UDC 338.266.4

Nadiia Pysar
D.Sc. (Economics), Associate Professor,
National Technical University of Ukraine
«Kyiv Polytechnic Institute» named after Igor Sikorsky
37 Peremohy Ave., Kyiv, 03056, Ukraine
diserdiser72@gmail.com
ORCID ID: https://orcid.org/0000-0003-2656-7323

Serhii Fediunin
PhD (Engineering), Director,
Educational and Research Institute of Management and Entrepreneurship,
State University of Telecommunications
7 Solomianska Str., Kyiv, 03110, Ukraine
s.fediunin@gmail.com
ORCID ID: https://orcid.org/0000-0001-6045-6657

Olena Vynogradova
D.Sc. (Economics), Professor,
State University of Telecommunications
7 Solomianska Str., Kyiv, 03110, Ukraine
evvy@ukr.net
ORCID ID: https://orcid.org/0000-0002-7250-5089

Viktoriia Chornii
PhD (Economics), Senior Lecturer of the Department of Management,
National Technical University of Ukraine
«Kyiv Polytechnic Institute» named after Igor Sikorsky
37 Peremohy Ave., Kyiv, 03056, Ukraine
lukashpost@gmail.com
ORCID ID: https://orcid.org/0000-0002-4460-0759

Assessment of the consequences of military conflicts and hybrid warfare for the socio-economic development of Ukraine

Abstract
Introduction. In recent years, the economic security and social well-being of Ukraine have been dramatically shaken due to military conflicts in eastern Ukraine and the effects of hybrid warfare on the sustainable development of the country's economic system. The insufficient research of the methodology for assessing the level of consequences of military conflicts and hybrid warfare on the country's socio-economic development necessitates a deeper insight into this problem, and the practical need to assess Ukraine's real GDP losses makes this insight even more relevant. In such conditions, of great importance is the search for economic potential, which, according to scientists, can be developed through the prism of the development of such a cluster of the economy as «New Energy». Therefore, *the purpose* of this paper is to develop a methodology for analyzing and assessing Ukraine's real GDP losses in the context of its sectors, as well as to find by means of the foresight methodology the growth factors of real GDP through the prism of development of the Ukrainian energy market.
Results. The study enabled to quantify and justify the resulting gap of real GDP initiated by the hybrid warfare and military conflicts in eastern Ukraine, as well as to predict the development of the national economy, taking into account the growth/decline rates of real GDP and the economic capacity of the Ukrainian energy market. The potential for overcoming the current gap of real GDP initiated by the hybrid warfare and military conflicts in eastern Ukraine has been demonstrated based on the analysis of the economic capacity of the Ukrainian energy market.
Conclusion. It is proved that the methodology for assessing the level of real GDP and elaboration of scenarios for the development of the economy are essential to improve the quality of management practices for economic transformations in the context of hybrid warfare. It has been calculated that in order to return to the level of the pre-crisis period, Ukraine will need to increase its annual GDP growth rate by at least 8%. The proposed forecast estimates of the economic capacity of the Ukrainian energy market are aimed at

developing a sound policy for transforming the Ukrainian economy. The results obtained can serve as a guide in modernizing the Ukrainian economy on the path to European integration and finding ways of its economic security based on economic liberalization, as well as a guide for constructive plans for socio-economic development in the conditions of violated territorial integrity of Ukraine.
Keywords: Methodology; Economic Security; Gross Domestic Product (GDP); GDP Economic Losses; Strategy; Hybrid Warfare; Energy; Energy Market; Gas and Oil Production; Ukraine

Писар Н. Б.
доктор економічних наук, доцент,
Київський політехнічний інститут імені Ігоря Сікорського, Київ, Україна
Федюнін С. А.
кандидат технічних наук, директор, навчально-науковий інститут менеджменту та підприємництва,
Державний університет телекомунікацій, Київ, Україна
Виноградова О. В.
доктор економічних наук, професор,
Державний університет телекомунікацій, Київ, Україна
Чорній В. В.
кандидат економічних наук, старший викладач кафедри менеджменту,
Київський політехнічний інститут імені Ігоря Сікорського, Київ, Україна
**Оцінка наслідків військових конфліктів і гібридних воєн
для соціально-економічного розвитку України**

Анотація. Авторами розглядаються питання діагностики соціально-економічного розвитку та економічної безпеки України в умовах гібридних воєн. Визначено реальні втрати ВВП в розрізі областей України в результаті військових конфліктів на сході України. Доведено необхідність застосування методики оцінки рівня реальних втрат ВВП у процесі розробки сценаріїв подолання загроз економічній безпеці України. Визначено напрямки подолання наслідків військових конфліктів і гібридних воєн для соціально-економічного розвитку України. Обґрунтовано економічний потенціал енергетичного ринку для розв'язання проблем розвитку української господарської системи. Встановлено, що дослідження може бути використане практиками на державному рівні при розробці стратегії побудови соціально орієнтованої ринкової економіки України.
Ключові слова: методологія; економічна безпека; валовий внутрішній продукт (ВВП); економічні втрати ВВП; стратегія; гібридна війна; енергетика; енергетичний ринок; видобування газу та нафти; Україна.

