



STRATEGIC PRIORITIES OF INCREASING THE LEVEL OF ECONOMIC SECURITY OF THE NATIONAL ECONOMY OF THE COUNTRY

Dmytro Zhuravlov¹, Viacheslav Volik², Iryna Slovka³, Yuliia Lushchyk⁴, Hanna Tsyhanok⁵

¹ Office of the President of Ukraine, st. Bankova, Kyiv, 11, 01220, Ukraine

^{2*} Mariupol State University, 129a, Budivelnkyiv Ave., Mariupol, 87500, Ukraine

³ National University of Water and Environmental Engineering, 11, Soborna str., Rivne, 33028, Ukraine

^{4,5} Sumy National Agrarian University. Gerasima Kondratyeva str., 160, Sumy, 40000, Ukraine

E-mail: ^{2*}volik@ua.fm (Corresponding author)

Received 18 March 2020; accepted 28 October 2020; published 30 December 2020

Abstract. The article solves the current scientific problem of substantiation of theoretical and methodological bases of forecasting the regional aspect of ensuring economic security of the national economy and the development of conceptual guidelines and practical recommendations for improving management processes. The impact of threats on the economic security of the regions was determined. The use of cluster analysis tools allowed to determine the impact of socio-economic development factors on the economic security of the regions. It was established that the economic security of the “Higher” regional cluster is affected by such threats as the loss of sales markets, reduction of protection and rational use of natural resources, the level of control over corruption, political stability and the absence of violence/terrorism. The economic security of the “Average” regional cluster is affected by declining political stability and the absence of violence/terrorism, protection and rational use of natural resources, loss of sales markets, reduction of human development level, efficiency of state power, supremacy of the law. The economic security of the “Lower” regional cluster is affected by the loss of sales markets, declining human development level, control over corruption, efficiency of state authority, political stability and the absence of violence/terrorism, protection and rational use of natural resources. It is recommended to develop the Strategy of economic development of regions on the basis of the world experience for the purpose of ensuring economic security of national economy of the country.

Keywords: economic security; cluster; region; national economy; strategy

Reference to this paper should be made as follows: Zhuravlov, D., Volik, V., Slovka, I., Lushchyk, Y., Tsyhanok, H.. 2020. Strategic priorities of increasing the level of economic security of the national economy of the country. *Journal of Security and Sustainability Issues* 10(2): XX-XX. [http://doi.org/10.9770/jssi.2020.10.2\(12\)](http://doi.org/10.9770/jssi.2020.10.2(12))

JEL Classifications: F35, F42

1. Introduction

The features of modern development of the national economy, regional disparities, variability, dynamism and multidimensionality of the economic environment, the processes of decentralization of public administration require the use of the new approaches to forecasting economic security. The solution of the set task, in its turn, is possible through determination of the ability of regions to solve problems of timely identification of destabilizing factors and the development of economic security management strategies. Forecasting is one of the decisive factors in improving the economic security of the national economy and, therefore, becomes the basis for the formation of theoretical and methodological apparatus and appropriate methodical tools.

The peculiarities of modern development of the national economy, variability, dynamism and multidimensionality of the economic environment, the processes of decentralization of public administration cause the growing urgency of the issue of national economic security and its regional disparities (Prause, G., Tuisk, T., & Olaniyi (2019); Gaile, Dž., Tumulavičius, V., Skrastiņa, U., & Načiščionis, J. (2020); Tvaronavičienė, M., Plėta, T., Della Casa, S., & Latvys, J. (2020); Mazzanti, M., Mazzarano, M., Pronti, A., & Quatrosi, M. (2020)).

It is the economic development of the regions that is the basis for ensuring the economic security of the state, especially in the conditions of decentralization.

The purpose of the study is to substantiate the methodological and conceptual foundations of ensuring economic security of the national economy in the regional aspect as well as to develop practical recommendations for their implementation.

2. Literature Survey

There are many approaches to the number and sequence of stages of forecasting economic systems of different hierarchies. The classical forecasting procedure includes: creation of an information base; object analysis; analysis of the external environment; determination of the predicted trajectory of an object; decision-making; assessment of forecast quality.

Antropova, T. G., et. al. (2015) offer the following stages of a forecasting process: formation of the concept of a forecast and the information base of its implementation; making a forecast and substantiation of its reliability. Levchuk, O., & Kovalenko, V. (2016) distinguish the following stages: pre-scenario stage which provides a description of an object of forecasting, analysis of the main elements, building a system of forecasting models and a scenario stage.

Sjoberg, L. (2015) highlights the following main stages: substantiation of forecasting; description of the external environment; development of a forecast model, development of an alternative option, assessment of the reliability, accuracy and validity of the developed forecast; development of recommendations for the further process management; statement of tasks for the development of a new version of the forecast.

Dong, X., & Kong, Z. (2016) represent the forecasting process in the following sequence of stages implementation: 1) initial; 2) analytical; 3) organizational; 4) forecasting; 5) final.

Jun, W. K., Lee, M. K., & Choi, J. Y. (2018) proposed an algorithm for assessing the level of economic security which contains the following elements: identification of functional characteristics of economic security; identification of structural components of economic security; definition of economic security indicators; establishment of normative values of economic security indicators; monitoring of indicators, hierarchical coordination of results and their analysis.

Best, J. (2017) offers to study the level of economic security of a region as an object of the national

economy in the following sequence: 1) formation of a balanced system of indicators to determine the level of economic security of the economy according to selected functional components; 2) calculation of unit indicators of the level of economic security of an object of economy; 3) formation of equations of Harrington functions; 4) calculation of group indicators of the economic security level and an integrated indicator; 5) forecasting the level of economic security of an object of economy using the Brown model.

