of Advanced Research in Law and Economics 9(5): 1689-1695. https://doi.org/10.14505//jarle.v9.5(35).22

Kostruba, Anatoly. 2019a. "The notion and attributes of right – terminating legal facts". Journal of Advanced Research in Law and Economics 10(1): 254-262.

Kostruba, Anatoly. 2019b. "The rule of law and its impact on socio-economic, environmental, gender and cultural issues". Space and Culture, India 7(2): 1-2. https://doi.org/10.20896/saci.v7i2.522

Krasilshchikov, Mikhail, Dmitriy Kozorez and Kirill Sypalo. 2014. "Development of high speed flying vehicle on-board integrated navigation, control and guidance system". Pp. 1-8 in 29th Congress of the International Council of the Aeronautical Sciences, ICAS 2014. Retrieved May 29, 2020 (https://www.icas.org/ICAS_ARCHIVE/ICAS2014/data/papers/2014_0329_paper.pdf).

Krugman, Paul. 1991. "Increasing returns and economic geography". Journal of Political Economy 99(3): 483–499. https://doi.org/10.1086/261763

Kurbanova, Karlygash, Zhanar Mukhametzhanova, Abdizhapar Saparbayev and Gulnazym Supugalieva. 2020. "Analysis of the financial stability of the Kazakhstan's economy". E3S Web of Conferences 159(60): 06004. https://doi.org/10.1051/e3sconf/202015906004

Magsumov, Timur, Marina Nizamova, Marina Ponomareva and Ruslan Allalyev. 2019a. "The Akhal-teke expeditions of 1879-1881 years: Historical and statistical study. Part 2". Bylye Gody 54(4): 1754-1760. https://doi.org/10.13187/bg.2019.4.1754

Magsumov, Timur, Marina Nizamova, Svetlana Artemova and Ruslan Allalyev. 2019b. "The Akhal-Teke expeditions of 1879−1881 years: Historical and statistical study. Part 1". Bylye Gody 53(3): 1256-1262. https://doi.org/10.13187/bg.2019.3.1256

Magsumov, Timur, Svetlana Artemova and Leonid Balanyuk. 2018. "Regional problems of public schools in the Russian Empire in 1869-1878 (using an example of the Vyatka Province)". European Journal of Contemporary Education 7(2): 420-427. https://doi.org/10.13187/ejced.2018.2.420

Molchanova, Violetta, Leonid Balanyuk, Evgeniya Vidishcheva and Irina Potapova. 2019a. "The development of primary education on the cossack territories in 1803–1917 years (on the Example of the Kuban Region). Part 1". Bylye Gody 53(3): 1049-1058. https://doi.org/10.13187/bg.2019.3.1049

Molchanova, Violetta, Leonid Balanyuk, Evgeniya Vidishcheva and Irina Potapova. 2019b. "The development of primary education on the Cossack Territories in 1803–1917 years (on the example of the Kuban Region). Part 2". Bylye Gody 54(4): 1524-1536. https://doi.org/10.13187/bg.2019.4.1524

Molchanova, Violetta, Leonid Balanyuk, Evgeniya Vidishcheva and Irina Potapova. 2020. "The development of primary education on the Cossack territories in 1803-1917 years (on the example of the Kuban region). Part 3". Bylye Gody 55(6): 88-104. https://doi.org/10.13187/bg.2020.1.88

Molchanova, Violetta, Svetlana Artemova and Leonid Balaniuk. 2018. "Teaching singing in the Russian empire educational institutions: Importance and results". European Journal of Contemporary Education 7(1): 220-225. https://doi.org/10.13187/ejced.2018.1.220

Montaev, Sarsenbek, Sabit Zharylgapov, Nurgul Montaeva and Bekbulat Shakeshev. 2020. "Research of possibility of producing ceramic paving stones by vibrocompression with the purpose of using them in the improvement of urban areas". IOP Conference Series: Materials Science and Engineering 775(1): 012118. https://doi.org/10.1088/1757-899X/775/1/012118

Mykhyda, Serhii, Svitlana Shandruk, Kamilla Mahrlamova, Lina Smirnova, Laryssa Yarova and Ganna Polishchuk. 2019. "Collaborative learning in academic English classroom: Preparation of PhD candidates". Asia Life Sciences 21(1): 399-409.

Natolochnaya, Olga, Vladimir Svechnikov, Lyudmila Posokhova and Ruslan Allalyev. 2020. "The history of the public education system in Vilna governorate (the second half of the 19th and early 20th centuries). Part 3". European Journal of Contemporary Education 9(1): 248-254. https://doi.org/10.13187/ejced.2020.1.248

Polyakova, Lybov and Leonid Balanyuk. 2018. "The black sea province in the first world war: A historiographical review". Bylye Gody 48(2): 838-849. https://doi.org/10.13187/bg.2018.2.838

Raevneva, Olena and Aleksandra Bobkova. 2010. "Use of the Theil unevenness index in the analysis of disparities in regional development". Business-Inform 5(2): 44–47.