Пысар Н. Б.
доктор экономических наук, доцент,
Киевский политехнический институт имени Игоря Сикорского, Киев, Украина
Федюнин С. А.
кандидат технических наук, директор, учебно-научный институт менеджмента и предпринимательства,
Государственный университет телекоммуникаций, Киев, Украина
Виноградова Е. В.
доктор экономических наук, профессор,
Государственный университет телекоммуникаций, Киев, Украина
Чорней В. В.
кандидат экономических наук, старший преподаватель кафедры менеджмента,
Киевский политехнический институт имени Игоря Сикорского, Киев, Украина
**Оценка последствий военных конфликтов и гибридных войн
для социально-экономического развития Украины**

Аннотация. Авторами рассматриваются вопросы диагностики социально-экономического развития и экономической безопасности Украины в условиях гибридных войн. Определены реальные потери ВВП в разрезе областей Украины в результате военных конфликтов на востоке Украины. Доказана необходимость применения методики оценки реальных потерь ВВП в процессе разработки сценариев преодоления угрозы экономической безопасности Украины. Определены направления преодоления последствий военных конфликтов и гибридных войн для социально-экономического развития Украины. Обоснован экономический потенциал энергетического рынка для решения проблем развития украинской хозяйственной системы. Установлено, что исследование может быть использовано практиками на государственном уровне при разработке стратегии построения социально ориентированной рыночной экономики Украины.
Ключевые слова: методология; экономическая безопасность; валовой внутренний продукт (ВВП); экономические потери ВВП; стратегия; гибридная война; энергетика; энергетический рынок; добыча газа и нефти; Украина.

1. Introduction

As a result of the current geopolitical challenges, hybrid warfare, military conflicts in eastern Ukraine and the annexation of Crimea, the assessment of Ukraine's real GDP requires an extended analysis. Today it is necessary to search for ways to develop the economic potential of the national economy towards restoring GDP losses, because military conflicts in the territory of Donetsk and Luhansk regions have shaken one of the existing reserves for improving the efficiency of the economy of any country - the energy system of Ukraine. So, to ensure production needs, metallurgical complexes and power plants require uninterrupted supply of coal from the Donets Basin. According to V. Lipkan (2015), the full implementation of the Ukrainian economy as a result of military conflicts in eastern Ukraine and hybrid warfare against Ukraine requires immediate elaboration of a concept to eliminate threats to the national interests of Ukraine. Therefore, the continuation of the study of the level of real GDP of Ukraine will serve as a theoretical statement of the problem of restoring the economic potential of the Ukrainian economic system and a practical basis for the mechanisms for its solution, since today the study of the assessment of losses incurred by the national economy as a result of military conflicts in eastern Ukraine needs to be more popularized and continued.

Since the interregional economic potential of Ukraine is different, which can be explained by the peculiarities of their historical development and different production and industrial specialization, the contribution of various Ukrainian regions to Ukraine's GDP is also different (Table 1). Under such conditions, it is more useful to assess the diversity of the contribution of various Ukrainian regions to the total GDP losses due to the hybrid warfare. Therefore, in this paper we will outline in general the main aspects of the problem and analyze the possible directions for its solution. To do this, we need to: determine the essence of the «GDP losses» category; establish the nature and compile a list of losses in the economic potential of Ukraine's GDP resulting from military conflicts in eastern Ukraine; assess these losses; identify possible directions for

Table 1:
Estimation of real GDP of Ukraine in the context of its regions

Indicator		Real GDP, in 2010 prices, 2005	Growth (fall) of real GDP, 2005 to 2018	Amount of revenues / losses of real GDP in 2010 prices	Share of real regional GDP (in 2010 prices, USD million) in the total real GDP of the country, 2010 to 2018,%		Real GDP, in 2010 prices, 2018
Unit		USD million	%	USD million	136419.00 USD million	38355.91 USD million	USD million
Region	Ukraine	200 330.23	-105.0	-210 341.38	100 %	100 %	38 355,91
Luhansk		8 947,09	-205.5	-18 385.72	4.2	1.0	379.25
Donetsk		26 340,28	-163.8	-43 151.90	11.9	5.4	2 071.04
Transcarpathian		3 040,45	-86.4	-2 628.42	1.4	1.5	564.95
Chernivtsi		1 921,38	-89.8	-1 726.09	0.9	1.0	365.21
Zaporizhzhia		9 061,45	-29.1	-2 637.53	3.9	4.1	1 584.35
Ivano-Frankivsk		4 366,45	-5.9	-256.05	1.9	2.2	845.01
Volyn		2 973,74	-42.9	-1 275.82	1.3	1.7	651.17
Autonomous Republic of Crimea		5 830,40	-298.7	-17 416.79	3.0	0.0	0.00
Sevastopol		1 281,07	-318.2	-4 076.71	0.7	0.0	0.00
Rivne		3 295,94	-41.1	-1 355.47	1.5	1.6	612.32
Chernihiv		3 461,12	-50.6	-1 750.71	1.6	2.0	760.78
Odesa		9 421,76	-153.2	-14 437.43	5.0	4.9	1 866.21
Sumy		3 641,73	-55.4	-2 015.76	1.7	1.9	737.79
Kherson		2 935,62	-142.2	-4 174.41	1.4	1.5	594.21
Dnipropetrovsk		18 708,75	-147.1	-27 517.52	10.7	10.4	3 980.03
Ternopil		2 331,16	-71.5	-1 666.28	1.2	1.4	529.28
Kharkiv		11 625,41	-102.8	-11 952.76	6.0	6.6	2 513.41
Mykolayiv		4 335,14	-147.8	-6 407.20	2.2	2.2	860.88
Khmelnytskyi		3 611,33	-26.2	-946.61	1.7	2.1	814.88
Poltava		8 213,30	-128.2	-10 531.52	4.1	4.9	1 875.97
Zhytomyr		3 371,72	-136.9	-4 615.92	1.7	2.2	830.65
Cherkasy		4 090,54	-80.7	-3 299.06	2.1	2.6	1 005.22
Lviv		7 801,70	-34.4	-2 683.22	3.8	5.0	1 909.32
Kirovohrad		3 120,77	-31.0	-968.13	1.5	1.8	694.13
The city of Kyiv		34 998,75	-44.5	-15 579.69	18.2	23.4	8 974.09
Vinnytsia		4 631,92	-22.3	-1 034.09	2.2	3.1	1 201.09
Kyiv		6 971,25	-85.1	-5 934.29	4.2	5.6	2 134.64

