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SOCIO-ECONOMIC SECURITY OF RURAL TERRITORIES AND AGRICULTURE: A CASE STUDY OF UKRAINE

Lyudmila LEVKOVSKA[1], Volodymyr SARIOGLO[2], Tetiana KOTENKO[2], Oleg DOBRYANSKYY[3], Yuliia HOREMYKINA[2], Olena DIDKIVSKA[2]

[1]Public institution «Institute of environmental economics and sustainable development of the National Academy of Sciences of Ukraine», 60, Shevchenko blvd., 01032, Kyiv, Ukraine Email: nauka2022@ukr.net, levlv@ukr.net
[2]Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine, 60, Shevchenko blvd., 01032, Kyiv, Ukraine. Emails: sarioglo@idss.org.ua, tatyanako@ukr.net, refer5718@gmail.com, o_didkivska@ukr.net
[3]Prince Volodymyr the Great Educational and Research Institute of Law of the Interregional Academy of Personnel Management, 2, Frometivska str., 03039, Kyiv, Ukraine. Email: o.dobryanskyy@yahoo.com

Corresponding author: nauka2022@ukr.net

Abstract

In this article we have studied the issues of ensuring the socio-economic security of the rural population of Ukraine. It is determined that an important role in this process is played by the state policy on financing the development of rural infrastructure. At the same time, it is proved that the key role in ensuring the socio-economic development of the rural population belongs to the system of agricultural production, which provides the rural population with jobs and in case of its effective activity contributes to increasing incomes. It is determined that in the system of social and economic security, in particular, food security, which is based on the effective functioning of the agricultural sector, is becoming important. In the article we study the dynamics of food production in some European countries and the EU, as well as the main trends in the financing of agricultural development programs through targeted government programs in Ukraine. The method of integrated assessment of the state of socio-economic security of the rural population is applied. Based on it, it is determined that the integral value of this indicator in Ukraine is within critical limits, which requires a set of measures aimed at improving the socio-economic development of rural areas.

***Key words*:** *socio-economic security, rural areas, rural population, integrated security indicator*.

INTRODUCTION

The peculiarities of the transformation of the system of economic relations in Ukraine, as well as the reform associated with the administrative and budgetary decentralization of territorial communities, involve a general change in approaches to the sustainable development of rural areas. The reason for this is the aggravation of socio-economic problems in these territories, which negatively affects the overall socio-economic security of the state. The reasons for these problems are quite diverse: on the one hand, urbanization and the general reduction of the rural population, and on the other – socio-economic problems associated with insufficient efficiency of socio-economic potential of the village and insufficient budget funding for its development. As a result, rural areas of Ukraine are characterized by problems related to the need to ensure the development of social and communal infrastructure, general deterioration of human capital, socio-demographic disparities, as well as low efficiency of available resources, and deteriorating environmental conditions.

At the same time, effective reform and development of rural areas in Ukraine is a significant reserve for solving socio-economic distortions of rural security, an incentive for the development of the real sector of the agricultural economy, general stimulation of business activity in rural areas, and a means to improve infrastructure and quality of life.

Many authoritative researchers have studied the problems of ensuring the socio-economic security of the rural population. It is worth noting the research on solving the problem of

ensuring the effectiveness of rural development, which is presented in the works of such researchers as O. Agres [1], O. Binert [4], Y. Chaliuk [6], A. Marcuta [20], A. Popescu [18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30], T. Shmatkovska [31, 32, 33, 34], I. Yakoviyk [44], Y. Yanyshyn [45] and others. In addition, a significant contribution to solving the problems of financing the socio-economic development of rural areas was made in the works O. Apostolyuk [2], I. Balaniuk [3], A. Boiar [5], M. Dziamulych [7, 8, 9, 10, 11, 12, 13, 14, 15], R. Sodoma [35, 36, 37, 38], O. Stashchuk [39, 40, 41], O. Yatsukh [46], I. Zhurakovska [47] and others.

However, with the growing intensity of economic globalization, threats to the socio-economic development of rural areas are changing, which requires the formation of new approaches to their assessment and finding solutions.

MATERIALS AND METHODS

Each component of the economic security of agriculture is characterized by an appropriate set of indicators (39 in total), which can be attributed to stimulants (S) (an increase which is desirable), or to stimulants (D) (decrease which is desirable).

To unambiguously assess the state of economic security of agriculture, an integrated index has been analytically determined, which will ensure the methodological unity of all indicators.

The study of methodological approaches to integrated assessment of the state of development or security has revealed a number of shortcomings that lead to distorted assessments, so modern advances in integrated assessment of the level of security are used, namely:

integral index form - multiplicative:

$$I_t = \prod_{i=1}^{n} Z_{i,t}^{a_i};\ \sum a_i = 1;\ a_i \geq 0$$

where: I – integral index;
z – normalized indicator;
a – weighting factor.

Method of rationing – combined:

$$S: z_i = \frac{x_i}{k_{norm}}, \qquad D: z_i = \frac{k_{norm} - x_i}{k_{norm}},\ k_{norm} > x_{max}$$

where:
x – indicator values;
k_{norm} – normalization factor.