Schneider, F., Raczkowski, K., & Mróz, B. (2015) suggested the following sequence of stages of assessment of the integral indicator of economic security of regions: 1) choosing the indicators for measuring economic security at the level of administrative-territorial units of a region- districts and cities; 2) quantitative and qualitative spatio-temporal assessment of the components of economic security of a region by formalization methods; 3) quantitative and qualitative spatio-temporal integral assessment of economic security of a region; 4) classification of the administrative-territorial unit of a region according to the level of economic security; 5) creation of a synthetic map of the geospatial organization of the region ES; 6) development of future scenarios for ensuring economic security of a region by the method of SWOT-analysis.

The analysis of theoretical sources on approaches to the assessment and forecasting of economic security and the defined methodical tools for the development of forecast models of the integral indicator of economic security of the regions allowed to identify the two directions:

- 1) construction of a regression model for forecasting the integral indicator of economic security, calculated according to the method of taxonomic analysis (Ertürk, E. (2015), Schor, J. (2016), Liu, F., & Liu, R. (2019));
- 2) models for forecasting the integral indicator of economic security with the help of the methods of canonical and component analysis (Balaam, D. N., & Dillman, B. (2015), Stiglitz, J. E. (2015)).

Paying tribute to the works of scientists on the researched issues and the significance of the obtained scientific results, it should be noted that some theoretical and methodological, practical issues of forecasting the economic security of regions and their impact on economic security of the national economy remain unresolved. There is an objective need for further research on the conditions for ensuring the economic security of the national economy in a regional aspect. Despite the significant achievements of the authors, the methodology for forecasting the economic security of the national economy, taking into account its regional component, needs to be clarified. There is a necessity for the further research of destabilizing factors, determination of strategic priorities for ensuring economic security of the national economy, formation of strategies to increase the economic security of the regions and the development of a mechanism for their implementation. The abovementioned led to the choice of the research theme and its scientific relevance.

3. Methods

The theoretical and methodological basis of the study were the provisions of economic theory, macro- and microeconomics, management theory, the works of leading scientists on ensuring economic security of regions and its management.

The next research methods were used in the study: generalization and systematization; computational-analytical and comparative; economic and mathematical (for the calculation of integral indicators of economic security of regions and creation of their forecast models); matrix (to determine the interrelation of strategic priorities, economic security of regions and destabilizing factors of economic development); graphic and tabular (for visual representation of statistical material, visualization of theoretical and practical provisions); cluster analysis (for grouping regions according to the level of economic security). Data processing was performed using the application software product STATISTICA 10.0.

Laws of Ukraine, Decrees of the President of Ukraine, normative documents of the Cabinet of Ministers of Ukraine, official materials of the State Statistics Service of Ukraine, official materials of territorial bodies of the State Statistics Service of Ukraine, official materials and publications of international organizations, scientific publications of scientists, results of own research of the author became the information and regulatory framework.

4. Results

In order to determine regional disparities in ensuring socio-economic development, the regions of Ukraine were grouped by means of the cluster analysis methods which allowed to identify the homogeneity of objects (regions) of the crisis management system.

The initial data are the materials of the State Statistics Services of Ukraine on the socio-economic situation of the regions of Ukraine in 2018 which were formed on the basis of data obtained from the Ministry for Development of Economy, Trade and Agriculture of Ukraine: Number of population, thousands people (A1); Number of people involved in economic activities, thousands people (A2); Available income of the population, UAH/person (A3); Expenditures of the population (A4); Average monthly salary, UAH (A5); Consumer price index (A6); Gross regional product, mln UAH (A7); Volume of sold industrial products, mln UAH (A8); Agricultural products, mln UAH (A9); Crop products, mln UAH (A10); Livestock products, mln UAH (A11); Commissioning of the total living area, thousand m² (A12); Retail turnover of enterprises, mln UAH (A13); Export of goods, mln USD (A18); Import of goods, mln USD (A19); Export of services, mln USD (A20); Import of services, mln USD (A21); Financial result before taxation (profit), bln UAH (A22); Financial result before taxation (loss), bln UAH (A23); Capital investments, bln UAH (A17).

It should be noted that this list of source data differs from that defined at the beginning of the study. Since 2018, while compiling the statistical digest on the regions of Ukraine, separate information on export and import has been provided; in the financial result the loss and profit has been represented separately, not the balance only. In order to conduct a retrospective analysis of the economic security of the regions, an initial sample of data (A1-A17) was used. Therefore, the mathematical expression of variables is presented as:

A14 – export of goods and services:

$$A_{14} = A_{18} + A_{20} \quad (1)$$

A15 – import of goods and services:

$$A_{15} = A_{19} + A_{21} \tag{2}$$

A16 – financial result before tax (balance):

$$A_{16} = A_{22} + A_{23} \tag{3}$$

The identified indicators are divided into the two groups- stimulants and deterrents. In this case the deterrents are indicators, the presence and increase of which is considered as a negative phenomenon. Therefore, in this particular case, the following indicators are included in the deterrent group: Consumer price index (A6) and Financial result before tax (loss), bln UAH (AI9) and when performing calculations their values are taken into account with a minus sign. In addition, before using any of the methods of the cluster analysis, it is necessary to perform the procedure of standardization and rationing of data in order to bring all indicators to one value (to make them comparable). The initial data of socio-economic development of the regions during 2018 are standardized using the appropriate module of the demo version of the software package Statistica 10.