Source: Developed by the authors on the basis of review of the information base by State Statistics Service of Ukraine (2020)

restoring the economic potential of Ukraine; propose the main development directions of the Ukrainian energy market, including the identification of problems and limitations that impede the recovery process in the conditions of hybrid warfare.

The issue of economic growth losses incurred due to military conflicts and hybrid warfare, and their compensation during the subsequent period of economic transformation towards the recovery growth, is a complex one. Transformational processes of the national economy in the conditions of hybrid warfare have revealed the drawbacks of the functioning mechanisms of the Ukrainian economic system as a whole, where obsolete technology has caused industry inefficiency, and a low level of real income of the population has indicated ineffective social policies, which poses threats to social and economic security. On the way to building a sustainable market economy of Ukraine, the national economic system should be able to maintain an adequate level of socio-economic security, and the implementation of transformation processes in the Ukrainian economy should be consistent and invulnerable for the population and industry in order to prevent crisis situations and prevent the transformation of threat factors in insecurity, because it is commonly known that untimely regulation of the impact of security factors can change their level, as a result of which they acquire a destabilizing property under conditions of uncertainty. Therefore, this study will not only assess the consequences of military conflicts and hybrid warfare on the socio-economic development of Ukraine, but also determine the areas of strengthening the national security in such conditions.

2. Brief Literature Review

The issue of estimating the country's GDP losses is not widespread among Ukrainian and foreign researchers. So, among experts who showed interest in assessing the economic losses of Eastern Ukraine are V. Gupaliuk, A. Ivanchenko, V. Sobutskyi (2017), A. Meish, and S. Moroz (2015). Among the researchers of this issue is also J. Stiglitz et al. (2009), who states that it is impractical to assess the loss of economic growth in terms of per capita income or consumption, since it does not take into account the decrease in the reproductive potential of the country due to the population decline. Authors N. Fatyuha and T. Makyshuna (2015) proposed an analysis of factors affecting the state of the economy. S. Moroz (2017) built a correlation model of the dependence of GDP on the population, namely the number of employed population and the number of unemployed. Therefore, his estimation of economic losses of the national economy is based on the impact of unemployment. Ya. Boyko and N. Gapak (2017) determined the influence of the shadow economy on the level of GDP. Ch. Wyplosz (1999) investigated the importance of the negative impact of inflation on the dynamics of real GDP in the context of economic transformation. O. Khaietska and M. Verteletskyi (2018) studied the predicted changes in the GDP indicator in Ukraine compared with other countries and found that the national economy is in a stage of deep crisis, which is accompanied by stagflation, and the production and economic activities of the country's residents were significantly affected by unfavorable political and economic conditions, weak economic dynamics, significant debt obligations, long military conflict, low investment attractiveness, distrust of government bodies, and high level of corruption. E. Cordes (2015) argues that the real decline in the basic sectors of the economy, which make up GDP, is fully compensated by the increase in selling prices for goods and services and the payment by enterprises and citizens of the country of an increased amount of taxes and fees. Therefore, he insists on improving the methodology for calculating Ukraine's GDP. T. Koryagina et al. (2016) show the relationship between changes in GDP and other macroeconomic indicators and argues that the negative indicator of net exports affects the dynamics of GDP most negatively, since Ukraine's imports exceed exports and do not ensure the growth of national income. No less important are deformations within consumer demand, which are primarily caused by low income of the population, whereas an insufficient amount of investment hinders economic development and keeps it at a low level. A. Kiosyeva (2016) examined factors affecting the dynamics and structure of Ukraine's GDP using an econometric analysis of Ukraine's GDP and found that Ukraine's GDP directly depends on the country's industrial production and retail sales volume. The research by L. Akinfiyev and L. Belozorov (2014) proves that in order to achieve macroeconomic stabilization, three main steps must be taken: 1) reduce inflation; 2) stop the decline in production and begin its recovery; 3) pay off the external debt of the state. O. Soskin (2010) showed interest in the obstacles to sustainable economic development of national capitalism and structural changes in times of uncertainty and development of different mainstreams in chaos. At the same time, a group of scientists led by M. Zgurovsky (2016) refined

