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STUDY OF THE FOREIGN TRADE SECURITY OF REGIONS IN THE FACE OF EXTERNAL THREATS

ABSTRACT

Global challenges, primarily related to the war in Ukraine, and the COVID-19 pandemic, have exacerbated the issue of the resilience of national economies to changes in the external environment. Security factors are becoming decisive in the formation of economic development strategies, the implementation of foreign policy, and the implementation of export-import operations. The ramifications and scale of global supply chains remain a tangible challenge for most countries of the world and their regions. Today, most participants in foreign economic activity are trying to reduce existing risks by diversifying the product range, expanding the circle of trade partners at the expense of "friendly" countries, etc. This situation highlights the importance of assessing the foreign trade security of regions to strengthen the country's economic resilience in conditions of a sharp decline in export potential, disruption of established logistics supply chains, the underdevelopment of border infrastructure for freight transportation, the prevalence of raw materials in the export structure, the lack of human resources, the aggravation of the general security situation, etc. The aim of the article is to develop a methodological approach for assessing the foreign trade security of regions in conditions of external challenges and to test it on the example of the regions of Ukraine. The taxonomic analysis method was used to assess the foreign trade security of the regions of Ukraine and to study its current risks and challenges. Based on the systematic comparative analysis of foreign trade security of the regions of Ukraine used in the work, a rating assessment of the regions of the country has been carried out, which allows to determine the position of each region among other Ukrainian regions in terms of the level of foreign trade security, to reveal factors affecting the dynamics of changes in the main security indicators, to identify the features of the economic development of each region and their resilience in the face of external threats. The results of the research will be useful both for researchers in the field of foreign economic activity and for economic security and politicians in the field of trade and economic policy.

Keywords: regions, security, foreign trade security, foreign trade, external threats

JEL Classification: H56, F10, P25, R11

INTRODUCTION

Despite the lively debate about the prospects for further growth in the interdependence of the world economy due to the significant rise in cross-border flows of goods, services, technology as well as capital, there is still no convincing evidence that international trade is deglobalizing (Goldberg Pinelopi & Reed, 2023). The dynamics of world trade growth slowed after the global financial crisis of 2008–2009 and plummeted at the beginning of the pandemic in 2020. Since then, trade volumes have recovered to their highest levels in history. The COVID-19 pandemic has forced many countries to temporarily restrict exports of medicines, and some have suspended supplies of wheat and other food products due to a surge in prices following Russia's invasion of Ukraine. Trade can respond with delay to changes in the political environment, and politics itself can lag behind changes in public sentiment. At the same time, terms such as "national security" and "reshoring" are increasingly appearing on the agenda of countries and their regions. This is confirmed by a survey of economists from the Booth School of Business at the University of Chicago. In March 2018, 100% of respondents were against the initial US tariffs. However, in January 2022, respondents were already sceptical about

global supply chains: most economists believed that dependence on foreign resources made American industry more vulnerable.

The occupation of part of Ukraine and subsequently the large-scale invasion of Russia, which for years has been the main trading partner of our country, shows the catastrophic consequences of underestimating the importance of strengthening the foreign trade security of the country and its regions. Changes in supply logistics, the blocking of checkpoints by Poland, Slovakia, and Romania, as well as restrictions on access to European markets for agricultural products create new challenges and threats to economic sustainability and the realization of growth potential in conditions of uncertainty. Therefore, there is a need to carry out a comparative assessment of the foreign trade security of the Ukrainian regions in wartime.

LITERATURE REVIEW

Certain aspects of foreign trade security are the subject of scientific research by both domestic and foreign researchers. Thus, Bown (2024), Chimits et al. (2024), Baur et al. (2023), Mavroidis & Sapir (2024), and Mejean & Rousseaux (2024) emphasize the importance of increasing attention to economic security issues, using the example of the EU, due to growing geopolitical tensions and the weaponisation of trade links. Studies of the features of formation and strengthening of economic security and its impact on the economic development of the country and regions were conducted by Varnalii (2020), Zhalilo (2023), Loiko (2013), Lukin (2004), Sak (2013), Stetsenko (2013).

The issue of foreign economic security as a significant component in the structure of economic security is revealed in the works of Aranchiy & Peretyatko (2012), Babets (2023), Hnatenko (2021), Kokovsky (2011).

The features of the implementation of foreign trade activities of the regions of Ukraine, the spatial organization of economic activity in the cross-border area in the context of increasing the competitiveness of border regions and their integration level into the global chains of added value are highlighted in the works of regionalist scientists (Ishchuk & Sozansky, 2020; Kalat & Zaika, 2024; Prytula et al. (2019, 2021, 2023, 2024).

In accordance with the Methodological Recommendations for Calculating the Level of Economic Security of Ukraine (On approval of Methodological recommendations for calculating the level of economic security of Ukraine), foreign economic security is an integral part of economic security. As per the definition given in this document, foreign economic security is a state of compliance of foreign economic activity with national economic interests. It is designed to minimize losses to the national economy in the face of negative external shocks and promote economic development through integration into global value chains. It is proposed to calculate the integral index of foreign economic security based on the assessment of 11 separate indicators, which are based on both statistical data and data obtained by surveyed respondents.

