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ПРОСТОРОВА ДИВЕРСИФІКАЦІЯ ВВП УКРАЇНИ

Анотація. Управління економікою держави у сучасних умовах господарювання вимагає насамперед уміння адаптуватися до змін у її внутрішньому та зовнішньому середовищі. Своєю чергою, до найнебезпечніших належать зміни, що впливають на національну безпеку і суверенітет держави. Саме таких змін зазнала Україна наприкінці 2013 р. Будучи виснаженою зміною влади після Євромайдану та Революції гідності, за умови, коли економіка вимагала негайних дій, Україна зіткнулася з зовнішнім конфліктом із Російською Федерацією, який не лише став причиною нових соціально-економічних проблем, а й виявив наявні проблеми.

Ідентифікатором змін у економіці держави беззаперечно є показник внутрішнього валового продукту. Водночас ВВП є одним із найвикористовуваних показників аналізу стану економіки у світі. Розрахунок цієї змінної дає змогу оцінити й проаналізувати стан економіки країни в конкретний момент, а порівняння рівня ВВП у динаміці дає змогу обрати напрям руху економіки. Детальний аналіз цього показника дозволяє визначити головні для економіки джерела формування добробуту та напрями розвитку. Подане у статті поняття розуміння цього індикатора, а також різноманітні способи його розрахунку сприяють ґрунтовнішому усвідомленню необхідності та важливості цього показника в аналізі економіки держави.

Дані, подані Державною службою статистики України, свідчать про зміни та коливання, що відбувалися в економіці України протягом 2004–2016 рр. Своєю чергою, аналіз й оцінка ВВП у регіональному розрізі виявили значну нерівність економічного розвитку регіонів України. Результати дослідження також указують на централізований підхід до управління державою, що дедалі більше загострює проблему регіональної диференціації. У роботі досліджено вплив цих чинників на політично-економічну кризу в Україні, а також здійснено спробу показати вплив економічних і політичних конфліктів на коливання в економіці України. Виявлено два критичні моменти для економіки України в межах указанного періоду, а також проаналізовано головні причини їх виникнення.

Ключові поняття: ВВП, регіональний аналіз, коливання, криза, диверсифікація.

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SPATIAL DIVERSIFICATION OF UKRAINE'S GDP

Abstract. GDP is the most commonly used indicator in the analysis of economy. Measurement of this variable helps to assess the economy's condition in the specific moment. The reports of the State Statistics Service of Ukraine demonstrate the changes and fluctuations in Ukraine's economy within the period of 2004–2016. Through various statistical techniques, this paper shows the current economic trends and the impact of political and economic conflicts on the country's GDP and demonstrates the necessity of structural reforms in government management in terms of region development. In this paper an attempt to find the impact of economic and political conflicts on the fluctuations in economy of Ukraine is made and the actions which help to minimize the regional differentiations are proposed.

Key concepts: GDP, regional analysis, fluctuations, crises, diversification.

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Introduction

GDP is the most commonly used indicator in the analysis of economy all over the World. Taking into consideration the dynamics of GDP's level it is easy to assess economy's condition at the specific moment. Furthermore, to get more factual results of analysis it is worth calculating GDP not only for the whole State but for each administrative unit, it helps to get the real situation of economy of the specific country.

Coming back to the meaning of GDP this is basically the most known abbreviation in World's economy. According to Gregory Mankiw, Professor of Economics at Harvard University and one of the most famous macroeconomist of present days, «*Gross domestic product (GDP) is the market value of all final goods and services produced within an economy in a given period of time*» [1]. Generally, it is the quantity of all produced goods and provided services in the specific economy multiplied by their prices.

There are different methods of calculating the GDP indicator, based on:

- expenditure approach;
- income approach;
- output approach.

Expenditure approach as follows from the definition depends on evaluation of the sum of all purchased in economy final goods and the services. It includes consumption, government spending, investment and net export.

On the contrary, the income approach takes into consideration the total income generated by households and firms in the specific period of time. The income in terms of this approach means the profits, wages, interest and rents.

Output approach stands on the added value, in this method GDP is shown as a sum of added value of all produced goods and provided services in economy [2].

From the above we can deduce that GDP is much more than just analytical indicator, it is one of the most important variable that displays the level of wellness in specific economy. In this article we will try to describe how GDP level of Ukraine was changing within 2004–2016 years due to influence of economic and political factors. We will try to find the connection of the decreases of GDP and economic and political crises in Ukraine.