In order to determine the number of clusters for a given set of objects, the entropy rate (uncertainty) for each possible grouping is calculated. The best option is the variant in which the deviation of the actual entropy rate from its maximum value is minimal.

The entropy of the classification of n objects is divided into B classes and is determined by the expression:

$$G = - \sum_{b=1}^B \frac{h_b}{h} \log_2 \frac{h_b}{h} \tag{4}$$

where G – is the entropy of the classification, bit; h_b – is the number of regions which were addressed to the b - class, units.

The maximum possible value of entropy G_{max} is determined by the expression (4) at values equal to each other, i.e. the number of objects is evenly distributed in clusters.

The deviation of entropy from the maximum value is determined by the expression:

$$\Delta G = \frac{(G_{max} - G) \times 100}{G_{max}} \tag{5}$$

The results of calculation and analysis of entropy rates in conditions of different numbers of clusters are shown in Table1.

Table 1. Calculation of entropy of different variants of the numbers of clusters to compare the regions of Ukraine according to the state of their socio-economic development (according to the results of 2018)

Number of clusters	Number of regions in a cluster №							Maximum possible of entropy, bit	Entropy, bit	Deviation of entropy from the maximum possible value, %
	1	2	3	4	5	6	7			
2	16	8						1,00	0,94	6,08
3	7	9	8					1,58	1,57	0,75
4	14	1	6	3				2,00	1,52	24,10

5	3	14	1	5	1			2,32	1,67	28,02
6	3	14	4	1	1	1		2,58	1,82	29,61
7	3	1	1	13	1	1	4	2,79	2,02	27,55

Source: author's calculations

Thus, the smallest deviation of the entropy index from its maximum possible value is observed when grouping objects into 3 clusters = 0.75%. Therefore, the regions of Ukraine in terms of socio-economic development (2018) are grouped into 3 clusters (by the k-means method).

The choice of the stated method of clustering is justified by the following advantages: it does not build geometric clusters which avoids their intersection and, as a consequence, hitting the same element in several clusters; it allows us to form a given number of clusters which facilitates the economic interpretation of the received results.

To identify regional differences in economic security by cluster analysis method, the corresponding module of the software product Statistica 10.0 «Statistics / Multivariate Exploratory / Cluster analysis» was applied.

The results of analysis of variance of the constructed clusters showed the absence of significant differences (i.e. the level of significance exceeds 0.05) according to the following indicators: A6 – Consumer price index ($p = 0.57$); A11 – livestock products ($p = 0.19$); A12 – commissioning of the total living space ($p = 0.12$).

This proves that the average values of the studied indicators are different for this level of significance and these indicators can be excluded and the analysis can be performed again. The results of re-checking the indicators of cluster analysis allowed us to conclude that other indicators could be used for the further calculations.

Carrying out clustering with the help of k-means method allowed us to determine the components of the built clusters. The list of regions (observations) included in each of the clusters was obtained using the function «Members for each cluster & distances» – Table 2.

Table 2. Grouping of regions (oblasts) of Ukraine into clusters according to the indicators of socio-economic development

Cluster 1 (9 objects)	Cluster 2 (8 objects)	Cluster 3 (7 objects)
Vinnitsia	Volyn	Dnipropetrovsk
Kirovohrad	Zhytomyr	Donetsk
Mykolayiv	Zakarpattia	Zaporizhia
Poltava	Ivano-Frankivsk	Kyiv
Sumy	Luhansk	Lviv
Kherson	Rivne	Odesa
Khmelnitskyi	Ternopil	Kharkiv
Cherkasy	Chernivtsi	

Chernihiv		
-----------	--	--

After clustering using the k-means method it is established that:

the first cluster should include the nine regions of Ukraine (Vinnytsia, Kirovohrad, Mykolayiv, Poltava, Sumy, Kherson, Khmelnytskyi, Cherkasy and Chernihiv);

the second one should include the eight regions (Volyn, Zhytomyr, Zakarpattia, Ivano-Frankivsk, Luhansk, Rivne, Ternopil, Chernivtsi);

the third cluster should include the seven regions (Dnipropetrovsk, Donetsk, Zaporizhia, Kyiv, Lviv, Odesa, Kharkiv).

The quality of the classification was checked by methods of discriminant analysis using the module «Multivariate Exploratory / Discriminant».

In this case the cluster number is selected as the grouping variable. According to the results obtained during the calculations it was determined that the Wilk's criterion of statistics is in the range [0,1] and is 0.00278. This indicates the conclusion that the classification is correct.

To check the correctness of the samples, the results of the matrix classification were obtained (Table 3).

Table 3. Classification matrix (discriminant analysis)

Group	Percent - Correct	G_1:1-p=,37500	G_2:2-p=,33333	G_3:3 - p=,29167
G 1:1	100,0000	9	0	0
G 2:2	100,0000	0	8	0
G 3:3	100,0000	0	0	7
Total	100,0000	9	8	7

The control of the correctness of the received breakdown of the initial set of observations into clusters was also performed using canonical analysis which is possible provided that there are at least three groups and the availability of at least two variables in the model (Figure 1).

