The impact of foreign trade development on the organization of socio-economic security of Ukraine

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Abstract. The integral indicator and dynamics of Ukraine's level of socio-economic security in the main areas in which it manifests are determined. The dynamics of the level of economic security depending on the development of the foreign trade of Ukraine are analysed using the official method for calculating Ukraine's level of economic security. Hypotheses relating to the existence of relationships between indicators of the economic security of foreign trade and the general level of socio-economic security are studied in detail in terms of individual subsystems of socio-economic security. With the help of regression analysis, the hypotheses are statistically confirmed and the measures of the influence of parameters of economic security of foreign trade development on socio-economic security are revealed. The main opportunities and threats related to ensuring the socio-economic security of Ukraine in foreign trade development are identified. It is proposed to direct further research to developing institutional tools to create opportunities to strengthen the positive impact of foreign trade on ensuring the socio-economic security of Ukraine.

Contents:

1. Introduction

Ukraine's foreign trade is developing in the context of market transformations of the socio-economic system that are aimed at overcoming such negative phenomena as the shadow economy, market monopolization, rising unemployment, increasing economic inequality and the deterioration of the socio-economic situation of many citizens. Under such conditions, the socio-economic security of the state should be considered an important component of the national security system, which states that integration into the European economic area and the development of equal mutually beneficial economic cooperation with other states meet Ukraine's national interests.

The socio-economic security of Ukraine is a dynamic component of the management of foreign trade development. As such, it is ensured based on the feasibility and rationality of using economic resources to ensure stable and efficient operation while minimizing risks of those resources being implemented in external transactions. These risks stem from the insufficient predictability of globalized financial and economic systems and the growth of factors destabilizing the development of the socio-economic environment. At the same time, the problem of managing foreign trade development to secure the socio-economic system of Ukraine insufficiently formalizes possible threats and the expected financial and economic consequences of foreign economic activity. Accordingly, there is a lack of adaptive tools for managerial influence on the state's socio-economic security. Under such conditions, the development of methodical tools for assessing factors of the influence of foreign trade development on the stability and security of the socio-economic system is becoming relevant.

2. Research materials and methods

The problem of ensuring socio-economic security is a priority for Ukraine's development as a sovereign state, and thus requires the relevant research. Kirchner & Dominquez (2011) identify three components of ecosestate (ECOnomic SEcurity of STATE) – the ability of public institutions i) to protect the economic superstructure of society, ii) to

use effective levers of market state regulation, and iii) to create an economic environment to maximize the benefits of international cooperation. According to Pasternak-Taranushenko (2003), to ensure economic security, the state assumes organizational and managerial functions to meet social needs – the needs of the population and every one of its citizens. Zaichenko & Dima (2021) consider economic security as a qualitative characteristic of the economic system, which determines its ability to maintain living conditions and to provide resources for the development of the national economy and the consistent realization of state interests. Typically, research by Ukrainian scholars on the formation of a system of socio-economic security focuses on determining the conditions for the implementation of security-oriented management, taking into account the negative impact of the operating environment (Vasyltsiv et al., 2018; Havlovska, 2016; Illiashenko et al., 2020; Oliinyk et al. 2020; Ilyash et al. 2021; Yukhnovskyi et al. 2021). Researching security-oriented management, Prytys (2020) and Petreman & Dubych (2021) focus on the circumstances within which operating conditions that can positively affect the state of economic security while implementing the overall development strategy are formed.

At the Convention on Social Security (Council of Europe, 1972), the International Labour Organization identified social risks of the loss or reduction of income due to objective circumstances that are taken into account when providing social benefits through the social insurance system. According to Vrooman (2009), this approach is rather narrow, as social security is not limited to financial allowances, but is aimed at ensuring occupational safety, health and social participation. The mechanism by which social security is provided and practically implemented is only comprehensible with the complex consideration of all components of social security. A promising, meaningful structure for implementing social security in practice is proposed by Nikolayev (2012), who identifies three closely related macro-structural components of social security – the social security of the state, society and man. Koval (2016) proposes to consider two understandings of social security – the traditional (i.e. absent threats to society) and an alternative (i.e. absent threats from society), which makes it possible to focus further on the

social security of society. Kolenda (2012) defines the mechanism of social security as a holistic system, the operation of which is aimed at preventing, reducing or overcoming threats to social security and increasing the level of social security through the influence of public authorities, local governments, public institutions and citizens themselves on social processes in society; this is associated with the use of some methods, measures, tools and levers, taking into account generally accepted principles and criteria. In the structure of this mechanism, N. Kolenda distinguishes methods (economic, organizational, legal) and resource provision (financial, regulatory, informational, personnel), as well as such components as principles, institutions, measures, tools and influence levers.

In Ukraine, it is defined at the legislative level (Ministry of Economic Development and Trade of Ukraine, 2013) that social security is a state of the country's development that provides a decent and quality standard of living regardless of age, gender or income level and promotes the development of human capital as the most important component of the country's economic potential. Nevertheless, the social aspects of the security of foreign economic activity are given much less attention by scholars, although these problems are multifaceted. Filipenko (2013) notes that ensuring social security in the development of foreign economic activity should be based on a set of geopolitical, economic and socio-cultural features of Ukraine in compliance with the supremacy of law and universally recognized norms of international law.