Weighting factors – dynamic: based on the application of the method "Main components" and the method of "Sliding matrix" [21]:

$$C_i \times D_i = \begin{pmatrix} d_1c_{11} + d_2c_{12} + \cdots + d_jc_{1j} \\ d_1c_{21} + d_2c_{22} + \cdots + d_jc_{2j} \\ \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\ d_1c_{j1} + d_2c_{j2} + \cdots + d_jc_{jj} \end{pmatrix} = \begin{pmatrix} w_1 \\ w_2 \\ \cdots \\ w_j \end{pmatrix},$$

$$a_i = \frac{w_i}{\sum w_i}$$

where:
C – matrix of absolute values of factor loads;
D – vector-matrix of variances;
a – weights coefficients;
c and d – elements of matrices C i D;
w – the resulting contribution of the i-th indicator to the integrated index.

An important step in integrated assessment is to determine the limits of the safe existence of the system, so it is not enough to simplify the representation of thresholds such as "no more", and "no less", which can lead to erroneous conclusions about maximizing integrated indices. Therefore, for each indicator you need to set a vector of threshold values: lower threshold, lower optimal, upper optimal, upper threshold, but for more in-depth research you need to consider both lower critical and upper critical. Determining the vector of threshold values makes it possible to identify safety/danger zones, pre-

crisis, or crisis states by comparing them with the dynamics of the integrated index.

Thus, the definition of the vector of threshold values is closely related to the concept of dynamic stability of the economic system, or the mechanism of homeostasis, which leads to the conclusion: "Without knowledge of the safe existence of the system it is impossible" [20]. With this in mind, A. Kaczynski proposed the concept of "homeostatic plateau" of a dynamic system with upper and lower threshold values, which determines the existence for each system of a stable state of dynamic equilibrium [16].

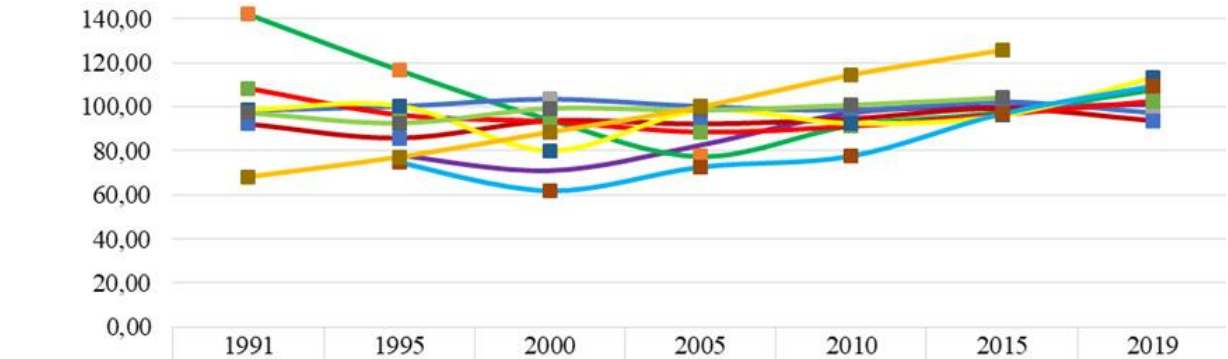
There are a number of methods for determining the threshold vector, the most accessible of which is the "t-test method".

RESULTS AND DISCUSSIONS

One of the key elements in ensuring the economic security of rural areas is the availability of developed agricultural production. On the one hand, it contributes to increasing the level of employment of the rural population and reducing social tensions. On the other hand, the availability of products in rural areas provides additional revenues to the budgets of local communities, some of which will eventually be directed to their socio-economic development and infrastructure development, which will also positively affect the economic security of the region.

However, it is worth highlighting several separate areas of production in the agricultural sector, which not only contribute to the direct solution of economic problems of the rural population but also affect its self-sufficiency in the context of food security in general.

An important indicator in this aspect is the index of food production, which is recommended for analysis and calculated by the World Bank. In particular, it is necessary to assess the dynamics of this indicator over the past thirty years in terms of individual countries in Europe, the European Union, and the world as a whole (Fig. 1).