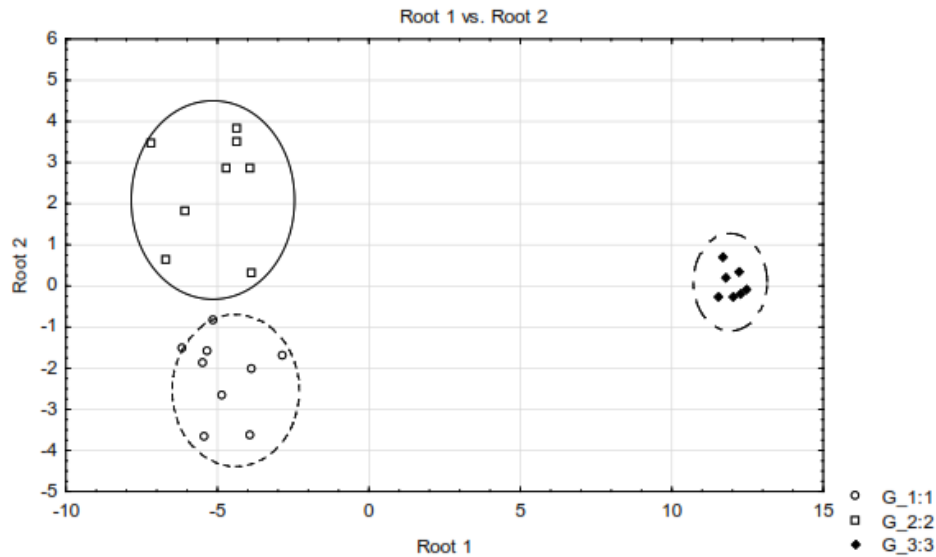


Figure 1. Graph of spread of canonical values

The diagram of spread of canonical values confirms the correctness of the division of the regions of Ukraine into 3 clusters. In addition, the data in Figure 1 show that there are significant differences between cluster №3 and clusters № 1, № 2.

In order to determine the characteristics of the identified clusters, the average values for each cluster were investigated which were built according to non-standardized variables (Figure 2).

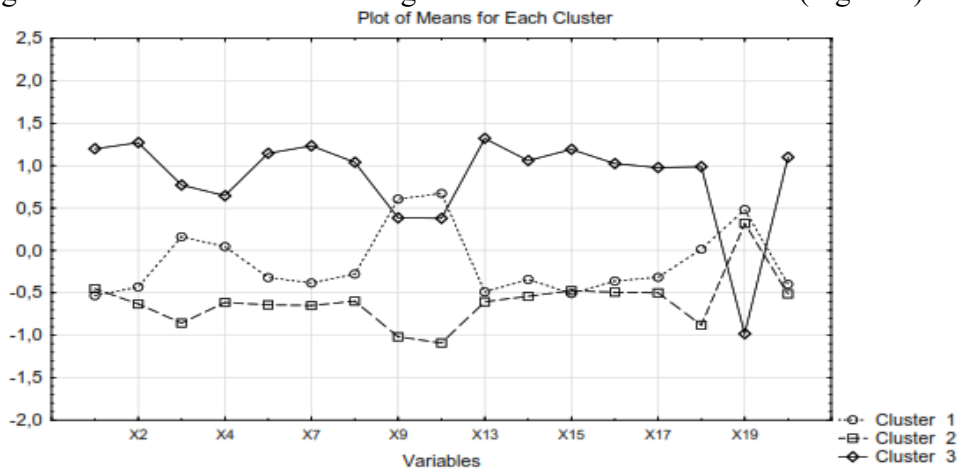


Figure 2. Graph of average values of factor variables for clusters

The graph of average values of factor variables for clusters shows a significant difference between the third cluster and other obtained clusters which is characterized by the highest values of almost all indicators except A9 (agricultural products), A10 (crop products) and A19 (pre-tax financial result (loss)).

Since in the cluster analysis the indicators were initially standardized then the clusters are characterized by non-standardized data (Table 4).

Table 4. Average values of factor variables for clusters

Variables		Cluster		
		1	2	3
X1	Number of available population, thousand people	1214,5	1284,313	2664,129
X2	Number of people involved in economic activity, thousand people	502,956	443,613	1001,414
X3	Available income of the population (UAH/person)	28310,72	23290,59	31314,54
X4	Expenditures of the population	37401,38	32014,54	42318,43
X5	Average monthly salary, UAH	3449,222	3298,625	4134,143
X7	Gross regional product, mln UAH	36713,11	26576,88	98072,14
X8	Volume of sold industrial products, mln UAH	41536,51	20188,58	129401,5
X9	Agricultural products, mln UAH	12407	5896,05	11519,41
X10	Crop products, mln UAH	9079,089	3683,8	8179,543
X13	Retail turnover of enterprises, mln UAH	10441,36	9095,713	31353,27
X14	Export of goods, mln USD	730,0111	446,975	2708,729
X15	Import of goods, mln USD	352,5667	379,125	1685,786
X16	Export of services, mln USD	79,7	52,2625	367,4429
X17	Import of goods, mln USD	39,5	23,0125	155,9286
X18	Financial result before taxation (profit), bln UAH	10,55556	3,475	18,24286
X19	Financial result before taxation (loss), bln UAH	8,766667	12,2875	40,47143
X20	Capital investments, bln UAH	5,266667	4,575	14,42857

The information in Figures 1-2 and Table 4 shows the heterogeneity of the regions of Ukraine in terms of their economic security level. And from the standpoint of socio-economic indicators, the three main segments(clusters) are distinguished. The generalization of the differences allowed to characterize the clusters the features of which are given in Table 5.