Liubokhynets et al. (2021) analyzed the state of the operating environment of Ukrainian enterprises from the standpoint of economic security and identified some positive trends in the processes of ensuring activity transparency, despite a lack of development and of strengthening of economic security. Havlovska (2016) emphasizes that foreign economic activity is managed based on the concept of economic security as a component of national security and that its management requires resource, process, competitive and harmonization approaches. Therefore, the author proposes to highlight in detail the main factors of destabilizing impact and the main objects of protection within these approaches. Martynenko (2021) proposes approaches to ensuring the economic security of foreign economic activity

that aim at protecting against the negative effects of threats to the external and internal environment. Moiseenko (2018) considers the economic security of foreign economic activity from the standpoint of integrating consumption and production security. Chernyshov (2021) points out the dependence of the management of business development on the security of the environment within which foreign economic activity functions, arguing that ensuring a stable position of an enterprise in the market requires the maximum level of economic security for foreign economic activity. Economic security is assessed based mostly on financial and economic indicators and balanced aggregation of assets and capital, but somewhat narrowly in terms of the coverage of risks and threats (Moiseenko & Demchyshyn, 2011).

At the same time, it should be noted that the methods of monitoring, analysis, threat identification, criterion identification and assessment of the integral indicator of the socio-economic security of foreign trade remain non-generalized. Methodical approaches to measuring its level cover two areas: Koval (2016) proposes to measure the risks and manifestations of social hazards, while Kopytko et al. (2017) focus on the variability of indicators. The assessment of the level of foreign economic security as a factor in the development of the socio-economic system of Ukraine requires scientific modification, which necessitates further research in this area.

The authors determined the level of socio-economic security according to the main areas in which it manifests: material welfare; employment and social and labour relations; demographic situation; health and safety; social protection; social exclusion; and social well-being. Accordingly, the choice of indicators was based on assessments of the level of socio-economic security by seven subsystems. The following indicators were selected by the subsystem "material welfare": equivalent total income per capita, share of population whose income is below the statutory minimum, rate of change of disposable income (*per capita*), share of households with insufficient income for necessities (including food), differentiation of population by decile ratio of funds, consumer price index, share of population that assess their financial situation as poor or destitute. By the subsystem "employment and

social and labour relations", the selected indicators were: rate of change of average monthly wages, share of workers with wages at subsistence level, unemployment rate of working-age population, share of unemployed seeking work for more than a year, and unemployment rate according to the International Labour Organization methodology aged 15–70 years. By the subsystem "demographic situation" the selected indicators were: rate of change of human potential, rate of change of existing population, life expectancy, reproduction rate of population, population migration balance, and share of population over 60 years. By the subsystem "health and safety" the selected indicators were: mortality rate, level of general and social morbidity, level of population with full or partial disability, level of occupational injuries, and proportion of people who lack means for treatment. In the subsystem "social protection", the statistical observations covered: levels and rates of change in expenditures on social protection and pensions, ratio of pensions, subsistence level, and average wages. The subsystem "social exclusion" included indicators that directly or indirectly determine the risks of social isolation in society: index of marital instability, number of children deprived of parental care, proportion of children born out of wedlock, and number of offenses per 100,000 inhabitants. The subsystem "social well-being" included some generalized sociological indices: social well-being, destabilizing protest behaviour, and national distance.

The aggregation of indicators into integral estimation was based on the theory of additive value (Yeleiko et al., 2016). To minimize the loss of the informational value of indicators, rationing was carried out on the theoretical scale of variation, and the normalized values of the initial indicators (Z_{ij}) were calculated separately for stimulators (1) and disincentives (2).

$$Z_{ij} = \frac{X_{ij} - X_j^{\min}}{X_j^{\max} - X_j^{\min}} \tag{1}$$

$$Z_{ij} = \frac{X_j^{\max} - X_{ij}}{X_j^{\max} - X_j^{\min}} \tag{2}$$

where X_{ij} is the actual value of indicator j by component i; $i = \overline{1,7}$; $j = \overline{1, \overline{m}_i}$; m_i is the number of indicators of component i; Zij is a normalized value of indicator j of subsystem i;   are limit values of the

theoretical scope of variation (10% deviation from the largest and smallest empirical value of indicator j, respectively).

When using rate values or individual indicators of population movement (coefficients of natural decrease, migration balance, inflation rates, etc.), the presence of negative values of the indicator was assumed, which excluded the conditions of rationing in the range (0–1). To eliminate this contradiction, the method of shifting along the numerical axis to the right by a value larger than the maximum negative value of the indicator, with a simultaneous shift of threshold values to maintain existing proportions (Ministry of Economy of Ukraine, 2007) was used. The integral index was determined according to the algorithm of additive convolution, taking into account the strength, weight and direction of the influence of each component. The sub-indexes based on this component (i_i) were calculated by each subsystem.

$$i_i = \frac{1}{m_i} \sum_{j=1}^{m_i} Z_{ij} \tag{3}$$

The weighted coefficients (w_i) were determined using standard economic and statistical methods of factor analysis (International Monetary Fund, 2020).