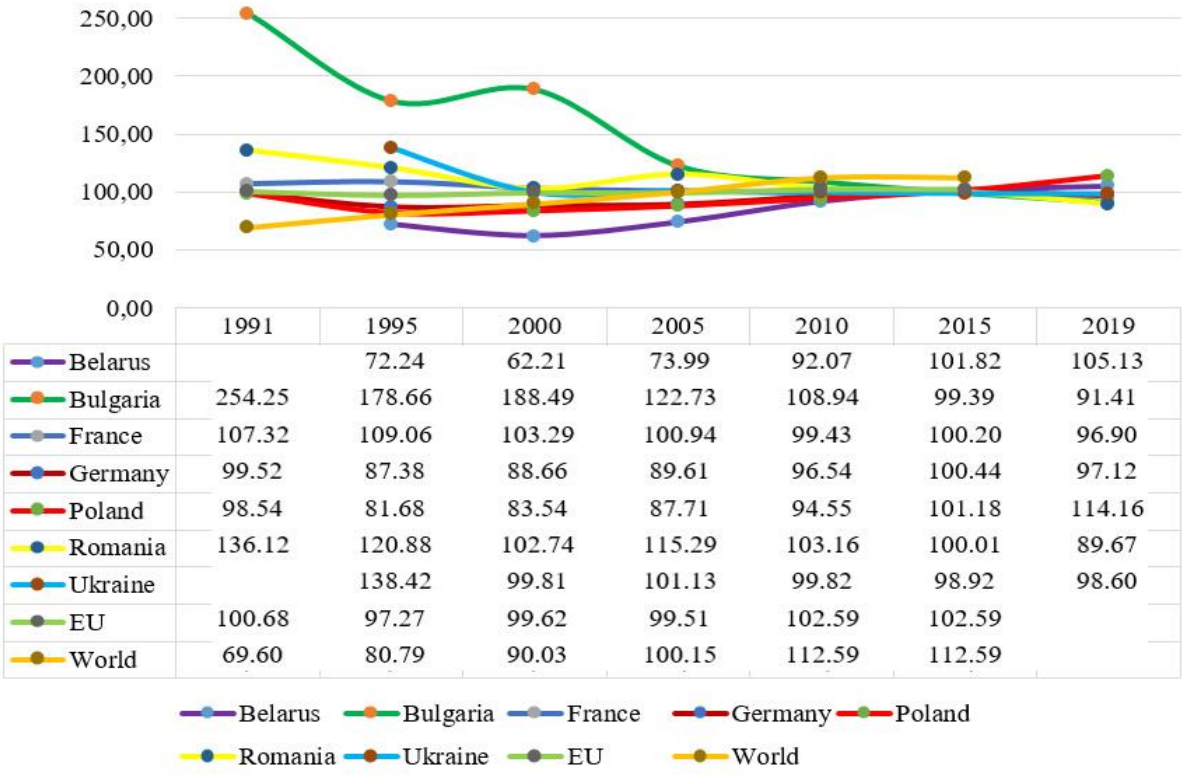
	1991	1995	2000	2005	2010	2015	2019
Belarus		78.10	70.99	82.60	97.24	99.95	100.97
Bulgaria	141.85	116.57	94.00	77.41	91.44	97.48	107.54
France	98.34	100.18	103.41	100.13	98.46	102.23	97.23
Germany	92.13	85.79	93.66	92.15	94.56	99.27	93.67
Poland	108.32	96.32	93.25	88.53	91.20	96.53	102.52
Romania	98.67	100.39	80.13	98.34	92.39	96.09	113.09
Ukraine		74.76	61.83	72.61	77.61	96.81	109.31
EU	97.21	92.60	99.17	98.42	100.76	104.04	
World	68.20	77.22	88.49	99.95	114.48	125.60	

Fig. 1. Index of food production, 1991-2019, %
Source: [43].

As you can see, during the analyzed period, the volume of food production on a global scale is associated mainly with global population growth. At the same time, in the European Union, such growth was less rapid and amounted to only 6.9 points. However, for some countries, such trends are not synchronous. In particular, while Ukraine and Romania have significantly increased production during this time, Western European countries such as Germany and France have generally remained unchanged. On the other hand, Bulgaria and Poland, which have joined the EU during this time, have reduced their production. Moreover, for Bulgaria, the fall of this index was the largest and amounted to 34.3 points.

According to the change in the dynamics of the food production index, the state of food security of the respective countries also changed. At the same time, the logical consequence was that these trends had a direct impact on the socio-economic situation of the rural population, which is directly involved in food production.

Trends in livestock production in the respective countries should also be considered separately based on the assessment of the dynamics of the livestock production index according to the World Bank (Fig. 2).