Table 5. Characteristics of regional clusters

Cluster characteristics	Specific weight of a cluster	Structure of a regional cluster
The highest values of agricultural production volumes (including crop production); Average indicators of the number of people involved in economic activity, available income of population, expenditures of population, average monthly wages, gross regional product, sold production of industry, retail turnover of enterprises, export of goods and services, import of services, enterprise profits, capital investments; The lowest indicators of population number, import of goods, losses of enterprises;	37.5%	Vinnitsia, Kirovohrad, Mykolayiv, Poltava, Sumy, Kherson, Chmelnytskyi, Cherkasy, Chernihiv

<p>The average values of the number of people, import of goods, losses of enterprises; The lowest indicators of the number of people involved in economic activity, available income of population, expenditures of population, average monthly wages, gross regional product, volumes of sold production of industry, agricultural production volumes (including crop production), retail turnover of enterprises, export of goods and services, import of services, profit of enterprises, capital investments.</p>	<p>33.3%</p>	<p>Volyn, Zhytomyr, Zakarpattia, Ivano-Frankivsk, Luhansk, Rivne, Ternopil, Chernivtsi</p>
<p>The highest indicators of the number of people involved in economic activity, available income of population, expenditures of population, average monthly wages, gross regional product, volumes of sold production of industry, retail turnover of enterprises, export of goods and services, import of goods and services, profit of enterprises, capital investments, profit and loss of enterprises; The average indicators of agricultural production volumes (including crop production).</p>	<p>29.2%</p>	<p>Dnipropetrovsk, Donetsk, Zaporizhia, Kyiv, Lviv, Odesa, Kharkiv</p>

The regions of the third cluster have the best indicators, its share in the structure is 29%. Almost all indicators are characterized by the highest values except for the volumes of agricultural production. It should be noted that factor variables significantly exceed their values in other clusters. Thus, the available income of the population exceeds the value of the first cluster by 9.6%, of the second one- by 25,6%. The average monthly salary exceeds by 16.6% and 20.2% respectively. The indicators of gross regional product and volume of sold industrial products are also significantly higher: by 62.6% and 72.9% respectively; 67.9% and 84.4%. the same situation happens with other indicators: retail turnover of enterprises-66.7% and 71.0%; export of goods -73.0% and 83.5%; import of goods- 79.1% and 77.5%; export of services- 78.3% and 85.8%; import of services- 74.7% and 85.2%; profit- 42.1% and 81.0%; loss- 78.3% and 69.6%; capital investments- 63.5% and 68.3%.

As a result of clustering of the regions of Ukraine according to the indicators of socio-economic development, the homogeneity of the regions within the respective clusters was identified which allowed to indicate the three clusters. The correctness of the classification of observations (regions) with the help of the k-means method is confirmed by the results of discriminant analysis.

Generalization of differences allowed us to characterize the highlighted clusters but according to the received results of the study it is difficult to identify the affiliation of a region for the next period. It is offered to develop forecast mathematical functions for each cluster (discriminant functions) and to conduct a component analysis that will determine the factor features and their components.

The characteristics of cluster 3 allowed us to give it the name “Higher” - it includes the regions with economic security at the “Higher” level: Dnipropetrovsk, Donetsk, Zaporizhia, Kyiv, Lviv, Odesa, Kharkiv regions.

Based on the characteristics of cluster 1, it is defined as “Average” which includes areas with economic security at a sufficient level, namely: Vinnitsia, Kirovohrad, Mykolayiv, Poltava, Sumy, Kherson, Khmelnytskyi, Cherkasy, Chernihiv regions.

Cluster 2 “Lower” – regions with lower levels of economic security which include the following ones: Volyn, Zhytomyr, Zakarpattia, Ivano-Frankivsk, Luhansk, Rivne, Ternopil, Chernivtsi regions.

It is determined that the first cluster “sufficient level of economic security” in almost all indicators has the largest share in their formation at the national level: Available number of population (A1) -33.4 %; Number of people involved in economic activity (A2) -33.8 %; Gross regional product (A7) -34.4 %; Volume of sold industrial products (goods, services) (A11) -31.4%; Commissioning of the total living space (A12) -42.4 %; Retail turnover of enterprises (in actual prices) (A13) -39.9 %; Import of goods and services (XI5) -45.5 %; Capital investments (in actual prices) (A17) -38.9 %.

Cluster 2 “satisfactory level of economic security” has the largest share in the following indicators: Agricultural products(at constant prices) (A9) -44.6 %; Crop products (at constant prices) (A10) -47 %; Livestock products (at constant prices) (A11) -39.2 %.

The regions of cluster 4 “good level of economic security” (Dnipropetrovsk and Donetsk regions) in 2013 are forming in terms of export of goods and services (A14), their share is 42.3 %.

In addition according to the indicators A3 (Available income of population per person), A4 (Expenditures of population per person), A5 (Average monthly salary) and A16 (Financial result (balance) of ordinary activities before taxation, the highest average values belong to cluster 4 “good level of economic security”; the minimum value has cluster 3 “dangerous level of economic security”.

In order to determine the disparities in ensuring economic security of the national economy of the regions, a study of socio-economical indicators in terms of certain identified regional clusters according to the data of 2018 was performed.

The first cluster includes regions (oblasts) with average values. The lowest indicators of socio-economic development were shown by the regions of the second cluster and the highest- by the third cluster (Table 6).