The integral indicator of the level of socio-economic security (i_{SES}) was defined as the arithmetic mean of sub-indices under the condition of equivalence (4) or inequality (5) of each component in ensuring security.

$$i_{SES} = \frac{1}{7} \sum_{i=1}^{7} i_i \tag{4}$$

$$i_{SES} = \sum_{i=1}^{7} w_i i_i \tag{5}$$

The dynamics of Ukraine's foreign trade were analysed according to the following indicators (Ministry of Economic Development and Trade of Ukraine, 2013):

- indicator of openness of economy, % (i_{EO})

$$i_{EO} = \frac{(E + I) \cdot er_{(UAH/USD)}}{GDP} \tag{6}$$

where E is volume of exports, USD million; I is the volume of imports, USD million; $er_{(UAH/USD)}$ is the average exchange rate of hryvnia to the US dollar;
- export–import ratio, times (*eir*)

$$eir = \frac{E}{I} \qquad (7)$$

- share of leading partner country in total volume of exported goods, %
- share of leading goods (product group) in total volume of exported goods, %
- share of high-tech products in overall structure of exports, %
- share of raw materials and products of low degree of processing in total volume of exports, %
- share of leading partner country in total volume of imported goods, %
- share of leading goods (product group) in total volume of imported goods, %
- share of imports in the country's domestic consumption, % (si_{CDC})

$$si_{CDC} = \frac{I \cdot er_{(UAH/USD)}}{PGS + E \cdot er_{(UAH/USD)}} - I \cdot er_{(UAH/USD)} \qquad (8)$$

where PGS is the production of goods and services, million hryvnias.

3. Research results

3.1. Research on the level of socio-economic security of Ukraine

A key feature of the development of modern society is the socialization of all spheres of human life and their subordination to social goals. The UN Declaration on Social Progress and Development emphasizes that international peace and security on the one hand, and social progress and economic development on the other hand, are closely interconnected and mutually influential. The basis of socio-economic security is the protection of vital interests of man, citizens and society, which ensures social progress and economic development and the timely detection, prevention and neutralization of real and potential threats to national interests in the social sphere. The purpose of socio-economic security is to ensure the sustainable and effective functioning and development of the individual and society in changing internal and external environments. Achieving it requires the development and implementation of a system of social guarantees, a state policy for the preservation and development of human potential, and the coordination of the interests and needs of all protection entities. From a macro-economic point of view, socio-economic security is the system social risks are managed to compensate for damage and to prevent negative impacts on the state, society and citizens. Socio-economic security covers relationships regarding national income redistribution to ensure certain social standards of living in the face of social risks.

The socio-economic security of Ukraine is ensured under: the Constitution of Ukraine; universally recognized principles and norms of international law; the international treaties of Ukraine; the Association Agreement between Ukraine, on the one hand, and the European Union, the European Atomic Energy Community, and their member states, on the other; laws; and regulations (Barna et al., 2020).

Socio-economic security is determined, first of all, by the growing poly-variance of socio-political and economic processes in the state, which leads to the emergence of both new opportunities for society

Table 1. Dynamics of sub-indices and integral indicator of level of socio-economic security from 2015 to 2020

Subindices by subsystems		2015	2016	2017	2018	2019	2020
Material well-being	i_1	0.52	0.52	0.50	0.44	0.55	0.68
Employment, social and labour relations	i_2	0.47	0.51	0.52	0.44	0.47	0.57
Demographic situation	i_3	0.53	0.57	0.50	0.42	0.40	0.34
Safety of health and life	i_4	0.52	0.52	0.59	0.55	0.57	0.73
The social protection	i_5	0.47	0.48	0.47	0.41	0.37	0.44
Social exclusion	i_6	0.47	0.57	0.69	0.70	0.75	0.77
Social well-being in society	i_7	0.45	0.43	0.51	0.42	0.40	0.37
Integral indicator of socio-economic security	i_{SS}	0.49	0.51	0.54	0.48	0.50	0.56

Source: calculated according to data of the State Statistics Service of Ukraine (2022)

Table 2. Dynamics of indicators of economic security of Ukraine's foreign trade from 2015 to 2020