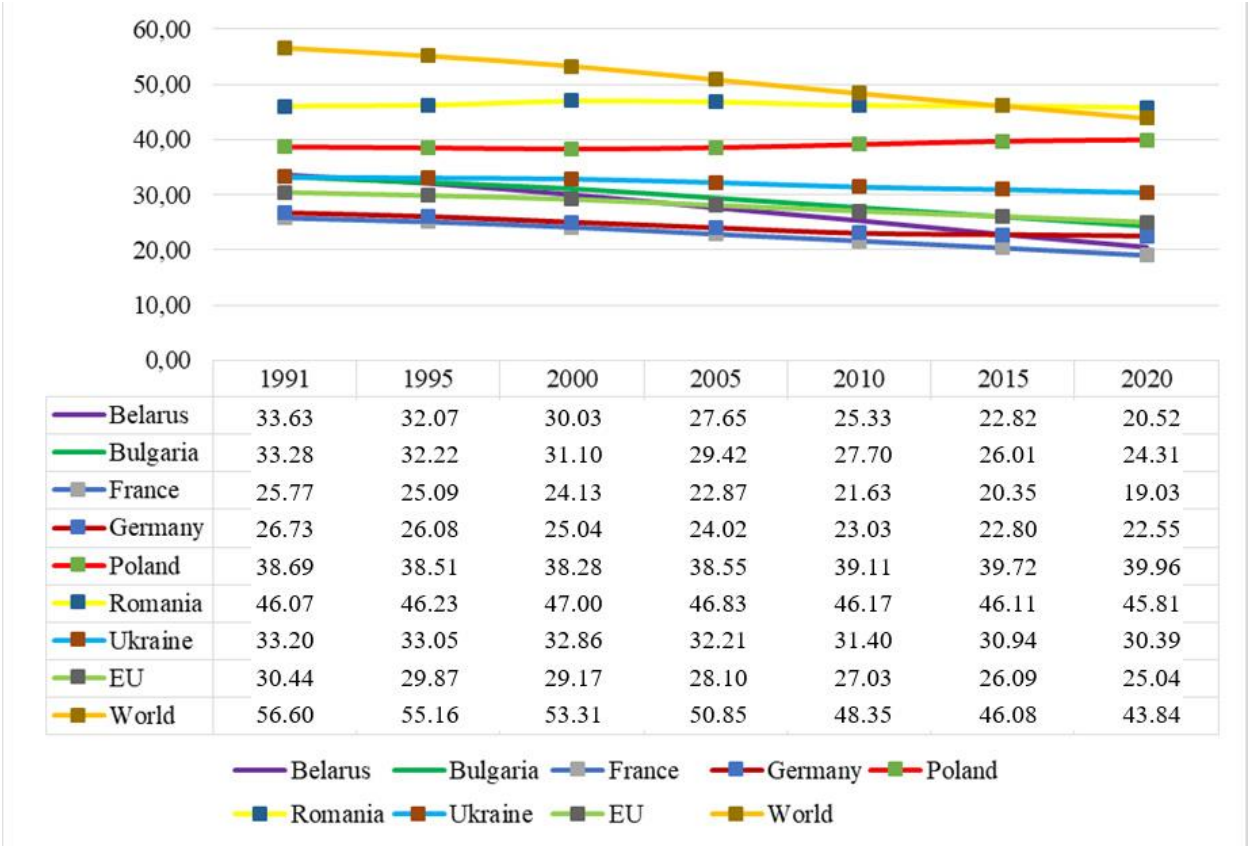
	1991	1995	2000	2005	2010	2015	2019
Belarus		72.24	62.21	73.99	92.07	101.82	105.13
Bulgaria	254.25	178.66	188.49	122.73	108.94	99.39	91.41
France	107.32	109.06	103.29	100.94	99.43	100.20	96.90
Germany	99.52	87.38	88.66	89.61	96.54	100.44	97.12
Poland	98.54	81.68	83.54	87.71	94.55	101.18	114.16
Romania	136.12	120.88	102.74	115.29	103.16	100.01	89.67
Ukraine		138.42	99.81	101.13	99.82	98.92	98.60
EU	100.68	97.27	99.62	99.51	102.59	102.59	
World	69.60	80.79	90.03	100.15	112.59	112.59	

Fig. 2. Index of livestock production, 1991-2019, %
Source: [43].

As we can see from Fig. 2, the situation with the production of livestock products during the analyzed period was more problematic. At the same time, if world production grew, in the EU for thirty years the growth was only 1.91 points. In many European countries, there has been a significant decline in this index. The most significant reduction in production was in Bulgaria - a drop in the index by 162.84 points. This decrease was also noticeable in Ukraine and Romania, which showed a positive trend in the overall food production index. Conversely, significant growth in livestock production during the analyzed period was demonstrated by Poland and Belarus, although the latter achieved this growth due to significant direct government subsidies in this area, including direct lending by the Central Bank.

An important aspect in the analysis of the

socio-economic security of the rural population is also the dynamics of its share of the total population. Of course, the processes of urbanization are inevitable on a global scale, but sharp fluctuations in this indicator indicate the presence of problems with the socio-economic situation in rural areas. Consider the dynamics of the share of the rural population in some European countries, the EU, and worldwide (Fig. 3).



	1991	1995	2000	2005	2010	2015	2020
Belarus	33.63	32.07	30.03	27.65	25.33	22.82	20.52
Bulgaria	33.28	32.22	31.10	29.42	27.70	26.01	24.31
France	25.77	25.09	24.13	22.87	21.63	20.35	19.03
Germany	26.73	26.08	25.04	24.02	23.03	22.80	22.55
Poland	38.69	38.51	38.28	38.55	39.11	39.72	39.96
Romania	46.07	46.23	47.00	46.83	46.17	46.11	45.81
Ukraine	33.20	33.05	32.86	32.21	31.40	30.94	30.39
EU	30.44	29.87	29.17	28.10	27.03	26.09	25.04
World	56.60	55.16	53.31	50.85	48.35	46.08	43.84

Fig. 3. The share of the rural population in the total population, 1991-2020, %
Source: [43].