Nowadays practically every country in the World is involved in calculating GDP indicator. One of the first scientists who started to analyze the GDP was the «father of economics» Adam Smith. In «*Wealth of the nations*» he presented his concept of measuring the wealth of the country based on the added value of the produced products and provided services more known now as GDP [3]. Among not less known economists who made their researches in this area were: Simon Kuznets, Gregory Mankiw and Arthur Okun. Simon Kuznets was a creator of the original formula of calculating gross domestic product that has been presented in report to U.S. Congress, «*National Income, 1929–35*» [4]. Mentioned above Gregory Mankiw, in his work «*Macroeconomics*», in a simple way explains the essence of understanding and calculating the GDP [1]. And finally Arthur Okun who was working under the correlation between GDP and other economical phenomena such as unemployment and inflation [5]. To the modern economists that have been researching problems related to GDP on the post-Soviet Area belong: Tomasz

Tokarski (Poland) [6], Valerii Heyets (Ukraine) [7], Viktor Bazylevych (Ukraine) [8] etc.

Nonetheless, lots of articles related to GDP, the research of affiliations between GDP and other economical phenomenon's is still on the top. The deep analysis of this variable helps to better understand the sources of fluctuations in economy of the country what is also the main goal of this article.

1. Differentiation of GDP in Ukraine in 2004–2016

As revealed from the above, GDP is one of the most commonly used and informative indicator in terms of the country's economic analysis. In this article we would like to analyze specific changes which exposed the Ukrainian economy starting from 2004 to 2016 by analyzing its GDP level over that years.

Ukraine is divided into 27 administrative units, 25 districts and 2 dedicated cities, Kiev which is also a capital of the country and Sevastopol which is located on Crimea peninsula (map 1). On the map 1 it has been presented the average level of GDP in Ukraine in millions of UAH. Even at first glance we can notice that the GDP level is higher on the left side of the Dnieper river except of Kiev city that is located on both sides of river and its GDP constitutes approximately

20% of whole GDP of country. We can also note that Western part of Ukraine has relatively lower level of GDP than other parts of Ukraine.

Deeper analysis of GDP level has been presented in tab. 1. We have divided the whole research period into 2 groups 2004–2009 and 2010–2016**. In cases of growth (negative growth) rate we have divided them into 3 period groups 2004–2008, 2009–2014 and 2015–2016 to find the connection between GDP level and political and economic crises that took place within the researched period of time.

From the tab. 1 it follows that averagely within 2004–2008 Ukraine declared positive growth rates within all administrative units, moreover, in 2004–2009 the highest GDP level was noticed in Kiev city (479 299,93 mm UAH), Donetsk DC (346 294,89 mm UAH), Dnipropetrovsk DC (261 263, 52 mm UAH), Kharkiv DC (160 658,50 mm UAH), Odessa DC (127 075,14 mm UAH). On the other hand, the lowest GDP level within mentioned above period was noticed in Sevastopol city (17 840,64 mm UAH) and the following districts: Chernivtsi (25 159,43 mm UAH), Ternopil' (30 797,82 mm UAH), Kherson (36 328,55 mm UAH), Volyn (34 889,38 mm UAH).

MAP 1 GDP level in Ukraine in 2004–2016 Years* in millions UAH



Source: prepared by own, based on the data provided by State Statistics Service of Ukraine with the help of <https://paintmaps.com>