Indices	2015	2016	2017	2018	2019	2020
Exports of goods and services, USD millions	38,127.1	36,361.7	43,264.7	47,335	50,054.6	49,191.8
Volume of imports of goods and services, USD millions)	37,516.4	39,250	49,607.2	57,187.6	60,800.2	54,336.2
Production of goods and services, UAH millions	3,449,879.6	4,217,826	5,328,975	6,207,688	6,981,864	7,294,447
GDP, UAH millions	1,979,458	2,383,182	2,982,920	3,558,706	3,974,564	4,194,102
The average exchange rate of UAH to USD	21.8	25.6	26.7	27.2	25.8	26.9
Index of terms of trade (price), %	91.6	99.8	101.7	99.5	99.9	105
Largest volume of exports of goods to one country, USD millions	Russian Federation				China	
	4,827.7	3,592.9	3,936.4	3,652.6	3,593.1	7,099.9
Largest volume of imports of goods from one country, USD millions	Russian Federation				China	
	7,492.7	5,149.3	7,204	8,090.4	9,204.8	8,318.4
Largest volume of exports of goods of one product group, USD millions	XV. Base metals and preparations thereof				II. Plant products	
	9,470.7	8,338.8	10,124.6	11,632.7	12,914.5	11,883.2
Largest volume of imports of goods of one product group, USD millions	V. Mineral products				XVI. Machines, equipment and technical equipment	
	11,690	8,495	12,504.7	14,191.9	13,312.8	11,552.8
Export of goods of group VI. Products of chemical and allied industries, USD millions	2,130.8	1,558.2	1,660.6	1,871.2	1,930.8	2,020.1
Export of goods of group XVI. Machines, equipment and technical equipment, USD millions	3,940.9	3,637.9	4,276.8	4,654.7	4,464.4	4,486.6
Exports of goods of group XVII. Ground, air and water transport facilities, USD millions	679.2	555.7	625.8	669.3	882.3	756.6
Exports of goods of group XVIII. Optical, cinematographic apparatus, USD millions	158.6	145.7	151.6	148.6	181.3	162.6
Indicator of openness of economy, %	83.3	81.2	83.1	79.9	72.0	66.4
Export–import ratio, times	1.02	0.93	0.87	0.83	0.82	0.91
Share of leading partner country in total exports of goods, %	12.7	9.9	9.1	7.7	7.2	14.4
Share of leading goods (product group) in total exports of goods, %	24.8	22.9	23.4	24.6	25.8	24.2
Share of high-tech products (VI), (XVI), (XVII), (XVIII) in total structure of exports, %	18.1	16.2	15.5	15.5	14.9	15.1
Share of raw materials and low degree of processing of products in total exports, %	81.9	83.8	84.5	84.5	85.1	84.9
Share of leading partner country in total imports of goods, %	20.0	13.1	14.5	14.1	15.1	15.3
Share of leading goods (product group) in total imports of goods, %	31.2	21.6	25.2	24.8	21.9	21.3
Share of imports in domestic consumption, %	23.6	24.2	25.7	26.2	23.4	20.4

Source: calculated according to data of the State Statistics Service of Ukraine (2022); Ministry of Finance of Ukraine (2022)

and new challenges and threats (Shvedun & Hren, 2021). The authors consider it as a complex system in which the management of subsystems requires various, sometimes different vector measures. At the same time, it should be noted that the openness of the system of ensuring socio-economic security and its active interaction with the external environment make it impossible to maintain a stable balance. This causes the parameters of its transformation to vary in response to the emergence or intensification of threatening factors. Thus, within the framework of this study, the authors defined socio-economic security as a universal category that reflects the protection of the entities of foreign economic relations at all levels of the socio-economic system of Ukraine. Table 1 presents the calculated indicators of level of socio-economic security by the main areas of manifestation and the integral indicator of level of socio-economic security.

The intensification of transformation processes in the Ukrainian economy and increased competition in international commodity markets increase the importance of foreign trade for the socio-economic security of Ukraine by providing the country with necessary resources, protection of trade interests and the sustainable growth of national income. To identify the role of foreign trade in ensuring the socio-economic security of Ukraine, the authors analyzed its dynamics according to the main indicators included in the official methodology (Ministry of Economic Development and Trade of Ukraine, 2013) for calculating Ukraine's level of economic security (Table 2).

The analysis of the dynamics of the exports and imports of goods and services in Ukraine from 2015 to 2020 indicates a change in the strategic orientations of Ukrainian entities of foreign trade. The trend of refusing to cooperate with counterparties of the Russian Federation is being formed; cooperation with entities of China and EU countries is intensifying.

3.2. Relationship between foreign trade and the socio-economic security of Ukraine

To unambiguously identify the impact of foreign trade on the socio-economic security of Ukraine, the authors hypothesized the existence of strong and resistant relationships: between the indicators of economic openness (X_1), export–import ratio (X_2), share of high-tech products in the structure of exports (X_3), share of imports in the country's domestic consumption (X_4), and general level of socio-economic security (Y), and the authors also detailed the analysis on such economically oriented indicators of socio-economic security as "material welfare" (Y_1), "employment and social and labour relations" (Y_2), and "social protection" (Y_3).

To confirm these hypotheses and identify the degree of influence in the identified dependences, regression analysis was used:

$$Y = f(\beta, X) + \varepsilon \qquad (9)$$

where β is the vector of influence parameters; ε is the error.