As we can see, in the analyzed period, the processes of urbanization were indeed characteristic of all selected countries. At the same time, in the European Union, the share of the rural population decreased by 4.6%. At the same time, in Belarus and Bulgaria, such reductions were 13.11% and 8.97%, respectively, which is significantly higher than the average compared to other European countries. Based on this, we can conclude about the existing problems in ensuring the socio-economic security of the rural population of these countries. In Poland, on the other hand, the share of the rural population increased by 1.27%, which is uncharacteristic of global trends. At the same time, it indicates an increase in the level of economic security of the rural population, which has been ensured through significant investments in rural infrastructure over the past ten years.

At the national level, the assessment of the regulatory impact of the state on ensuring the socio-economic security of the rural population is determined not only by direct funding of rural communities and support for their infrastructural development.

Investment in agriculture and support programs for agricultural producers, which directly affect the level of employment and income of the rural population, are of key importance for the economic security of rural areas.

Therefore, to assess the effectiveness of such an impact on the agricultural sector in Ukraine, we estimate the planned and actual government expenditures to finance various agricultural support programs (Table 1).

As you can see, during the analyzed period in the structure of the state budget expenditures on agricultural support programs, the largest share is occupied by expenditures on the financial support of agricultural producers.

Table 1. Structure of planned and actual expenditures of the state budget for financing programs of state support of the agricultural sector of the economy for 2017-2020,%

Name of the budget program	2017		2018		2019		2020	
	Plan	actually	plan	actually	plan	actually	plan	actually
Financial support of measures in the agro-industrial complex by reducing the cost of loans	5.51	5.87	6.21	6.31	8.75	9.86	0.00	0.00
Financial support of activities in the agro-industrial complex	1.10	1.13	0.12	0.07	0.10	0.04	0.12	0.00
Financial support for the development of farms	0.00	0.00	4.9	4.83	9.01	9.14	0.00	0.00
State support for the development of hop growing, the establishment of young orchards, vineyards, and berries, and their supervision	5.49	5.95	9.34	9.36	7.75	8.72	0.00	0.00
State support in the field of animal husbandry, storage, and processing of agricultural products, aquaculture (fish farming)	3.12	3.3	56.05	56.73	56.75	53.32	0.00	0.00
Financial support for agricultural producers	83.52	82.37	22.29	21.67	13.21	14.03	98.11	98.35
Providing loans to farms	1.19	1.29	1.01	1.01	4.35	4.89	1.65	1.65
Financial support of measures in the agro-industrial complex on the terms of financial leasing	0.07	0.08	0.09	0.02	0.09	0.00	0.12	0.00
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: [42].

At the same time, in 2017-2020, the share of these funds in the overall structure increased from 82.37% to 98.35% of the total expenditures. This indicates the state`s focus on targeted subsidies for large enterprises. At the same time, the program to support small farms is virtually non-existent, despite the fact that in 2019 it was allocated 9% of the total funding. As of 2020, the state was limited to preferential lending to farmers in the amount of 1.65% of all funds allocated to support the agricultural sector.

Thus, we can conclude that in the field of state regulation of agribusiness support the main attention is paid to large agricultural producers and agricultural holdings. From the point of view of ensuring the socio-economic security of the rural population, such an orientation is justified, as large enterprises have the opportunity to create a significant number of jobs, which will positively contribute to increasing the employment and income of the rural population. However, it should be noted that increasing the number of small farmers and financially stimulating the development of their farms will greatly contribute to the quality development of the middle class in rural areas, which will have a significant impact on the socio-economic security of the rural population.

Hence, using modern approaches to calculate the integrated index of economic security of agriculture, we obtain the dynamics of integrated indices of components of sustainable rural development! economy: the economic component and components of sustainable development (Fig. 4).

According to calculations, all components of the economic security of sustainable agricultural development are below the lower threshold value, which indicates a danger. Of the 39 indicators of sustainable development, 25 (almost 64%) pose a threat to the secure existence of economic security in agriculture

and need immediate measures to improve them.

Integral convolution is carried out in stages by components simultaneously with the integral convolution of threshold values that define safety/danger zones, provided the choice of the principles of sustainable development (Table 2).

Fig. 4. Dynamics of integrated indices of economic security of sustainable development of agriculture
Source: [22].

Table 2. Vectors of threshold values of components of economic security of agriculture of Ukraine

Individual components	Lower threshold	Lower optimal	Upper optimum	Upper threshold
Economic	0.424062	0.566986	0.760337	0.978949
Social	0.353323	0.556334	0.719614	0.885245
Ecological	0.202794	0.432501	0.646858	0.921113
Economic security of agriculture	0.310711	0.513254	0.707008	0.929664

Source: own research.

The main reason for the low integrated level of industrial safety of agriculture in Ukraine is the presence of a number of indicators below or on the verge of the lower threshold, namely: economic component: structural development – low Gross value added of agriculture (face value) per capita, low level of production technology inflated intermediate consumption), low yields of cereals and legumes; on the structure of production – low level of production of fruits, berries, and grapes, meat and milk; by consumption structure – low level of consumption of grain, fruits, berries and grapes, meat and milk; on investment and financial development – low level of investment, critically low level of growth of foreign direct investment, the share of lending

to agriculture.