* Averagely in a given period of time

** In cases of Crimea DC and Sevastopol city data was available only to 2013 year

Table 1. Gross Domestic Product in Ukrainian districts within 2004–2016

District	GDP in mm UAH (2016 constant price) ^{1*}		The average annual growth rate of GDP in %		
	2004–2009	2010–2016	2004–2008	2009–2014	2015–2016
Cherkasy	52609,46	59426,96	6,34	1,16	–2,42
Chernihiv	43721,99	44381,27	1,69	0,08	–2,54
Chernivtsi	24848,92	24029,69	4,52	–1,61	–6,63
Crimea	77216	83395	5,2	0,8	–
Dnipropetrovs'k	260432,8	276734	11,46	–1,52	–7,51
Donets'k	336055,5	251948,2	3,42	–8,22	–14,39
Ivano-Frankivs'k	53148,48	56834,53	2,04	2,14	–8,19
Kharkiv	160848,3	157095,5	6,47	–2,5	–0,41
Kherson	37252,33	38286,11	3,08	–1,17	1,34
Khmel'nyts'kyi	46395,16	48900,16	2,91	1,13	–3,14
Kiev	96942,79	125629,1	7,41	2,94	–0,03
Kirovohrad	39621,32	44137,67	2,59	1,69	–0,65
Luhans'k	116541,1	79989,86	6,74	–12,02	–16,49
L'viv	103359,4	113627,4	3,07	1,48	–1,37
Mykolayiv	57036,12	57960,9	2,09	–0,63	0,33
Odessa	128159,4	125213	5,23	–2,85	–0,69
Poltava	103216,5	111455	2,08	1,54	1,32
Rivne	41478,33	41520,24	2,77	1,55	–7,92
Sumy	46563,8	48030,93	3,42	–0,06	–3,11
Ternopil'	30778,2	33123,08	4,52	1,32	–5,86
Transcarpathia	38677,18	37536,58	2,56	–0,34	–8,93
Vinnitsya	58964,07	66744,51	2,32	2,54	2,17
Volyn	37126,02	37464,82	3,23	0,17	–4,58
Zaporizhzhya	117815,1	104758,1	5,42	–2,89	–1,27
Zhytomyr	42949,6	47132,77	2,82	0,98	–0,26
Kiev City	477005,6	534894,4	5,42	2,01	–1,55
Sevastopol	17819,97	19692,18	6,2	1,48	–

* Calculated as arithmetic mean in the following years

Source: prepared by own self, based on the data provided by State Statistics Service of Ukraine in period 2010–2016

In period 2009–2014 the situation has dramatically changed, only 16 administration units were able to achieve positive growth rate. This decrease in GDP level was caused by global financial crises and the political crises in Ukraine related to the gas conflict with Russian Federation. Looking back to period of 2010–2016 years we can observe that the top 5 DC's (except Kiev which is a city) in terms of GDP level did not changed, which denotes that the global and political crises did not have such a strong negative effect on the most developed administrative units. As for more weaker, from economic point of view, units here still overweigh units from Western Ukraine regional group such as Transcarpathia, Volyn, Ternopil', Chernivtsi Dc's and Sevastopol city which belongs to southern part of Ukraine.

And finally 2015–2016 years, after political crises caused by military conflict with Russian Federation and annexation of Crimea peninsula by Russian Federation the level of growth rates rapidly changed in whole Ukraine, only 4 DC's were able to increase their GDP such as Poltava, Vinnitsya, Mykolayiv, Kherson. Their growth rates were fluctuated between 0,3 to 2,2% in mentioned period of time. As for the rest administrative units their negative growth rate was fluctuating averagely around 4,7%. The strongest effect was obviously felt in eastern DC's, especially Luhans'k and Donets'k, which are directly involved into a military conflict, in this period of time they showed the biggest negative growth rates 16,5% and 14,4% appropriate. As these are districts that belong to the developed ones their decreases of GDP level caused negative effect on the whole country.

2. Differentiation of GDP level in regional groups in Ukraine in 2004–2016

For analysis purposes we have divided all administration units into 5 regional groups mentioned below:

1. Central Ukraine – districts: Cherkasy, Dnipropetrovs'k, Kirovohrad, Vinnytsya and Poltava.

2. Western Ukraine – districts: Khmel'nyts'kyy, Chernivtsi, Ivano-Frankivs'k, L'viv, Rivne, Ternopil', Volyn and Transcarpathia.