Using the method of the least squares, the following vectors of the estimation of the regression coefficients (S) were obtained:

$$S = \left(X^T X\right)^{-1} X^T Y = \begin{pmatrix} 0.7316 \\ 0.00344 \\ 0.7612 \\ -0.0648 \\ -0.0058 \end{pmatrix}$$

$$S_1 = \left(X^T X\right)^{-1} X^T Y_1 = \begin{pmatrix} 1.6465 \\ 0.00434 \\ 0.303 \\ -0.04273 \\ -0.04355 \end{pmatrix}$$

$$S_2 = \left(X^T X\right)^{-1} X^T Y_2 = \begin{pmatrix} 0.6911 \\ 0.00397 \\ 1.3496 \\ -0.0996 \\ -0.00548 \end{pmatrix}$$

$$S_3 = \left(X^T X\right)^{-1} X^T Y_3 = \begin{pmatrix} -0.4777 \\ -0.000204 \\ 1.8243 \\ -0.08381 \\ 0.0263 \end{pmatrix}$$

Paired correlation coefficients (Table 3) were calculated by the formula:

Table 3. Matrices of the paired correlation coefficients (R)

Y	1	-0.493	0.0146	-0.408	-0.566
X_1	-0.493	1	0.314	0.619	0.796
X_2	0.0146	0.314	1	0.883	-0.31
X_3	-0.408	0.619	0.883	1	0.0903
X_4	-0.566	0.796	-0.31	0.0903	1
Y_1	1	-0.8194	0.1922	-0.2483	-0.9676
X_1	-0.8194	1	0.3138	0.6193	0.7964
X_2	0.1922	0.3138	1	0.8833	-0.3097
X_3	-0.2483	0.6193	0.8833	1	0.09032
X_4	-0.9676	0.7964	-0.3097	0.09032	1
Y_2	1	-0.487	0.1939	-0.2697	-0.67
X_1	-0.487	1	0.3138	0.6193	0.7964
X_2	0.1939	0.3138	1	0.8833	-0.3097
X_3	-0.2697	0.6193	0.8833	1	0.09032
X_4	-0.67	0.7964	-0.3097	0.09032	1
Y_3	1	0.5429	0.7288	0.5879	0.05207
X_1	0.5429	1	0.3138	0.6193	0.7964
X_2	0.7288	0.3138	1	0.8833	-0.3097
X_3	0.5879	0.6193	0.8833	1	0.09032
X_4	0.05207	0.7964	-0.3097	0.09032	1

Source: Results of the analysis

$$r_{XY} = \frac{\overline{X \cdot Y} - \overline{X} \cdot \overline{Y}}{s(X) \cdot s(Y)} \qquad (10)$$

The partial coefficients of elasticity were used for the detailed analysis of the obtained regression models concerning the density of the relationship between the factors of foreign trade development and socio-economic security (Table 4).

The density of the joint influence of factors on the resulting cause was estimated by the multiple correlation index R (12) with the definition and estimation of the average error of approximation A (13).

$$E_i = b_i \frac{\overline{X_i}}{\overline{Y}} \qquad (11)$$

where $b_i = \beta \frac{s(Y)}{s(X_i)}$ is the value of the regression coefficients

$$R = \sqrt{\frac{s_e^2}{\sum (Y_i - \overline{Y})^2}} \qquad (12)$$

$$A = \frac{\sum |\varepsilon : Y|}{n} \cdot 100\% \qquad (13)$$

The value of multiple correlation indices affirms a strong relationship between the studied factors, and the level of approximation average errors indicates a fairly high level of reliability of the research.

The statistical significance of the parameters of the multiple regression equations was assessed by

Table 4. Impact of factors of foreign trade development on ensuring the socio-economic security of Ukraine from 2015 to 2020

Partial coefficients of elasticity	Influence of factors on			
	integrated indicator of socio-economic security	level of material well-being of population	employment, social and labour relations	level of social protection of population
E_1	0.52	0.63	0.621	-0.0359
E_2	1.33	0.508	2.436	3.718
E_3	-2.005	-1.269	-3.185	-3.026
E_4	-0.27	-1.947	-0.264	1.43
R	0.9354	0.9943	0.9874	0.9999
R^2	0.875	0.989	0.975	1
A	1.47%	1.14%	1.02%	0.088%

Source: Results of the analysis

partial F-criteria for the inclusion of each factor and Student's *t*-test (Table 5).

According to the calculations, the hypothesis of the availability of the impact of foreign trade on the socio-economic security of Ukraine, which is described by the equation $Y = 0.7316 + 0.00344X_1 + 0.7612X_2 - 0.0648X_3 - 0.0058X_4$, is statistically confirmed. In the studied model, 87.5% of the total variability of the result is explained by the change of factors, the factor "export–import ratio" has the greatest positive influence (β=1.836) on the result, whereas the factor "share of high-tech products

in the structure of exports" has the most negative influence (β=−2.472) (Fig. 1).