eight scenarios of socio-economic development of Ukraine up to 2030 using the scenario planning methodology and SWOT analysis. In addition, the Delphi and SWOT methods of analysis were used to conduct a new large-scale expert study of the socio-economic segment of society, as a result of which the authors reviewed the structural and resource losses for the Ukrainian economy in connection with the annexation of Crimea and part of Donbas and found that the largest losses were incurred by the processing, mining and energy industries, the bulk of the production capacity of which was concentrated in the occupied territory of Donbas. Based on the methodology of foreseeing the socio-economic development of Ukraine, the authors investigated the impact of the «New Energy» cluster on the growth of the national economy. Hence, based on the analysis of publications on the above issues, it is clear that the study of real GDP in terms of assessing losses of the Ukrainian economic system needs to be expanded and continued. For the most part, the authors do not propose a methodology for calculating GDP losses. In this sense, our study is different from the previous ones, because it is aimed at calculating the country's GDP losses caused by hybrid warfare and military conflicts in eastern Ukraine and searching for the development of the Ukrainian economy on the basis of achieving energy independence of the national economy through the prism of developing the «New Energy» cluster.

3. The purpose of the research is to develop a methodology for assessing the gap of real GDP and identify the contributors to the formation of threats to the economic security of the country in the conditions of hybrid warfare and military conflicts in eastern Ukraine and search for ways to overcome them.

4. Results

It is commonly known that any exogenous factors affecting the functioning of the country's economic system primarily reveal its «weaknesses». Transitional processes in the country also lead to a «transformational economic downturn.» The economic downturn in the country results in a change in socio-economic relations, the economic structure, and, consequently, leads to the reduction in employment in certain sectors and economic activities and the occurrence of other activities that are not found in the previous economic system. Thus, we will try to study the level of GDP of Ukraine through the prism of real production growth. The assessment of GDP losses incurred due to military conflicts in eastern Ukraine characterizes the assessment of missed opportunities for national economic growth and development as a result of the loss of historical time, and not the assessment of the loss of welfare, income, changes in the economic structure. So, the lost potential that could be used to restore industrial production, modernize the economy, replace fixed assets, etc. is shown in Figure 1 «Calculation of accumulated GDP losses based on the methodological principle of lost profits.» At the macro level of economic dynamics, the indicator of lost profits can be formulated as the total deviation of actual real GDP in each period. The indicator of accumulated GDP losses is calculated by summing up the deviation indicators of real GDP from the level of real GDP of the base year. Thus, the accumulated losses of Ukraine's GDP for 2005-2016 amounted to 35%. The depth of GDP decline shows the magnitude of the decline in GDP compared to the base year: if the real GDP of Ukraine in 2016 amounted to +14% of the 2005 level (+19%). Accordingly, the depth of decline for 2004-2016 amounted to 5%. The period from 2004 to 2016 was characterized by an uneven decline in real GDP, since real GDP increased from 2006 to 2008 and from 2010 to 2013, but the losses due to its decline in 2009 and 2014 required significant compensation in terms of the growing GDP of subsequent years. The extent of the accumulated GDP losses is graphically represented through the static and dynamic options for estimating GDP.

Since the economy should enter the trajectory of the basic trend line of GDP growth, and not the stationary level of GDP of the base year, we propose to estimate the GDP losses using the second option. Dynamics of real GDP of Ukraine for the period 2004-2016 in % of the 2004 level, where the accumulated GDP losses are equal to the area of the figure bounded by the 100% line above and below by the GDP values during the period of decline and recovery growth, i.e. in the period 2008-2009 and 2013-2015. Due to the economic downturn, Ukraine's GDP losses amounted to 5%, although Ukraine's nominal GDP is 5.4 times that of 2005. However, the Ukrainian economy worked to reduce accumulated expenses due to economic growth in 2007-2008 and 2011-2013. As a result, the total amount of accumulated losses for the entire period is estimated at 35%. Thus, in addition to recovery growth, the accumulated GDP losses are nullified as