3. Eastern Ukraine – districts: Kharkiv, Donetsk, Luhans'k and Zaporizhzhya.

4. Southern Ukraine – Autonomous Republic of Crimea, districts: Kherson, Odessa and Mykolayiv and Sevastopol city.

5. Northern Ukraine – Kiev city and districts: Chernihiv, Kiev, Sumy and Zhytomyr.

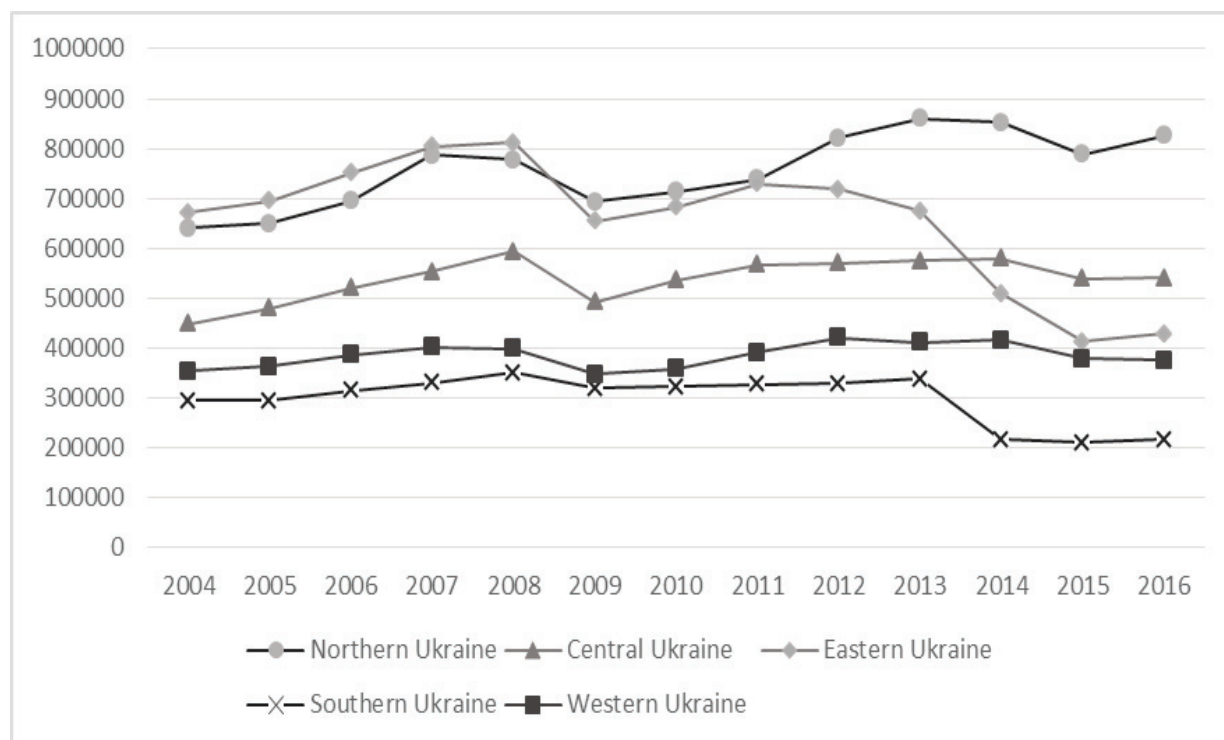
On figure 1 it is even more visible than on map 1, that the highest GDP level is on DC's belonged to Northern Ukraine. Moreover, if we look back on the time perspective, we can notice that only in northern part of Ukraine the increasing trend of GDP level is avowedly shown. There are several factors that can explain that: Kiev city which belongs to this regional group, and at the same time is a capital, also is the only one city in Ukraine that has 20% of whole GDP of Ukraine. It

is worth mentioning that Kiev is also the biggest city from demographical point of view, population of capital of Ukraine amounted to approximately 3 million of people and it is more than Chernivtsi, Ternopil', Kirovohrad DC's taken together, this explains necessity of products and services that needs to be produced to satisfy needs of the population. The other factor that plays a prominent role is decentralization, nonetheless of different programs and imperative requirements from European Union, DC's are still dependent on their capital in different queries of social, political and economic aspects. Despite the visible increasing trend, there were several critical moments: in 2009 GDP decreased for 10,8% comparing to 2008 and 7,5% in 2015 comparing to 2014.

Rather similar trends were in Central and Western Ukraine. We can see stable increasing trend from 2004 till 2008 then rapid decline in 2009, that caused 17,1 and 12,7 percentage decrease appropriate in Central and Western Ukraine compared to 2008. And starting from 2010 there was again normalization and increasing the GDP in both regional groups till 2015 where additional averagely 8% drop was noticed.