Seisenbayeva, Aizada, Nazira Gumar, Munira Imramziyeva, Sanimkul Lapbayeva and Nurgul Shmanova. 2020. "Towards sustainable development via enhancing viability of small businesses through lending: a case study". Journal of Security and Sustainability Issues 9(3): 943-950. https://doi.org/10.9770/jssi.2020.9.3(19)

Shakbutova, Aliya, Abdizhapar Saparbayev, Popek Stanislaw, Aiymzhan Makulova and Aigerim Nurmukhan. 2020. "Impact of tax competition on fiscal incomes of Kazakhstan in terms of tax competitive environment". E3S Web of Conferences 159(60): 06006. https://doi.org/10.1051/e3sconf/202015906006

Shandruk, Svitlana, Lina Smirnova, Natalia Cherednichenko, Liudmyla Lysenko, Tetyana Kapitan, Yaroslav Chernionkov and Ihor Spinul. 2019. "Future human development from the standpoint of dominant philosophical concepts of the United States pedagogical education". Astra Salvensis 1: 323-333.

Shormakova, Arailym, Lira Ibraymova, Aizhan Shormakova, Botakoz Nurzhanova and Laura Daurenbekova. 2019. "Nominations of the plant world lingo-cultural aspect". Opcion 35(89): 607-623.

Sorokin, Andrey and Sergey Novikov. 2019. "Formation of the national economy of Russia in the context of state support of innovation actions". Espacios 40(38): 1-9.

Statement of the Cabinet of Ministers of the Republic of Azerbaijan for 2012. 2013. Retrieved July 14, 2020 (http://www.e-qanun.az/framework/23242).

Sultanbekov, Rabel and Maria Nazarova. 2019a. "Determination of compatibility of petroleum products when mixed in tanks". Pp. 1-5 in 6th Scientific Conference. Tyumen: European Association of Geoscientists & Engineers. https://doi.org/10.3997/2214-4609.201900614

Sultanbekov, Rabel and Maria Nazarova. 2019b. "The influence of total sediment of petroleum products on the corrosiveness of the metal of the tanks during storage". In: 1st International

Conference on Corrosion in the Oil and Gas Industry, CR 2019. 22-24 May. Saint Petersburg, Russian Federation.

Tabachenko, Mykola, Roman Dychkovskiy and Volodymyr Falshtynskiy. 2012. "About extraction of methane and slate gas from coal and slate deposits". Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu 2: 44-48.

Trusova, Natalia, Inna Kohut, Svitlana Osypenko, Nataliia Radchenko and Natalia Rubtsova. 2019. "Implementation of the results of fiscal decentralization of Ukraine and the countries of the European union". Journal of Advanced Research in Law and Economics 10(6): 1649-1663.

Trusova, Natalia, Nataliya Tanklevska, Tetiana Cherniavska, Oleksandr Prystemskyi, Denys Yeremenko and Valentina Demko. 2020a. "Financial provision of investment activities of the subjects of the world industry of tourist services". Journal of Environmental Management and Tourism 11(4): 890-902. https://doi.org/10.14505//jemt.v11.4(44).13

Trusova, Natalia, Serhii Kalchenko, Volodymyr Tsap, Volodymyr Ternovsky and Olha Levchenko. 2017. "Restrictions of financing the budget deficit of Ukraine". International Journal of Economic Research 14(14): 353-364.

Trusova, Natalia, Tetiana Cherniavska, Stanislava Pasieka, Viktoriia Hranovska, Oleksandr Prystemskyi and Valentina Demko. 2020b. "Innovative clustering of the region in the context of increasing competitive positions of the enterprises of the tourist-recreational destination". Geojournal of Tourism and Geosites 31(3): 1126-1134. https://doi.org/10.30892/gtg.31326-549

Trusova, Natalia. 2016. "Systemic factors of projected financial potential of business entities". Economic Annals-XXI 161(9-10): 61-65. https://doi.org/10.21003/ea.V161-14

Ushakov, Denis and Mariia Ermilova. 2020. "Autoregulators in the housing market financing system: A structurally functional approach". E3S Web of Conferences 164: 09003. https://doi.org/10.1051/e3sconf/202016409003

Wu, Dengsheng, Lili Yuan, Ruoyun Li and Jianping Li. 2018. "Decomposing inequality in research funding by university-institute sub-group: A three-stage nested Theil index". Journal of Informetrics 12(4): 1312–1326. https://doi.org/10.1016/j.joi.2018.10.007

Zhukovskyy, Viktor, Nataliya Zhukovska, Anatoliy Vlasyuk and Andrii Safonyk. 2019. "Method of forensic analysis for compromising carrier-lock algorithm on 3G modem firmware". Pp. 1179-1182 in 2019 IEEE 2nd Ukraine Conference on Electrical and Computer Engineering, UKRCON 2019 – Proceedings. Lviv: UKRCON. https://doi.org/10.1109/UKRCON.2019.8879941

Zhusupbekov, Askar, Aruzhan Montayeva, Sarsenbek Montayev and Nurgul Montayeva. 2020. "Ensuring chemical resistance of pile foundations when they are installed in permanently and seasonally frozen soils with aggressive environments". IOP Conference Series: Materials Science and Engineering 775(1): 012130. https://doi.org/10.1088/1757-899X/775/1/012130

Zykova, Svetlana, Grihorii Tsaplin, Vladymyr Talismanov, Ilya Bulatov, Sergey Popkov and Olga Karmanova. 2021. "Antioxidant activity and acute toxicity of new n4-substituted5-(1,2,4-triazole-1-ylmethyl)-1,2,4-triazole-3-thiones and s-derivatives". International Journal of Pharmaceutical Research 13(1): 309-313. https://doi.org/10.31838/ijpr/2021.13.01.056

Received on 20-11-2020 Accepted on 18-12-2020 Published on 31-12-2020

DOI: https://doi.org/10.6000/1929-4409.2020.09.349