Social component: below the lower threshold – depopulation rate (D); total mortality rate (number of deaths per 1,000 population), ppm (D); net reproduction rate per 1 woman (S); the number of hospitals in rural areas, per 10,000 rural population (S); the number of independent outpatient clinics and polyclinics per 10,000 rural population (S); on the border of the lower threshold – the share of the rural population (D); unemployment rate (D); coefficient of economic activity of the rural population (S); the number of medical and obstetric points per 10,000 rural population (S).

Ecological component: below the lower threshold - the level of the fertilized area with organic fertilizers, % (S); level of plowed territory, % (D); level of plowing of agricultural lands, % (D).

If we assume the growth of all threatening indicators for the period 2019-2022 by the maximum value observed in the previous period 2007-2018 for existing trends - the inertial scenario of development, we have that maintaining existing trends forever leaves the level of economic security in agriculture. critical zone with a high probability of further destruction of Ukraine`s economic system.

Thus, the calculations show that despite the important role of agricultural production in meeting the internal and external needs of the population of Ukraine, its level of economic security is invariably below or below the lower threshold, which symbolizes the danger that lies primarily in management. In particular, there are problems of inefficient management of agriculture and irrational use of productive resources, which directly affect the economic security and sustainable development of rural areas. In order to monitor the level of economic security of sustainable development of agriculture in Ukraine, the structure of its sustainable development is proposed, which includes social, environmental, economic (production: structural development, production structure, consumption structure, and investment-financial) components characterized by a set of indicators (39 in total), and certain vectors of threshold values of socio-ecological-economic "modernization" of agriculture, which allows identifying its current state in all the diversity of its aspects.

The identification of the state of economic security of agriculture in Ukraine using a modern methodology of integrated assessment indicates that all components of the relevant integrated indicator are below the lower threshold, which determines the same level of sustainable development and indicates a very poor agroeconomic policy in Ukraine.

CONCLUSIONS

Thus, we conclude that the socio-economic security of the rural population is from both global and regional factors of economic development. At the same time, the formation of economic security in rural areas should focus on stimulating the development of agriculture, which will have a direct impact on increasing the welfare and employment of the rural population of Ukraine. At the same time, there is an objective need to find methods to ensure dynamic growth and to form a mechanism for implementing measures to ensure the economic security of the rural population. In our opinion, an important role in this mechanism should be played by programs of state support for agricultural development, because it is through the economic mechanism is the direct distribution of funds among all participants in the production, which leads to increased welfare. The implementation of such measures should ensure the economic security of the agricultural sector in general and the rural population in particular. The key tasks to be ensured to ensure the effective functioning of the agricultural sector should be to fill the budgets of rural communities, increase the income of the rural population, improve the labour market, create a balanced market and social infrastructure in rural areas, and ensure proper environmental and man-made safety.

In addition, the calculations show that the most significant threat to the safe development of agriculture is the catastrophic situation in the social sphere, as 90% of

relevant indicators pose a threat to the economic security of agriculture in Ukraine. In total, among all 39 indicators used in the study, 25 (almost 64%) pose a threat to the secure existence of economic security in agriculture and need immediate measures to improve them.

Hence, given the current trends, the medium-term forecast of further changes in the level of economic security of agriculture indicates that the integrated index is in the critical zone, which is likely to destroy not only the agro-economic system but also slow down Ukraine`s economy.

REFERENCES

[1]Agres, O., Sadura, O., Shmatkovska, T., Zelenko, S., 2020, Development and evaluation of efficiency of leasing activities in agricultural sector of Ukraine. Scientific Papers: Series «Management, Economic Engineering in Agriculture and rural development», Vol. 20(3): 53-60.

[2]Apostolyuk, O., Shmatkovska, T., Chykalo, I., Husak, A., 2020, Assessment of the rural population economic activity in the system of united territorial communities development: a case study of Volyn Region, Ukraine. Scientific Papers: Management, Economic Engineering in Agriculture and Rural Development, Vol. 20(3): 99-108.

[3]Balaniuk, I., Kyrylenko, V., Chaliuk, Yu., Sheiko, Yu., Begun, S., Diachenko, S., 2021, Cluster analysis of socio-economic development of rural areas and peasant farms in the system of formation of rural territorial communities: a case study of Volyn region, Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development", Vol. 21(3): 177-188.

[4]Binert, O., Sodoma, R., Sadovska, I., Begun, S., Shmatkovska, T., Balash, L., 2021, Mechanisms for improving economic relations in the milk subcomplex of the agricultural sector: a case study of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 21(2): 101-110.

[5]Boiar, A., O., Shmatkovska, T. O., Stashchuk, O. V., 2018, Towards the theory of supranational finance. Cogent Business & Management. 5(1).

[6]Chaliuk, Y., Dovhanyk, N., Kurbala, N., Komarova, K., Kovalchuk, N., 2021, The digital economy in a global environment. AD ALTA: Journal of Interdisciplinary Research. Vol. 11(1), Special issue XVII: 143-148.

[7]Dziamulych M., Hrytsenko, K., Krupka, I., Vyshyvana, B., Teslia, S., Tereshko, O., Fadyeyeva, I., 2022, Features of banks` liquidity management in the context of the introduction of the LCR ratio in Ukraine. AD ALTA: Journal of interdisciplinary research. Vol. 12(1), Special Issue XXVII: 148-152.