Table 6. Maximum and minimum indicators of economic security of the regions of Ukraine (by clusters), 2018

Variables	Maximum		Minimum	
	Average values	Cluster	Average values	Cluster
Number of available population, thousand people	2664,129	3	1214,5	1
Number of people involved in economic activity, thousand people	1001,414	3	443,613	2
Available income of population	31314,54	3	23290,59	2
Expenditures of population	42318,43	3	32014,54	2
Average monthly salary, UAH	4134,143	3	3298,625	2
Gross regional product	98072,14	3	26576,88	2
Volume of sold industrial products	129401,5	3	20188,58	2
Agricultural products, mln UAH	12407	1	5896,05	2

Crop production, mln UAH	9079,089	1	3683,8	2
Retail turnover of enterprises, mln UAH	31353,27	3	9095,713	2
Export of goods, mln USD	2708,729	3	446,975	2
Import of goods, mln USD	1685,786	3	352,5667	1
Export of services	367,4429	3	52,2625	2
Import of services	155,9286	3	23,0125	2
Financial result before taxation (profit), bln UAH	18,24286	3	3,475	2
Financial result before taxation (loss), bln UAH	40,47143	3	8,766667	1
Capital investments, bln UAH	14,42857	3	4,575	2

According to the results of conducted calculations of deviations between the maximum and minimum values of the average indicators of economic security of regional clusters, it was established that the average deviations are 277% (Figure 3).

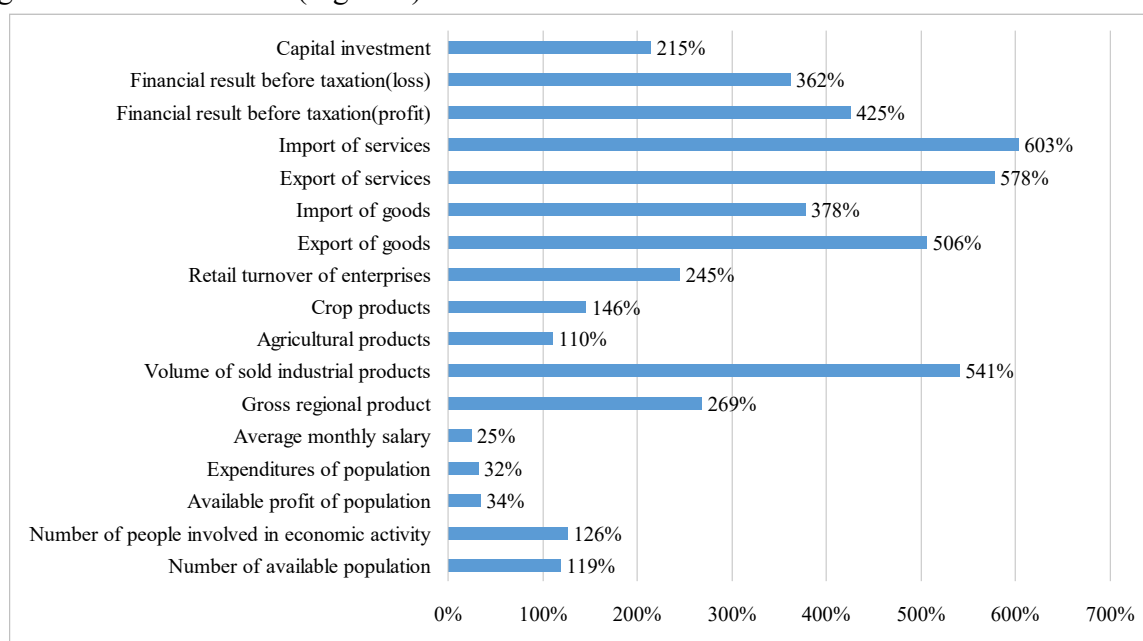


Figure 3. Disproportionate deviations of clusters of the regions of Ukraine (according to the economic security indicators, 2018)

The largest deviations are observed in the indicators of export and import of services - 603% та 578% of the minimum value respectively. The highest volume of export of services has the cluster “Higher”, the lowest volume has the cluster “Lower” (Figure 4).

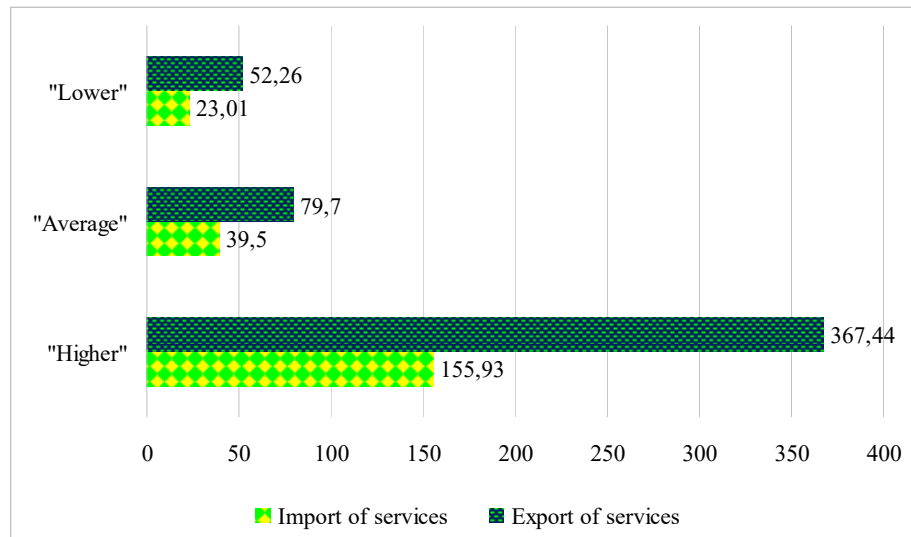


Figure 4. Average values of export and import of clusters of the regions of Ukraine (mln USD), 2018

The results of the conducted study allow us to make a conclusion that there are disparities in economic security between clusters of regions which are 277% in average. Thus, "Higher" cluster has the best results and includes Dnipropetrovsk, Donetsk, Zaporizhia, Kyiv, Lviv, Odesa and Kharkiv regions. The worst results are in Volyn, Zhytomyr, Zakarpattia, Ivano-Frankivsk, Luhansk, Rivne, Ternopil and Chernivtsi regions which are estimated to represent the cluster "Lower". All the other regions (Vinnitsia, Kirovohrad, Mykolayiv, Poltava, Sumy, Kherson, Khmelnytskyi, Cherkasy, Chernihiv regions) make up the cluster "Average" and have mediate indicators.