Close enough to each other were trends between southern and eastern parts of Ukraine. And there is an easy explanation why, both groups

Figure 1 GDP Level in Regional Groups of Ukraine in 2004–2016 in mm UAH*



Source: prepared by own, based on the data provided by State Statistics Service of Ukraine

* In 2016 constant prices

were involved into a conflict with Russian Federation. In case of southern part the main factor was the annexation of Crimea as for Eastern Ukraine as mentioned before Donetsk and Luhans districts were directly involved into a military conflict with Russia. What is more, political and economic crises that took place in Ukraine had more influence to Eastern Ukraine than on Northern. First time decline of GDP was noticed as in previous cases in 2009 for about 19,3% in Eastern Ukraine and 8,9% Southern Ukraine. And next one in 2014 in southern units for about 35,9% fall and 24,6% in eastern regions of Ukraine. What is curious, after annexation of Crimea in 2014 and rapid drop, the situation in the southern regional group started to normalize and looking from past 2014–2016 years perspective the trend stands stable showing practically the same GDP level. This could not be told in case of the eastern regional group, were after fall in 2014 GDP kept decreasing till 2016 were finally appeared some small 3% growth.

From table 1 and figure 1 we can come to the following conclusions:

- the highest GDP level was noticed in the northern regional group averagely 28,7% comparing to whole Ukraine, within this group in taken period Kiev as an administration unit had the highest GDP level 67,1% (comparing to the total group);
- to high GDP level groups could also be counted eastern and central regional groups with average level of GDP 24,9% and 20,4% appropriate. Within the eastern regional group the highest GDP level was in Donetsk DC 44, 2% of total group and in Dnipropetrovsk DC 50,0% that belongs to central regional group;
- groups with the lowest GDP were western and southern parts 14,6% & 11,3% appropriate. In this group the lowest GDP was in Chernivtsi DC 6,3% in comparing to the total western regional group and Sevastopol city 6,2% in Southern Ukraine.

There were several factors that had impact on the way how the GDP level was forming in Ukraine in considered period, such as historical, demographical and natural. Many problems with differences between regional development were caused in period of creating and forming of the Ukrainian economy in 1990–2000th because there was no claimable systematic approach used in terms of regional development that caused their differentiation [9]. The other negative factor that took place in regional development in Ukraine is central approach in government management, therefore northern regions led by Kiev city have a higher GDP than for example western and southern parts.

Natural and demographical factors played a prominent role in development of central and eastern regions. The Eastern Ukraine is rich with natural resources such as oil, gas and carbon. At the

same time Dnipro city is located in the central part and is one of the main service centers in Ukraine. Extraction natural resources and their further processing are the key factors of success of eastern regions. Besides natural resources, regions located on the left side of the Dnieper river are more industry developed. Those regions are well known because of the heavy engineering and export of products produced by it.

Comparing to that, western and southern parts of Ukraine which are poorer in natural resources and because of the historical and demographical reasons are less developed than other parts of Ukraine. Their main sources of income are based on tourism, agriculture, construction industry and trade. Those parts of Ukraine especially need the decentral and systematic approach in terms of their management.

Conclusions

In analyzed period economic prosperity of Ukraine experienced in 2004–2008 years, in this time all regional groups showed stable trend of increasing GDP. After this period, economy of Ukraine has exposed some fluctuations. There were two critical moments in Ukrainian economy within 2004–2016 that could be underlined, first in 2009 that caused drastic decrease of GDP in all regional groups which was caused by global financial crisis and the political crises because of gas conflict with Russia, and the second one in 2014–2015 years caused by the annexation of Crimea peninsula and political crisis with Russian Federation.

Conflict and annexation of Crimea peninsula by Russian Federation that directly complied to Crimea peninsula, Donetsk and Luhans DC's caused a dramatic decrease of GDP in the southern and the eastern parts of Ukraine. Moreover, based on the above research, we can realize that decline of GDP in one of the most developed DC's such as Donetsk caused the effect on the whole Ukraine. All regional groups declared a decrease of GDP in 2015 and economic crises within the country as the result. During the analysis we have also noticed, that despite the fact that the western regional group declared the lowest GDP level comparing to the whole Ukraine, conflict in 2015 did not have such a strong influence on its GDP.

To sum up, during the analysis of GDP in regions of Ukraine, it is easy to find problems with their differentiation. Definitely there are some risks and threats which are very difficult to predict and liquidate, such as military conflict and annexation of administration unit, but there also those ones that could be minimized. The problems with regional differentiation in Ukraine are mainly caused by maladministration. There are several actions that should be done immediate to roll out

the region development, among them: decentralization of regions and giving them financial independence, change of the focus in government management on systematic approach and finally, but

non less important, support of the favorable business environment that needs to be created for small and medium-sized enterprises.