[8]Dziamulych M., Kulinich, T., Shmatkovska, Y., Moskovchuk, A., Rogach, S., Prosovych, O. Talakh, V., 2022, Forecasting of economic indicators of agricultural enterprises activity in the system of ensuring their management on the basis of sustainable development: a case study of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 22(1): 207-216.

[9]Dziamulych, M., Moskovchuk, A., Vavdiiuk N., Kovalchuk N., Kulynych, M., Naumenko, N., 2021, Analysis and economic and mathematical modeling in the process of forecasting the financial capacity of milk processing enterprises of the agro-industrial sector: a case study of Volyn region, Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 21(1): 259-272.

[10]Dziamulych, M., Petrukha, S., Yakubiv V., Zhuk, O., Maiboroda, O., Tesliuk, S., Kolosok, A. 2021, Analysis of the socio-demographic state of rural areas in the system of their sustainable development: a case study of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 21(4): 223-234.

[11]Dziamulych, M., Sadovska I., Shmatkovska T., Nahirska K., Nuzhna O., Gavryliuk O., 2020, The study of the relationship between rural population spending on peasant households with the main socio-economic indicators: a case study of Volyn region, Ukraine. Scientific Papers: Series «Management, Economic Engineering in Agriculture and rural development», Vol. 20(2): 217-222.

[12]Dziamulych, M., Shmatkovska, T., Gordiichuk, A., Kupyra, M., Korobchuk, T., 2020, Estimating peasant farms income and the standard of living of a rural population based on multi-factorial econometric modeling: a case study of Ukraine. Scientific Papers: Series «Management, Economic Engineering in Agriculture and rural development», Vol. 20(1): 199-206.

[13]Dziamulych, M., Shmatkovska T., Petrukha, S., Zatsepina, N. Rogach, S., Petrukha, N., 2021, Rural agritourism in the system of rural development: a case study of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development", Vol. 21(3): 333-343.

[14]Dziamulych, M., Stashchuk, O., Korobchuk, T., Mostovenko, N., Martyniuk, R., Strelkova, I., Grebeniuk, N., 2021, Banking innovations and their influence on the formation of digital banking. AD ALTA: Journal of Interdisciplinary Research. Vol. 11(2), Special issue XXI: 108-112.

[15]Dziamulych, M., Yakubiv, V., Shubala, I., Filiuk, D., Korobchuk, L., 2020, Analysis and evaluation of the rural labour market and employment of the rural population: a case study of Volyn region, Ukraine. Scientific Papers Series "Management, Economic

Engineering in Agriculture and Rural Development", Vol. 20(4): 165-174.
[16]Kachynskyj, A. B., 2013, National security indicators: identification and application of their limit values, Kyiv, NISD, 104 p.
[17]Kachyns'kyj, A. B., 2006, Principles of system analysis of safety of complex systems. Kyiv. Euroatlantic inform. 336 p.
[18]Kharazishvili, Yu. M., 2015, Problems of the integrated assessment of the level of economic security of the state. Banking. 1(133): 3-21.
[19]Kostiuk, T. O., 2021, Economic security of the rural economy of Ukraine: current state and forecast. Agrosvit. 17: 53-62.
[20]Marcuta, L., Popescu, A., Tindeche, C., Smedescu, D., Marcuta, A., 2021, Food security of the European Union and the influence of COVID-19. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". 21(2): 383-392.
[21]Popescu A., 2013, Considerations on the Rural Population as a Resource of Labor Force in Romania. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 13(3): 229-236.
[22]Popescu A., 2013, Considerations on the main features of the agricultural population in the European Union, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 13(4): 213-220.
[23]Popescu A., 2015, Research on labour productivity in Romania's agriculture. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 15(2): 271-280.
[24]Popescu, A., 2016, Research on the concentration of tourist arrivals in Romania. Scientific Papers: Series Management, Economic Engineering in Agriculture and rural development, Vol. 16(1): 425-429.
[25]Popescu, A., 2016, Research on the dynamics and territorial dispersion of the occupied population in Romania's tourism in the period 2007-2015. Scientific Papers: Series Management, Economic Engineering in Agriculture and rural development, Vol. 16(4): 279-288.
[26]Popescu A., 2016, The position of tourist and agrotourist guesthouses in Romania's accommodation structures. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 16(1): 417-424.
[27]Popescu A., Condei R., 2015, Research on Romania's employment in agriculture and its position in the European Union, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol. 15(2): 281-289.
[28]Popescu, A., Dinu, T. A., Stoian, E., 2019, Changes, trends and relationships between average income and consumption expenditures per household in Romania in the period 2007-2017. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development", Vol. 19(2): 363-374.
[29]Popescu, A., Dinu, T. A., Stoian, E., Serban, V. 2021, Efficiency of labor force use in the European Union's agriculture in the period 2011-2020. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development", Vol. 21(3): 659-672.
[30]Popescu, A., Tindeche, C., Marcuta, A., Marcuta, L., Hontus, A., Angelescu, C. 2021, Labor force in the European Union agriculture – traits and tendencies. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". 21(2): 475-486.
[31]Shmatkovska, T., Britchenko, I., Voitovych, S., Lošonczi, P., Lorvi, I., Kulyk, I., Begun, S. 2022, Modern information and communication technologies in the digital economy in the system of economic security of the enterprises. AD ALTA: Journal of interdisciplinary research. Vol. 12(1), Special Issue XXVII: 153-156.
[32]Shmatkovska, T., Dziamulych, M., Gordiichuk, A., Mostovenko, N., Chyzh, N., Korobchuk, T. 2020, Trends in human capital formation and evaluation of the interconnection of socio-demographic processes in rural area: a case study of Volyn region, Ukraine. Scientific Papers: Series «Management, Economic Engineering in Agriculture and rural development», Vol. 20(2): 437–444.
[33]Shmatkovska T., Dziamulych M., Yakubiv V., Myshko O., Stryzheus L., Yakubiv R., 2020, Economic efficiency of land use by agricultural producers in the system of their non–current assets analysis: a case study of the agricultural sector of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 20(3): 543-554.
[34]Shmatkovska T., Nikolaeva, A., Zabedyuk, M., Sheiko, Yu., Grudzevych Yu., 2020, Increasing the efficiency of the labour resources usage of agrosector enterprises in the system of sustainable development of the rural territories: a case study of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 20(4): 467-476.
[35]Sodoma, R., Brukh, O., Shmatkovska, T., Vavdiiuk, N., Bilochenko, A., Kupyra, M., & Berezhnytska, G., 2021, Financing of the agro-industrial complex in the context of the implementation of international experience. Financial and credit activity: problems of theory and practice, 38(3): 341-350.
[36]Sodoma, R., Cherevko, H., Krupiak, I., Andrusiak, H., Brodska, I., Shmatkovska, T., 2021, Regulation of the lending market and prospects of financial sector stabilization in Ukraine. Financial and credit activity-problems of theory and practice. Vol. 36(1): 4-13.
[37]Sodoma R., Shmatkovska T., Dziamulych M., Vavdiiuk, N., Kutsai, N., Polishchuk, V., 2021, Economic efficiency of the land resource management and agricultural land-use by agricultural producers. Management Theory and Studies for Rural Business and Infrastructure Development. Vol. 43(4): 524-535.