The detailed analysis statistically confirmed the impact of the main characteristics of foreign trade on the following parameters of socio-economic security:

- "material welfare": 98.87% of the total variability is described by the equation $Y_1 = 1.6465 + 0.00434X_1 + 0.303X_2 - 0.04273X_3 - 0.04355X_4$, the factor "openness of the economy" has the most positive influence (β=0.375), and the share of imports in the

Table 5. Statistical significance of results of regression analysis of foreign trade development to ensure the socio-economic security of Ukraine from 2015 to 2020 ($p < 0.05$)

Factors	β	Partial F-criterion for inclusion of factor	Share of factors in general variant	Std. err.	t
For dependence $Y = 0.7316 + 0.00344X_1 + 0.7612X_2 - 0.0648X_3 - 0.0058X_4$					
Free member	—	—	—	0.821	0.891
X_1	0.771	-3.04	-0.38	0.0133	0.259
X_2	1.836	0.214	0.0268	1.206	0.631
X_3	-2.472	8.066	1.009	0.039	1.662
X_4	-0.388	1.757	0.22	0.0493	0.118
For dependence $Y_1 = 1.6465 + 0.00434X_1 + 0.303X_2 - 0.04273X_3 - 0.04355X_4$					
Free member	—	—	—	0.641	2.569
X_1	0.375	-27.9	-0.307	0.0104	0.418
X_2	0.281	4.788	0.054	0.941	0.322
X_3	-0.627	13.802	0.156	0.0304	1.404
X_4	-1.122	96.19	1.086	0.0384	1.133
For dependence $Y_2 = 0.6911 + 0.00397X_1 + 1.3496X_2 - 0.0996X_3 - 0.00548X_4$					
Free member	—	—	—	0.554	1.246
X_1	0.591	-11.456	-0.288	0.00898	0.442
X_2	2.162	16.672	0.419	0.814	1.658
X_3	-2.523	27.069	0.68	0.0263	3.784
X_4	-0.244	6.494	0.163	0.0333	0.165
For dependence $Y_3 = -0.4777 - 0.000204X_1 + 1.8243X_2 - 0.08381X_3 + 0.0263X_4$					
Free member	—	—	—	0.0436	10.954
X_1	-0.0327	-97.983	-0.0178	0.000706	0.288
X_2	3.156	12678.208	2.3	0.064	28.492
X_3	-2.293	-7431.734	-1.348	0.00207	40.482
X_4	1.263	362.392	0.0657	0.00262	10.055

Source: Results of the analysis
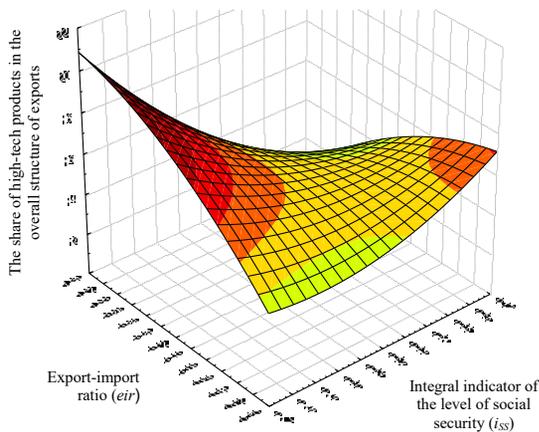
Fig. 1. 3-D visualization of the impact of the factors "export-import ratio" and "share of high-tech products in the structure of exports" on ensuring the socio-economic security of Ukraine
Source: Results of the analysis

country's domestic consumption has the most negative influence ($\beta=-1.122$);

- "employment and social and labour relations": 97.49% of the total variability is described by the equation $Y_2 = 0.6911 + 0.00397X_1 + 1.3496X_2 - 0.0996X_3 - 0.00548X_4$, the factor "export–import ratio" has the most positive influence ($\beta=2.162$), and the share of high-tech products in the structure of exports has the most negative influence ($\beta=-2.523$);

- "social protection": 99.98% of the total variability is described by the equation $Y_3 = -0.4777 - 0.000204X_1 + 1.8243X_2 - 0.08381X_3 + 0.0263X_4$, the factor "export–import ratio" has the most positive influence ($\beta=3.156$), and the share of high-tech products in the structure of exports has the most negative influence ($\beta= -2.293$).

To identify the impact of foreign trade on the socio-economic security of Ukraine, the hypotheses on the relationship between the indicators of the economic security of foreign trade and the general level of socio-economic security are studied. The regression analysis statistically confirmed these hypotheses and revealed the measures of the impact of economic security parameters of foreign trade on socio-economic security on the whole and in the selected subsystems. The factors "export coverage

of imports" and "openness of economy" have the greatest positive impact on socio-economic security.

4. Discussion

The provision of socio-economic security in the system of the state regulation of Ukraine is constantly being transformed, but in the practice of institutional regulation, the principles of systematic coverage of various areas of socio-economic development are not implemented. This necessitates the construction of a multilevel system of socio-economic security, at various stages of which it is possible to integrate institutional tools to effectively combat external and internal threats. The structural and functional approach to the inclusion of foreign trade in socio-economic security involves identifying functional relationships at the level of socio-economic relations.

The analysis of the dynamics of the exports and imports of goods and services in Ukraine from 2015 to 2020 indicates a change in the strategic orientations of Ukrainian entities of foreign trade. The trend of refusing to cooperate with counterparties of the Russian Federation is being formed; the cooperation with entities of China and the EU countries is intensifying. Focusing on new markets widens the prospects for growth and development but creates some threats to the socio-economic security of Ukraine, which requires the institutional implementation of security-oriented management.