a result of compensating growth. Hence, the situation is much worse with compensating growth. In Ukraine, the recovery growth compensates for growth at the turn of 2006-2008, but the economic crisis that broke out in 2009 interrupted the period of compensating growth. In 2010-2012, Ukraine had a recovery growth against the level of GDP before the crisis, i.e. 2009. Since 2012, a slowdown in the growth of the Ukrainian economy has begun, which then developed into decline in 2013. This resulted in a slowdown in overcoming accumulated losses. So, the economic downturn in 2014-2016 significantly complicates potential for subsequent compensating growth.
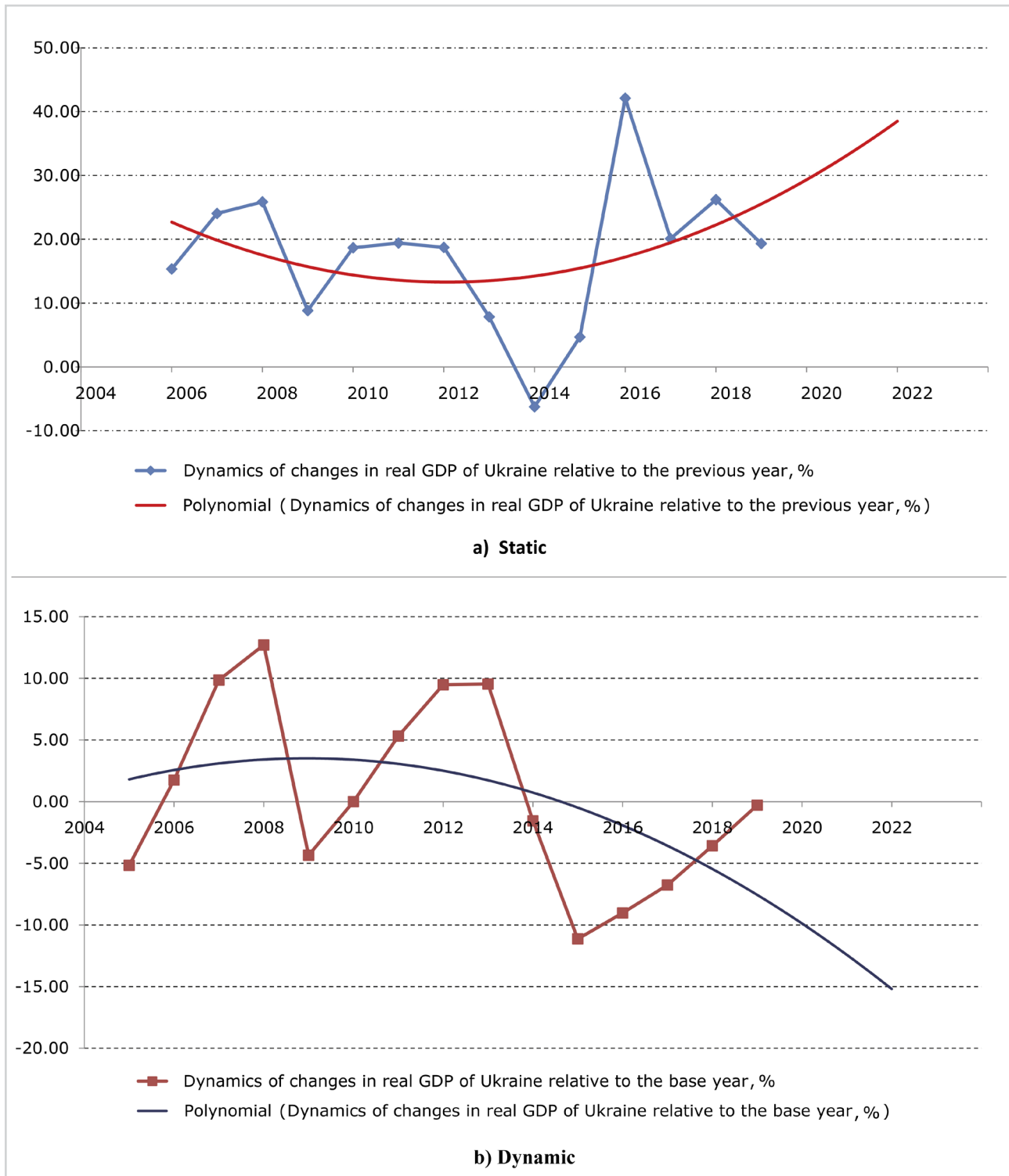

a) Static

b) Dynamic

Figure 1:
Options for estimating the extent of accumulated GDP losses
Source: Developed by the authors on the basis of review of the information base
by State Statistics Service of Ukraine (2020)

According to calculation data, in order to overcome the GDP losses in 2014-2015 (-20%) by 2030, the annual growth of real GDP should be at least 8%. A trend line has been added to the dynamics of real GDP of Ukraine in Figure 1, which shows the dynamics of real GDP, which would have occurred if the average annual growth rate of GDP remained the same as in the period preceding the decline transformation. The calculation of accumulated losses by the dynamic option yields a figure of 5% of GDP 2005. In Figure 1 (b) accumulated losses can be defined as the area of the figure bounded above by the basic growth trend line, and below by the dynamics line of actual GDP. If we calculate the average actual growth rate of real GDP of Ukraine for 2004-2016, it will be equal to 2%. In Figure 1 (a), the dynamics of Ukraine's GDP at this rate is represented by the trend line of the actual GDP dynamics. The calculation of the accumulated GDP losses by the dynamic option is more complicated, since it is necessary to first estimate the average growth rate of their GDP in the pre-crisis period. The basic trend line of the country's GDP growth, which would have taken place if the line had maintained the average annual GDP growth rate for the previous period, has a downward slope (Figure 1 (b)).