References (in language original)

1. Mankiw G. (2009). *Macroeconomics, 7th Edition*. Worth Publishers.
2. Mathews R. (2012). GDP and the US economy: 3 ways to measure economic production.
3. Smith A. (2008). *An inquiry into the nature and causes of the wealth of nations*. Oxford world's classics.
4. Kuznets S. (1934). National Income, 1929–1932. NBER Chapters, in: National Income, 1929–1932, pages 1–12 National Bureau of Economic Research, Inc.
5. Okun A. (1981). *Prices and Quantities: A Macroeconomic Analysis*. Washington, DC: Brookings Institution.
6. Chugaievska N., Tokarski T. Wpływ zmian PKB na przestrzenne zróżnicowanie bezrobocia na Ukrainie. *Wiadomości statystyczne*. 2018. № 3. 682 s.
7. Геєць В. М. Суспільство, держава, економіка: феноменологія взаємодії та розвитку. НАН України; Ін-т екон. та прогнозув. НАН України. К., 2009. 864 с.
8. Базилевич В., Ільїн В. Метафізика економіки: монографія. К.: Знання-Прес, 2007.
9. Амоша О. І., Булєєв І. П., Землянкін А. І., Збаразська Л. О., Харазішвілі Ю. М. Промисловість України–2016: стан та перспективи розвитку. НАН України, Ін-т економіки промисловості. 2017.
10. Економіка регіонів у 2015 році: нові реалії і можливості в умовах започаткованих реформ. НІСД, 2015.
11. Юрченко К. Г. Вплив фінансової децентралізації на соціально-економічний розвиток регіонів. Аналітична записка. URL: <http://www.niss.gov.ua/articles/2458/>

References

1. Mankiw, G. (2009). *Macroeconomics, 7th Edition*. Worth Publishers.
2. Mathews, R. (2012). GDP and the US economy: 3 ways to measure economic production.
3. Smith, A. (2008). *An inquiry into the nature and causes of the wealth of nations*. Oxford world's classics.
4. Kuznets, S. (1934). National Income, 1929–1932. NBER Chapters, in: National Income, 1929–1932, pages 1–12 National Bureau of Economic Research, Inc.
5. Okun, A. (1981). *Prices and Quantities: A Macroeconomic Analysis*. Washington, DC: Brookings Institution.
6. Chugaievska, N., & Tokarski, T. (2018). Wpływ zmian PKB na przestrzenne zróżnicowanie bezrobocia na Ukrainie [Impact of changes in GDP on the spatial diversification of unemployment in Ukraine]. *Statistical data*. 3 (682) [in Pol.].
7. Heyets, V. M. (2009) *Suspil'stvo, derzhava, ekonomika: fenomenolohiya vzayemodii ta pozvytku* [Society, state, economics: phenomenology of interaction and development]. National Academy of Sciences of Ukraine; Institute of economics and predicting. National Academy of Sciences of Ukraine. Kyiv [in Ukr.].
8. Bazilevich, V., & Ilyin, V. (2007) *Metafizyka ekonomiky* [Metaphysics of Economics]. Kyiv, Znannia-Pres [in Ukr.].
9. Amosha, O. I., Buleev, I. P., Zemlyankin, A. I., Zbarazskaya, L. O., & Kharazishvili, Yu. M. (2017) *Promyslovist' Ukrainy – 2016: stan ta perspektyvy rozvytku* [Ukrainian Industry – 2016: Status and Prospects of Development]. National Academy of Sciences of Ukraine, Institute of Industrial Economics [in Ukr.].
10. *Ekonomika rehioniv u 2015 rotsi: novi realii i mozhlyvosty v umovah zapochatkovanyh reform* [The Economics of the Regions in 2015: New Realities and Opportunities under the Conditions of Initiated Reforms]. Kyiv, NISS [in Ukr.].
11. Yurchenko, K. G. *Vplyv finansovoi detsentralizatsii na sotsial'no-ekonomichnyi rozvytok rehioniv*. Analitychna zapyska [Influence of financial decentralization on socio-economic development of regions]. Analytical note. URL: <http://www.niss.gov.ua/articles/2458/> [in Ukr.].

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