[38]Sodoma R., Shmatkovska T., Dziamulych M., Vavdiiuk, N., Kutsai, N., Polishchuk, V., 2021, Economic efficiency of the land resource management by agricultural producers in the system of their non–current assets analysis: a case study of the agricultural sector. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 21(2): 577-588.
[39]Stashchuk, O., Boiar, A., Shmatkovska, T., Dziamulych, M., Sko,ruk, O., Tesliuk, S., Zintso, Yu., 2021, Analysis of fiscal efficiency of taxation in the system of filling budget funds in Ukraine. AD ALTA: Journal of interdisciplinary research. Vol. 11(1) Special Issue XVII: 47-51.
[40]Stashchuk, O., Shmatkovska, T., Dziamulych, M., Kovalska, L., Talakh, T., Havryliuk, O. Integrated assessment, analysis and management of financial security and stability of joint-stock companies operating in the agricultural sector: a case study of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 21(2): 589-602.
[41]Stashchuk, O., Shmatkovska, T., Dziamulych, M., Kupyra, M., Vahnovska, N., Kosinskyi, P., 2021, Model for efficiency evaluation of financial security management of joint stock companies operating in the agricultural sector: a case study of Ukraine. Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development". Vol. 21(1): 715-728.
[42]State Statistics Service of Ukraine, http://www.ukrstat.gov.ua, Accessed on April 20, 2022.
[43]The World Bank. DataBank. https://databank.worldbank.org/source/world-development-indicators/Series/AG.PRD.LVSK.XD, Accessed on April 20, 2022.
[44]Yakoviyk, I., Chyzhov, D., Karpachova, N., Hlushchenko, S., Chaliuk, Yu., 2020,. National security policy in Ukraine: a change in the system of power relations of the modern world. Revista San Gregorio. Vol. 42: 224-235.
[45]Yanyshyn, Ya., Sodoma, R., Markiv, G., Lipych, L., Shmatkovska, T., Shidnytzka, G., 2020, Economic efficiency of the nuts complex business in the agriculture of Ukraine. Scientific Papers Series «Management, Economic Engineering in Agriculture and Rural Development» Vol. 20(2): 531-536.
[46]Yatsukh, O., Demchenko, I., Ilnytskyy, D., Tsap, V., Shmatkovska, T., 2021, Management of banking innovations in the conditions of digitalization. AD ALTA: Journal of Interdisciplinary Research. Vol. 11(1), Special issue XVII: 123-127.
[47]Zhurakovska, I. V., Sydorenko, R. V., Shmatkovska, T. O., Brodska, I. I., 2020, Factors of influence on employment in small and medium-sized business in Ukraine. Financial and credit activity: problems of theory and practice. Vol. 32(1): 109-119.