The successful development of foreign trade directly correlates with socio-economic factors of state security. The coordinating role of public administration bodies in the processes of ensuring socio-economic security is objectively determined by the function of the state as a guarantor of national interests. According to the Ministry of Economy of Ukraine (2022), the development of Ukraine's socio-economic system over the past ten years has not provided a sufficient level of economic security – its average value has been in the zone of unsatisfactory state (40% of the optimal value). At the same time, according to the Ministry of Economic Development and Trade of Ukraine, 2013, the production, demographic, energy, foreign economic, investment and innovation, food, social

and financial components of economic security were taken into account. The state of Ukraine's foreign economic security from 2010 to 2020 was assessed as dangerous (34% of the optimal value) due to low competitiveness of production and a significant share of raw materials in the structure of exports, which led to imbalances in Ukraine's foreign economic activity.

The authors found that the factor "export–import ratio" has the greatest positive impact on socio-economic security (Fig. 2). The dynamics and structure of trade flows of exports and imports are an indicator of the level of competitiveness of Ukrainian goods and services, as well as indirectly characterizing macro-economic conditions in the country.

The main reasons for the decline in the exports of Ukrainian goods include:

- the reduction in world prices for low value-added goods, i.e. raw materials and supplies (Ukraine's main export items);
- EU anti-dumping measures (on certain items of Ukrainian exports);
- the difficult political and socio-economic situation in Ukraine.
- a reduction in production volumes due to the partial loss of industry in the temporarily occupied territories of the Autonomous

Republic of Crimea, Donetsk and Luhansk regions;
- partial loss of markets in the territory of the Russian Federation.

At the same time, the described circumstances led to the reorientation of Ukrainian export flows to the EU market.

The openness of Ukraine's economic system, identified by the authors as the second most important factor influencing socio-economic security, opens up opportunities to raise social standards of living. The revealed degree of openness is conditioned by the procurement of natural resources, the high capacity of the domestic market and the sectoral structure of the economy, while being limited by the deteriorating demographic situation and declining effective demand. A high degree of openness is observed in most Western European economies; however, as pointed out by Anhelko et al. (2020), ultra-high openness rates may indicate a high dependence on raw material exports. It should be noted that a decrease in the share of metallurgy in the structure of Ukraine's foreign trade due to the Russian Federation's temporary occupation of Crimea and some districts of Donetsk and Luhansk regions negatively affected the relative involvement in the international division of labour; instead, the reorientation of export flows to agricultural products and imports to high-tech
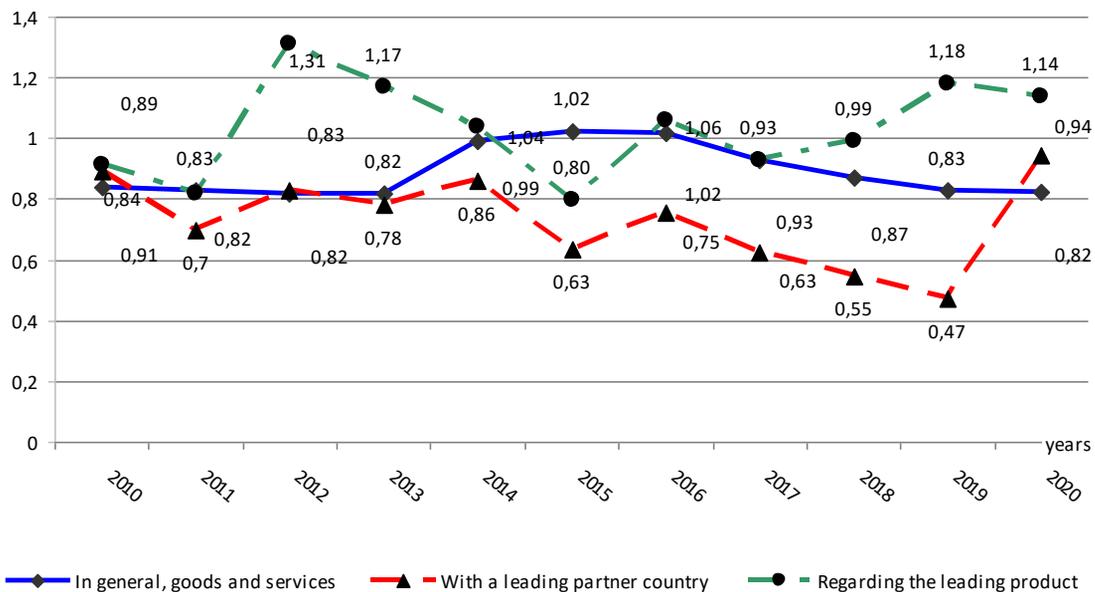
Fig. 2. Dynamics of the export-import ratio in Ukraine from 2010 to 2020
Source: Calculated according to the data of the State Statistics Service of Ukraine (2022)
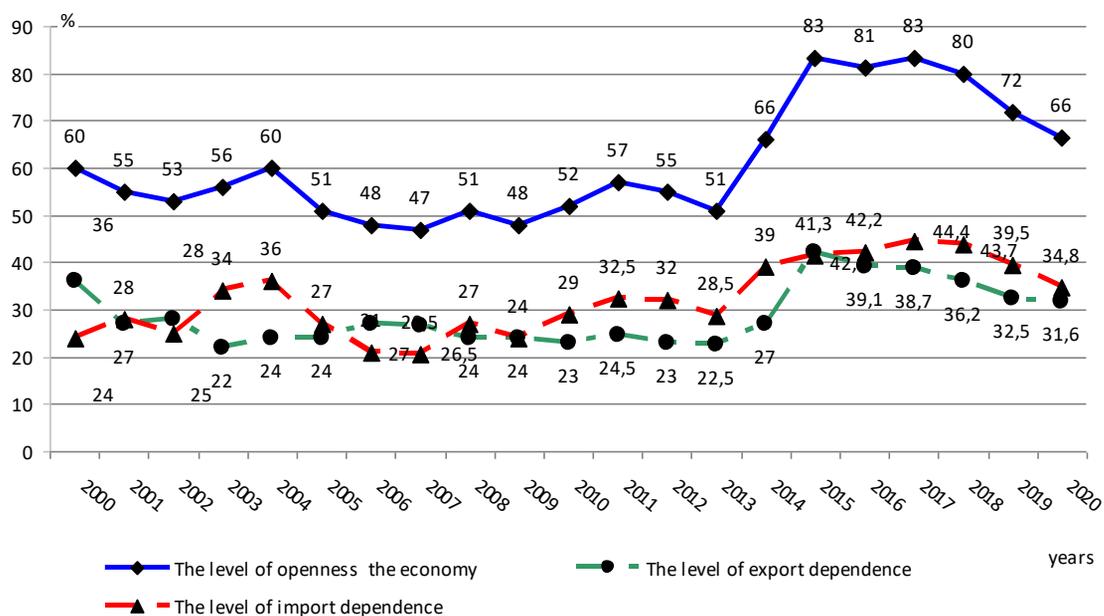
Fig. 3. Dynamics of the degree of openness of the economy of Ukraine from 2010 to 2020
Source: Calculated according to the data of the State Statistics Service of Ukraine (2022)