A weighty factor in the economic development of regions is the effectiveness of economic security management which can be achieved through implementation of a strategic approach in the process of definition and realization of measures to ensure economic security at a regional level. The executive stage of the methodology for forecasting the economic security of the regions involves the development of strategies, programs for ensuring economic security of the corresponding region.

5. Discussion

The Strategy of economic development of regions should also include the elements of their economic security management. In this case, each region in accordance with the stated purposes, set tasks and offered specific actions to ensure economic security, indicates the main directions of economic security in relation to the entities and objects of the regions and offers a set of prompt and long-term strategic measures taking into account available resources and potential opportunities for their changes. In the process of the Strategy development it is necessary to consider the deviation of actual results from the planned forecast indicators of economic development of a region which, according to the results of our previous research, are indicators of economic security of a region. Then one should continuously monitor the determinants of the process of economic security management and their possible changes in order to timely adjust the corresponding events in the regions.

The main obstacles to effective strategic management of economic security of the regions are: distrust of economic entities to the methods of public administration and reformation of economic relations, administrative barriers and the corruption component of economic activity and so on. However, the introduction and implementation of strategic management of economic security of regions in terms of decentralization of management create a competitive business environment, ensure economic development, stability and resistance of the economic system of a region through the interest of all entities of economic security and so on.

One of the priority tasks of central and regional economic policy should be a common program of economic restructuring with the predominant development of the most profitable and promising industries at that moment as well as industries that have long-term economic advantages in the general system of territorial division of labor.

The experience of ensuring economic security of the USA and Canada (Odell, J. S. (2018)) shows the expedience and necessity of implementing the principles of strategic planning which is one of the effective means of influencing the development of regional socio-economic systems.

Strategic plans for sustainable development according to UNO methods must be developed with the involvement of the community (Stubbs, R. (2017)). Such a strategic plan foresees the “socialization” of planning activity, i.e. the involvement in the development of not only representatives of local authorities but also representatives of commercial institutions and public organizations. It contains the vision of the future and the mission, a thorough SWOT-analysis. It defines strategic goals that are specified taking into account deadlines, expected results, sources of funding and responsible executors. It describes the system of monitoring and updating-making changes to a strategic document on the basis of the conducted external audit. It is assumed that the public should be informed through the media not only about achievements in the work on implementation of the strategy but also about all the other relevant changes.

Thus, as the experience of overcoming the crisis of other countries shows, the program-targeted approach to ensuring economic security is focused not only on production and quantitative indicators but also on social and qualitative ones in combination with the implementation of individual projects which are effective in the region’s economy. The method of partnership planning, on condition that specifically assigned tasks are implemented, provides an opportunity to approach the world standards.

Conclusions

According to the results of the study the following conclusions are made:

Regional cluster with the value of economic security “Higher” (“H”) according to the data of 2018 has the highest values of the following indicators: number of people involved in economic activity, available profit and expenditures of population, average monthly salary, gross regional product, volume of sold industrial products, retail turnover of enterprises, export and import of goods and services. The average value has the index of agricultural production volume (including crop production);

Regional cluster with the sufficient level of economic security (“A”) is characterized by the highest value of agricultural production volumes(including crop production); the average values of the following indicators: the number of people involved in economic activity, available income and expenditures of population, average monthly salary, gross regional product, volume of sold industrial products, retail trade of enterprises, export and import of goods and services;

Regional cluster with the satisfactory level of economic security (“L”) is characterized by the average value of the population index and the lowest values of all the other indicators of socio-economic development of a region.

Thus, as a result of the conducted study, the characteristics of regional clusters were determined according to the indicators of their socio-economic development. In the further researches the calculation of the impact of every considered indicator of socio-economic development of regions on the level of their economic security was done in order to create a model for assessing the level of economic security of regions with the help of the multivariate statistics methods.

The data of cluster 3 for 2018 allow us to give it the name “Higher”, i.e., the regions with economic security at the “Higher” economic security level are there: Dnipropetrovsk, Donetsk, Zaporizhia, Kyiv, Lviv, Odesa and Kharkiv regions.

The values of the components of cluster 1 allow us to call it “Average” which includes areas with regional security at a sufficient level - Vinnitsia, Kirovohrad, Mykolayiv, Poltava, Sumy, Kherson, Khmelnytskyi, Cherkasy, Chernihiv regions.

Cluster 3 “Lower” contains regions with satisfactory level of regional economic security - Volyn, Zhytomyr, Zakarpattia, Ivano-Frankivsk, Luhansk, Rivne, Ternopil and Chernivtsi regions.

References

Antropova, T. G., Ishmuradova, I. I., Minsabirova, V. N., Gazizova, F. S., & Temirbulatov, R. R. (2015). Economic security in the conditions of innovative transformation of economy. *Rev. Eur. Stud.*, 7, 195. Available at: <https://heinonline.org/HOL/LandingPage?handle=hein.journals/rveurost7&div=36&id=&page=>

Balaam, D. N., & Dillman, B. (2015). *Introduction to international political economy*. Routledge.