The analysis of data clearly shows that military conflicts in eastern Ukraine in 2014-2015 significantly accelerated and intensified destructive processes in the country's economy. The loss of gas deposits of the Black Sea shelf, the tourist complex of the Crimea, the major part of industrial enterprises of Donbas, the imposition of trade restrictions and sanctions by the Russian Federation, as well as blocking by the Russian Federation of Ukraine's exports to the Caucasus, Central Asia, Kazakhstan, China and Mongolia actually destroyed the existing model and structure of the domestic mainly commodity oriented economy and made impossible its development under the previous model. In this regard, in the international labor cooperation, Ukraine's economy must find other areas for itself using the economy clusters with geographic, resource and human benefits. Large enterprises lost in connection with the withdrawal of large territories from Ukraine's economic space formed the basis of entire branches of the country's economy. So, according to the research by M. Zgurovsky (2016), the part of the Donbas (with the share of population of 14% of the total population of Ukraine), which was lost by Ukraine due to Russian military aggression, was the country's main industrial and energy center. The share of this region in the national real GDP was 13%, including 25% of industry and 7% of agricultural output. This region provided 95% of domestic coal needs and a disproportionate share of merchandise exports - from 23 to 25%. The Crimea (with the share of population of 4.3% of the total population of Ukraine) provided 3% of real GDP and up to 2% of foreign trade. The largest losses were incurred by the processing, mining and energy industries, the bulk of the production capacity of which was concentrated in the occupied territory of Donbas. Structural and resource related losses caused by this expropriation can conveniently be classified into two categories: the first category is the loss of territories; the second category is the permanent loss of economic potential caused by the destruction of the economic and industrial sector (enterprises, factories) that were not relocated to the territory controlled by Ukraine at the initial stages of military conflicts in eastern Ukraine.

Figure 2 characterizes the level of potential losses of individual industries in the structure of Ukraine's industry, and shows that mining and quarrying had the largest impact on the decline in real GDP of Ukraine as it reduced the growth rate of industrial production by 13 and 14% in 2014 and 2015, respectively; production of chemicals and chemical products, metallurgical production decreased by 14% and 16% in 2014 and 2015, respectively; mechanical engineering decreased by 20% and 14% in 2014 and 2015, respectively.

So, the mining industry, which was strategic for Ukraine, suffered a critical level of loss. Almost half of all Ukrainian coal was mined in the territory controlled by the so-called «Donetsk and Luhansk people's republics», including almost 100% anthracite. In 2014, coal production generally decreased by more than 22% compared to the previous year, including decrease in production of anthracite coal by one third (National Institute for Strategic Studies, 2015). In 2015, production decreased by another 36.8% compared to 2014. The loss of resources entails a significant decrease in economic indicators of the functioning of Ukraine's fuel and energy complex. Another strategically crucial industrial segment, which was almost completely concentrated in the Donbas, is the production of iron ore, which has decreased by 9.5 million tons over the past two years. Salt production decreased significantly over the indicated period, the production of which is also the prerogative of the Donetsk region (Zgurovsky, 2016).

The analysis of calculations of GRP losses in the conditions of hybrid warfare (Table 1) allows us to conclude that there is a regional differentiation of the degree of harm to the country's
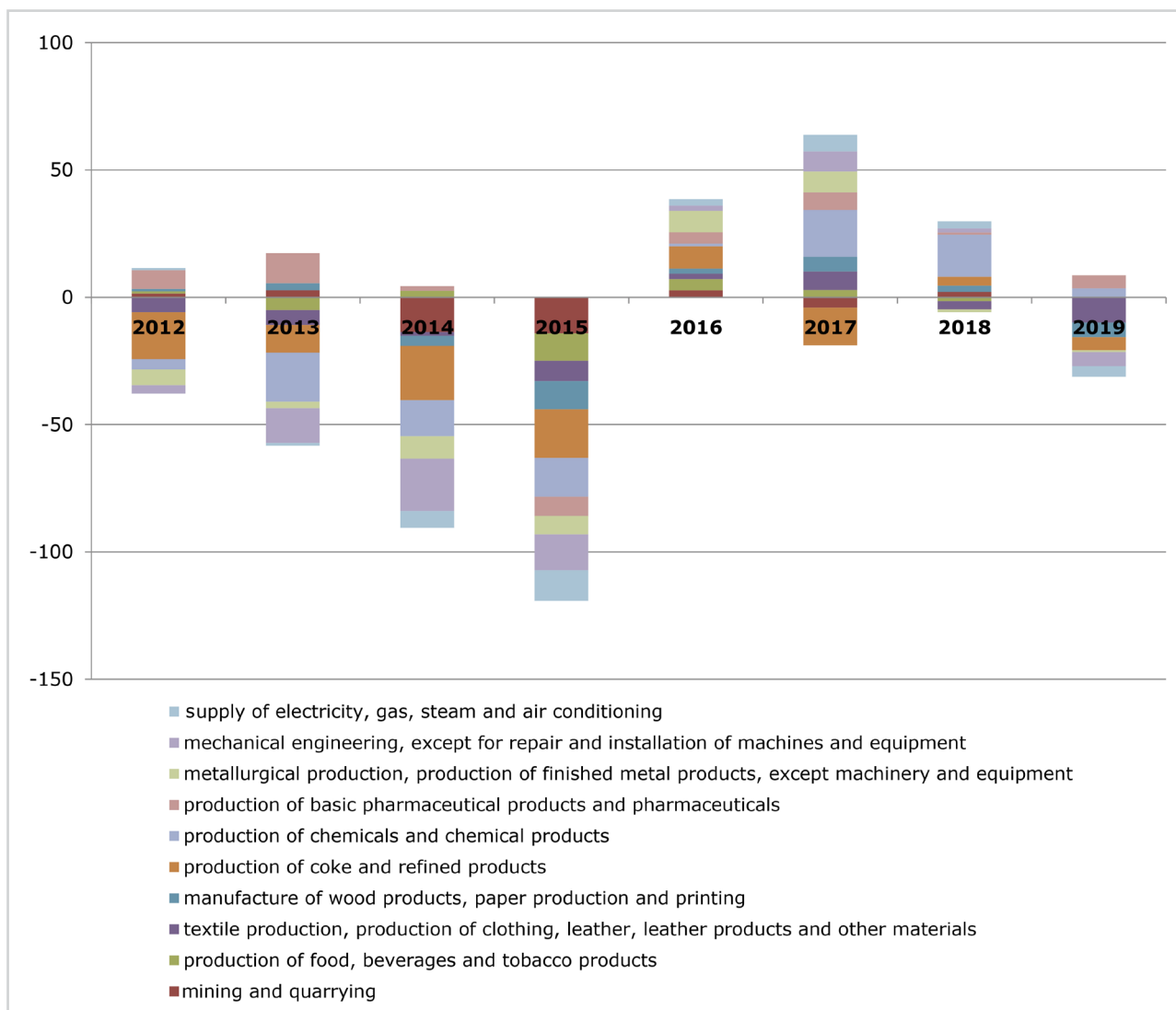
Figure 2:
Growth rates, decrease (-) of industrial products by core activities in Ukraine, 2012-2019, %
Source: Developed by the authors on the basis of review of the information base by State Statistics
Service of Ukraine (2020)