Scientists of the Research Centre for Industrial Development Problems, in assessing the country's foreign economic security, emphasize the importance of taking into account modern trends towards vertical specialization and the inclusion of countries in global value chains. At the same time, an integrated assessment of Ukraine's foreign trade security is proposed to be carried out in terms of the following components: the balance of foreign trade activity, import dependence of the domestic market and exports, the progressiveness of exports and release of goods, which allows, together with indicators of export and import dependence, to consider the impact of the movement of added value in the country's economy and international trade (Kyzym et al., 2019).

Assessing the foreign economic security of the region, Lyubchenko O.M. also takes into account indicators of the volume of foreign trade turnover per capita and the share of imports in domestic consumption (Lyubchenko, 2007).

Zubko (2022) proposed a method of express assessment of the state of the country's economic security, which involves the study of international trade and important statistical indicators of the economy. It is based on comparing the data of economic indicators of the selected country with another. At the same time, the country's place in world trade is assessed according to indicators of foreign trade and its potential for development in the international arena. This approach allows to identify problematic components and conduct monitoring of the country's economic security.

Some researchers study the foreign economic security of the state through the prism of three components: trade, financial investment, and banking and credit security of the state. The first component (trade) includes indicators of macroeconomic characteristics of foreign economic activity and general indicators reflecting geographical orientation, scientific and technical sphere, and export structure (Khaustova & Hryhorova-Berenda, 2013).

Chernova & Popko (2017) suggest that the proper state of foreign economic security is designed to provide favourable conditions for the country's economic development through its active participation in the global labour division. As globalization intensifies, the need for countries to enter international markets increases. Therefore, the foreign trade activity of

countries around the world is growing, since export-import operations are an indispensable component of the national economic growth. At the same time, the main variables for analysing the level of foreign economic security are the volumes and structure of exports and imports, the volume of GDP, the level of dollarization of the national currency, the share of exports in GDP, etc.

Vlasyuk (2016) studied the foreign trade security of Ukraine using systemic analysis and hierarchical structuring. It allowed to structure of the system of foreign trade security assessment indicators of Ukraine: at the lower level of the hierarchy, a number of indicators are placed that characterize each element of the previous level of the hierarchical model. The researcher also emphasizes the importance of forming their list based on the principles of representativeness, reliability, information accessibility, and scientific validity.

Despite the significant scientific achievements of scientists on the outlined issues, the emergence of new challenges and threats to the foreign trade security of the country and its regions necessitates the study of their impact on ensuring economic growth in the conditions of the transition to military rails.

AIMS AND OBJECTIVES

The aim of the article is to develop a methodological approach to assessing the foreign trade security of regions in the face of external threats and to test it on the example of the regions of Ukraine.

The main objectives of the article to achieve the aim were:

1. To assess the foreign trade security of the Ukrainian regions in the face of external threats.
2. To conduct a comparative analysis of the foreign trade security of regions in terms of its main indicators.

METHODS

The assessment of the foreign trade security of the regions of Ukraine and the study of its current risks and challenges were carried out, they were based on the taxonomic analysis method.

The algorithm for assessing the foreign trade security of the Ukrainian regions included the following stages:

1. Formation of a matrix of initial data (indicators) of the foreign trade security of the regions of Ukraine.
2. Standardization of initial data (indicators).
3. Construction of a reference vector for foreign trade security of regions of Ukraine.
4. Calculation of distances between the initial data and the reference vector.
5. Calculation of the taxonomic indicator of foreign trade security of regions of Ukraine.
6. Qualitative interpretation of the initial data and the taxonomic indicator of foreign trade security of regions of Ukraine.

Analysis of modern approaches to the study of foreign trade security of regions of Ukraine and taking into account current trends in the development of the world economy as well as challenges associated with the war in Ukraine, allowed us to identify the following main indicators of assessing the foreign trade security of regions of Ukraine:

1. Degree of dependence on sale of products in foreign markets (level of export dependence, % to GRP).
2. Share of imports in the domestic consumption of the region, %.
3. Share of the main partner country in the total volume of goods export, %.
4. Share of the main partner country in the total volume of goods imports, %.
5. Share of the main commodity group in the total volume of goods export, %.
6. Share of the main commodity group excluding energy imports in the total volume of goods imports.
7. Share of raw materials and low-tech exports; in the total volume of goods export, %.
8. Share of knowledge-intensive services in the total volume of exports of services, %.

For the convenience of analysing the foreign trade security of regions, the work proposes the calculation of the total rating number R_i :

$$R_i = 1 - \frac{D_i}{\sqrt{\sum_{i=1}^m D_i^2}},$$

where D_i means Euclidean distance, calculated for the i -th region.