Best, J. (2017). Security, economy, population: The political economic logic of liberal exceptionalism. *Security Dialogue*, 48(5), 375-392. Available at: <https://journals.sagepub.com/doi/abs/10.1177/0967010617712683>

Dong, X., & Kong, Z. (2016). The impact of China's natural gas import risks on the national economy. *Journal of Natural Gas Science and Engineering*, 36, 97-107. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S1875510016307661>

Ertürk, E. (2015). Intergovernmental Organizations (Igos) And Their Roles And Activities In Security, Economy, Health, And Environment. *Journal of International Social Research*, 8(37).

Gaile, Dž., Tumulavičius, V., Skraстіņa, U., & Načiščionis, J. (2020). Modern economics in the context of security: efficient use of funds and reduction of risks as one of the aims of public procurement. *Entrepreneurship and Sustainability Issues*, 8(1), 49-59. [http://doi.org/10.9770/jesi.2020.8.1\(4\)](http://doi.org/10.9770/jesi.2020.8.1(4))

JOURNAL OF SECURITY AND SUSTAINABILITY ISSUES

ISSN 2029-7017/ISSN 2029-7025 (online)

2020 Volume 10 Number 2 (December)

[http://doi.org/10.9770/jssi.2020.10.2\(12\)](http://doi.org/10.9770/jssi.2020.10.2(12))

Jun, W. K., Lee, M. K., & Choi, J. Y. (2018). Impact of the smart port industry on the Korean national economy using input-output analysis. *Transportation Research Part A: Policy and Practice*, 118, 480-493. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0965856418304403>

Levchuk, O., & Kovalenko, V. (2016). Current issues of reformation national economic interests of Ukraine in the conditions of globalization. *Economy and society*, (2), 61-67. Available at: http://economyandsociety.in.ua/journal/2_eng/12.pdf

Liu, F., & Liu, R. (2019). China, the United States, and order transition in East Asia: An economy-security Nexus approach. *The Pacific Review*, 32(6), 972-995. Available at: <https://www.tandfonline.com/doi/abs/10.1080/09512748.2018.1526205>

Mazzanti, M., Mazzarano, M., Pronti, A., & Quatrosi, M. (2020). Fiscal policies, public investments and wellbeing: mapping the evolution of the EU. *Insights into Regional Development*, 2(4), 725-749. [http://doi.org/10.9770/IRD.2020.2.4\(1\)](http://doi.org/10.9770/IRD.2020.2.4(1))

Ministry for Development of Economy, Trade and Agriculture of Ukraine. Available at: <http://me.gov.ua/>

Odell, J. S. (2018). *Negotiating the world economy*. Cornell University Press.

Prause, G., Tuisk, T., & Olaniyi. (2019). Between Sustainability, Social Cohesion and Security. *Regional Development in North-Eastern Estonia, Entrepreneurship and Sustainability Issues* 6(3): 1135-1154. [http://doi.org/10.9770/jssi.2019.6.3\(13\)](http://doi.org/10.9770/jssi.2019.6.3(13))

Schneider, F., Raczkowski, K., & Mróz, B. (2015). Shadow economy and tax evasion in the EU. *Journal of Money Laundering Control*. Available at: <https://www.emerald.com/insight/content/doi/10.1108/JMLC-09-2014-0027/full/html?journalCode=jmlc>

Schor, J. (2016). Debating the sharing economy. *Journal of Self-Governance and Management Economics*, 4(3), 7-22. Available at: <https://www.cceol.com/search/article-detail?id=430188>

Sjoberg, L. (2015). From Unity to Divergence and Back Again: Security and Economy in Feminist International Relations. *Politics & Gender*, 11(2), 408-413. Available at: <https://www.cambridge.org/core/journals/politics-and-gender/article/from-unity-to-divergence-and-back-again-security-and-economy-in-feminist-international-relations/87D71C16D6FD222FB86C7764371C8465>

State Statistics Service of Ukraine. Available at: <http://www.ukrstat.gov.ua>

Stiglitz, J. E. (2015). *Rewriting the rules of the American economy: An agenda for growth and shared prosperity*. WW Norton & Company.

Stubbs, R. (2017). *Rethinking Asia's economic miracle: The political economy of war, prosperity and crisis*. Macmillan International Higher Education.

Tvaronavičienė, M., Plėta, T., Della Casa, S., & Latvys, J. (2020). Cyber security management of critical energy infrastructure in national cybersecurity strategies: cases of USA, UK, France, Estonia and Lithuania. *Insights into Regional Development*, 2(4), 802-813. [http://doi.org/10.9770/IRD.2020.2.4\(6\)](http://doi.org/10.9770/IRD.2020.2.4(6))

Short biographical note about the contributors at the end of the article:

Dmytro ZHURAVLOV, Doctor of Juridical Sciences, Professor, Deputy Head of the Department for Citizenship, Pardons, State Awards - Head of the Pardons Department of the Office of the President of Ukraine

ORCID ID: orcid.org/0000-0002-2045-9631

Viacheslav VOLIK, Doctor of Law, Professor, Professor of the Law and Public Administration Department, Mariupol State University

ORCID ID: orcid.org/0000-0002-1344-9486

Iryna SLOVSKA, Doctor of Law, Professor, National University of Water and Environmental Engineering

ORCID ID: orcid.org/0000-0001-9587-2300

Yuliia LUSHCHYK, PhD in Educational Sciences, Sumy National Agrarian University

ORCID ID: orcid.org/0000-0003-4306-1949

Hanna TSYHANOK, PhD in Philological Sciences, Sumy National Agrarian University

ORCID ID: orcid.org/0000-0003-6303-6831

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