economy where the Donetsk region suffered the highest economic damage, although the Lu-hansk region experienced changes in the economy more and reduced its own economy by as much as 70%. The analysis shows that the share of individual regions in the overall structure of the country's economy is different. Since the real sector of economy, namely, coal production, metallurgy, mechanical engineering, and chemical industry, which provided a significant part of Ukraine's domestic industrial production and exports, are located in the eastern regions, it was these industries that suffered huge losses, and a number of transport and logistics facilities were destroyed.

For the real sector, as well as for the economy as a whole, 2014-2015 were periods of signifi-cant loss. Ukraine has lost at least 20% of its economic potential. In the course of the armed con-frontation in the eastern regions of Ukraine, the production facilities of the coal, metallurgical, me-chanical engineering, chemical industries were destroyed, which provided a significant part of the domestic industrial production and exports, and a number of transport and logistics facilities were destroyed. The negative dynamics was demonstrated by all the main aggregated types of indus-trial activity. Production cutbacks in the mining and quarrying amounted to 13.7%, in the proces-sing industries - 9.3%. The number of enterprises in the mining and metallurgical complex has de-creased. 7 coal mines of the Donets Basin were completely destroyed, 55 mines producing an-thracite coal are located in the territory of Donetsk and Luhansk regions controlled by terrorists. Losses of domestic metallurgical enterprises are estimated at about UAH 40 billion, including

UAH 25 billion of lost income from under-produced products and UAH 15 billion of destroyed fixed assets in the amount.

In mechanical engineering, the decrease in production amounted to 20.6%; according to preliminary estimates, industry losses in 2014 amounted to UAH 10 billion (Meish, 2015). More than a quarter (27%) of the industrial potential of Donetsk and Luhansk regions were exported to the Russian Federation, which will deprive Ukraine of strategic capacities (Grebenik, 2014). Chemical production volumes decreased by 14.2%, ammonia production in Ukraine decreased by 30.8%, and the capacity for the production of mineral fertilizers was actually lost by 36%.

As a result of the above, the development of the «New Energy» cluster is proposed among the directions of restoring the economic potential of Ukraine, which should include the development of domestic gas and oil production and the establishment of a transparent and competitive energy market by differentiating suppliers and investors in the development of this industry. The authors lead by M. Zgurovsky (2016) developed an impact matrix of strengths and weaknesses of the «New Energy» economy cluster, which indicates the opportunities and threats for the development of the energy market, where strengths can enhance opportunities and ease the threats of development of both the energy sector of the economy and the national economy as a whole, and vice versa, weaknesses can increase the threats to the security of the national economy.

5. Conclusion

1. Our study of the impact of military conflicts and hybrid warfare on the socio-economic development of Ukraine allowed to specify the essence of the category «GDP loss», which characterizes the assessment of missed opportunities for national economic growth and development as a result of the loss of historical time that could be used for restoration of industrial production, modernization of the economy, and replacement of fixed assets.

2. The detailed analysis of the level of real GDP allowed to estimate GRP losses (by regions of Ukraine); as a result, it was found that the losses in the economic potential of Ukraine's GDP were due to GRP economic losses (gross regional product) of Eastern Ukraine caused by military conflicts and hybrid warfare, and differentiated assessment of GRP economic losses can serve as a basis for building regional policy in the field of public administration.

3. The nature and list of GDP losses due to the loss of industry in the Donetsk and Luhansk regions of Ukraine have been established, including losses of investments, which are necessary for the national economy to increase energy efficiency, modernize production capacities based on the development of high-tech, knowledge-intensive and energy-efficient industrial production and the development of basic sectors of the regional economy; losses of transport and communication, which are necessary to ensure logistics flows through the Luhansk and Donetsk regions.

4. Feasible directions of restoring the economic potential of Ukraine have been identified, among which the need for the development of the «New Energy» cluster is identified, which should include the development of domestic gas and oil production and the establishment of a transparent and competitive energy market by differentiating suppliers and investors in the development of this industry.