products allowed an increase in the level of openness of the economy formed in previous periods (Fig. 3).

A totality of real and potential conditions and factors of internal and external threats poses a danger to the development of foreign trade. The main challenges to ensuring socio-economic security in the field of Ukraine's foreign trade are as follows:

- insufficient rates of diversification of Ukraine's trade flows to ensure competitiveness in world markets;
- a significant share of foreign economic transactions with the Russian Federation, despite its use of economic levers that are contrary to the national interests of Ukraine;
- a dysfunctional structure of trade flows predominated by the export of raw materials and the import of high-tech products;
- a high level of import dependence of Ukraine's economy;
- a significant number of protectionist measures applied by foreign states to Ukrainian goods (high customs tariffs, use of non-tariff barriers);
- weakness of foreign trade infrastructure;
- risks of export restrictions in the case of the introduction of new carbon taxes.

At the macro level, some factors are negatively affecting socio-economic security – the main ones being the military conflict in Ukraine, policy gaps of the National Bank of Ukraine, permanent transformations in the fiscalization area, unstable resource provision of the economy, and, in recent years (2020–2022), additional risks due to pandemic restrictions. These factors are leading to appropriate reactions by business entities – in particular, the termination or significant closure of entities' activity, the strengthening of the economy's "shadowing", and the withdrawal of capital from Ukraine. Additional risks are created by the crisis of Ukrainian society's trust in political institutions and global-class challenges – climate change, the energy supply crisis and pandemic restrictions. Thus, it can be argued that threats to the socio-economic security are complex.

5. Conclusion

The level of socio-economic security is determined by the following criteria (subsystems of socio-economic security system): "material welfare", "employment and social and labour relations", "demographic situation", "health and safety", "social protection", "social exclusion" and "social well-being". The integral indicator of the level of socio-

economic security is defined as the arithmetic mean of the sub-indexes, and its dynamics are revealed.

The dynamics of the level of the economic security of foreign trade is analyzed in terms of openness of the economy, export coverage of imports, share of leading partner country, and leading product (product group) in the overall structure of exports and imports. The shares of low value-added products in the total volume of exports and the share of imports in Ukraine's domestic consumption are also analyzed.

To identify the impact of foreign trade on the socio-economic security of Ukraine, hypotheses on the relationship between the indicators of economic security of foreign trade and general level of socio-economic security are studied in detail on the subsystems "material welfare", "employment and social and labour relations" and "social protection". The regression analysis statistically confirmed these hypotheses and revealed the measures of the impact of economic security parameters of foreign trade on socio-economic security on the whole and in the selected subsystems. The factors "export coverage of imports" and "openness of economy" have the greatest positive impact on socio-economic security.

The analysis of the dynamics of the relevant indicators revealed the main opportunities and threats related to ensuring socio-economic security. The main risks to Ukraine's socio-economic security in the field of foreign economic activity include insufficient competitiveness of goods and services in world markets, the dysfunctional structure of trade flows with a predominance of raw materials in exports and high-tech products in imports, and a high level of import dependence.

It is desirable to focus further research in this direction on the development of institutional tools to level the identified risks and create new opportunities to strengthen the positive impact of foreign trade on the socio-economic security of Ukraine.

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