5. It has been proved that in order to return to the level of the pre-crisis period, Ukraine will need to increase its annual GDP growth rate by at least 8%.

The prospects for further scientific research in this direction are possible in the context of continued analysis of the criteria of influence on the components of GDP, which lead to losses or contribute its growth.

References

1. Akinfiyeva, L. P., & Belosorova, L. S. (2014). Factor analysis of the dynamics and structure of Ukraine's GDP. *Visnyk sotsialno-ekonomichnykh doslidzhen* (*Herald of Social and Economic Research), 52*(1), 93-98 (in Ukr.).
2. Boyko, Ya. M., & Gapak, N. M. (2017). GDP of Ukraine: Level and trends of dynamics. *Naukovyi visnyk Mizhnarodnoho humanitarnoho universytetu* (*Scientific Herald of the International Humanitarian University), 25*(1), 69-72 (in Ukr.).
3. Cordes, E. (2015). *Ukraine's GDP and its impact on the lives of Ukrainians.* Retrieved from http://publicaudit.com.ua/reports-on-audit/vvp-ukrayini-ta-jogo-vpliv-na-zhittya-ukrayintsiv (in Ukr.)
4. Fatyuha, N. G., & Makyshuna, T. P. (2015). Analysis of Dynamics of GDP of Ukraine. *Efektyvna ekonomika (Effective Economy), 12,* Retrieved from http://www.economy.nayka.com.ua/?op=1&z=4634 (in Ukr.)
5. Grebenik, K. (2014). *What Donbas Enterprises Risk to Find Out in Russia.* Retrieved from https://news.finance.ua/ua/news/-/333289/yaki-pidpryyemstva-donbasu-ryzykuyut-opynytysya-v-rosiyi (in Ukr.)

6. Gupaliuk, V., Ivanchenko, A., & Sobutsky, V. (2017). Features of expert assessment of Donbas economy loss. *Visnyk Natsionalnoho universytetu vodnoho hospodarstva ta pryrodokorystuvannya. Ekonomichni nauky (Herald of the National University of Water and Environmental Engineering. Economic Sciences), 77*(1), 2017, 11-17 (in Ukr.).

7. Khaietska, O. P., & Verteletskyi, M. V. (2018). Analysis of GDP dynamics in Ukraine and other countries of the world. *Efektyvna ekonomika (Effective Economy), 1.* Retrieved from http://www.economy.nayka.com.ua/pdf/1_2018/60.pdf (in Ukr.)

8. Kioseva, I. A., & Kurova, T. G. (2016). Analysis of the gross domestic product of Ukraine. Visnyk Berdianskoho universytetu menedzhmentu i biznesu (*Herald of the Berdyansk University of Management and Business*), *35*(3), 21-26 (in Ukr.).

9. Koryagina, T. V., Stasiuk, A. V., & Sosenkova, K. R. (2016). Dynamics of Ukraine's GDP and the impact of some components on its change. *Young Scientist, 39*(12), 763-767 (in Ukr.).

10. Lipkan, V. A. (2015). The essence of hybrid war against Ukraine. Electronic resource. Global Organization of Allied Leadership. Retrieved from http://goal-int.org/sutnist-gibridnoi-vijni-proti-ukraini (in Ukr.)

11. Meish, A. V., & Moroz, S. V. (2015). Estimation of military casualties in eastern Ukraine. *Visnyk Khmelnytskoho natsionalnoho universytetu (Herald of Khmelnitsky National University), 5*(1), 161-165 (in Ukr.).

12. Moroz, S. V. (2017). Level of GDP as criterion of estimation of national safety of Ukraine. *Problemy systemnoho pidkhodu v ekonomitsi (Problems of the System Approach in the Economy), 62*(2). Retrieved from http://psae–jrnl.nau.in.ua/journal/6_62_1_2017_ukr/15.pdf (in Ukr.)

13. National Institute for Strategic Studies (2015). *Ukrainian coal industry in hybrid war conditions. Analytical note.* Retrieved from http://www.niss.gov.ua/articles/1890 (in Ukr.)

14. Soskin, O. I. (2010). The model of people's capitalism as the basis of competitive development of Ukrainian economy. *Ekonomist (Economist), 2,* 21-25. Retrieved from http://soskin.info/news/2996.html (in Ukr.)

15. State Statistics Service of Ukraine (2020). *Statistical collections «Ukraine-2014», «Ukraine-2015», «Ukraine-2016».* Retrieved from http://www.ukrstat.gov.ua (in Ukr.).

16. Stiglitz, J. E., Sen, A., & Fitoussi, J.-P. (2009*). Report by the Commission on the Measurement of Economic Performance and Social Progress.* Retrieved from https://www.researchgate.net/publication/258260767_Report_of_the_Commission_on_the_Measurement_of_Economic_Performance_and_Social_Progress_CMEPSP

17. Wyplosz, Ch. (1999). *Ten Years of Transformation: Macroeconomic Lessons.* World Bank Annual Conference on Development Economics. Washington. doi: https://doi.org/10.1596/1813-9450-2288

18. Zgurovsky, M. Z. (2016). *Foresight and construction of the strategy of socio-economic development of Ukraine in the medium-term (until 2020) and long-term (until 2030) time horizons.* Kyiv: NTUU «KPI», View «Polytechnic» (in Ukr.).