Using this ratio in calculations it is possible to obtain the value of the integral indicator in the range from 0 to 1, while the taxonomic method in its classical interpretation does not allow to assess objectively the resulting indicator, since its value is not limited by an upper limit.

The rating number R_i being larger leads to a higher level of foreign trade security in the region. The assessment of the foreign trade security of the regions of Ukraine based on the taxonomic method and the corresponding ranking of the regions allowed for a comparative analysis of the development of foreign trade activity in the security dimension.

The total assessment of the foreign trade security of the Ukrainian regions was conducted based on statistical data for 2019-2021. The lack of data on GRP in 2022 because of martial law in the country did not allow its assessment for this year. The analysis of foreign trade security in the context of its separate components was carried out on the data of 2019-2023.

RESULTS

Given the external and internal challenges, primarily related to the war in Ukraine, the country needs accelerated economic growth to mobilize sufficient resources to ensure high defence spending and other critical needs, and then our task is to achieve the EU standard of living and convergence for this generation (Ministry of Finance of Ukraine, 2024). Both the Ministry of Finance and the Ministry of Economy of Ukraine have prepared a Report on the Priorities of Economic Policy Aimed at Ensuring Economic Growth (hereinafter the Report).

It identifies key economic priorities aimed at accelerating economic recovery, strengthening the macroeconomic foundation as well as increasing growth potential in the face of uncertainty. In particular, the Report emphasizes the importance of reform in the field of trade facilitation to improve the competitiveness of trade and the efficiency of border services. Also, one of the priority restrictions on economic growth caused by external demand is access to foreign markets, especially the EU market. Deep, predictable, long-term integration and access to the EU internal market are essential to help Ukrainian exporters secure long-term contracts for the supply, investment, and transfer of technology (Ministry of Finance of Ukraine, 2024).

The priorities of the economic policy of Ukraine emphasize the importance of ensuring the foreign trade security of Ukrainian regions to strengthen the economic resilience of the country in the conditions of a sharp decline in export potential, the termination of established logistics supply chains, the underdevelopment of border infrastructure for freight transportation, the prevalence of raw materials in the export structure, the lack of human resources, the aggravation of the general security situation, etc.

Based on the understanding of the complexity of the study object (foreign trade security of the regions) and the heterogeneity of the features that characterize it, a mathematical apparatus of the taxonomic method, ranking and grouping by a set of indicators, which is a generalization of the distance method is proposed to carry out a comparative assessment of the foreign trade security of the country's regions.

The rating assessment of foreign trade security of the regions of Ukraine in years is presented in the next table.

Table 1. Rating assessment of foreign trade security of regions of Ukraine.

Oblasts	2019		2020		2021	
	Ranking score	Rank	Ranking score	Rank	Ranking score	Rank
AR of Crimea	-	-	-	-	-	-
Vynnytska	0.833	5	0.837	2	0.825	6
Volynska	0.818	8	0.802	15	0.796	16
Dnipropetrovska	0.825	7	0.819	8	0.817	8
Donetska	0.739	24	0.761	22	0.756	24
Zhytomyrska	0.826	6	0.823	7	0.826	5
Zakarpatska	0.738	25	0.731	25	0.722	25
Zaporizhska	0.810	13	0.831	4	0.815	9
Ivano-Frankivska	0.837	4	0.824	6	0.846	1
Kyivska	0.810	12	0.804	14	0.805	12
Kirovohradska	0.812	10	0.815	10	0.805	13
Luhanska	0.774	21	0.795	18	0.791	18
Lvivska	0.843	2	0.833	3	0.836	3
Mykolayivska	0.806	14	0.801	16	0.786	21
Odeska	0.798	17	0.807	12	0.807	11
Poltavska	0.803	15	0.790	20	0.777	23
Rivnenska	0.777	20	0.784	21	0.777	22
Sumska	0.839	3	0.828	5	0.832	4
Ternopil'ska	0.758	22	0.744	24	0.791	17
Kharkivska	0.850	1	0.850	1	0.839	2
Khersonska	0.748	23	0.748	23	0.790	19
Khmelnyska	0.795	18	0.792	19	0.797	15
Cherkaska	0.813	9	0.816	9	0.787	20
Chernivetska	0.801	16	0.805	13	0.809	10
Chernihivska	0.794	19	0.798	17	0.798	14
Kyiv city	0.812	11	0.814	11	0.819	7
Sevastopol city	-	-	-	-	-	-

In 2019-2020, the Kharkivska Oblast was the leader in terms of foreign trade security. In 2021, it became the Ivano-Frankivska Oblast. The "outsider" of the rating during the studied years is the Zakarpatska Oblast.

The share of the Kharkivska Oblast in the total volume of the country's foreign trade is relatively low. In 2019-2023, its share in total volume exports fluctuated within 2.15-3.09%, and in imports it was 2.18-3.09%. The contribution of the Ivano-Frankivska Oblast is even smaller: the share of its exports fluctuated within 1.5-1.7%, and imports it was 0.9-1.3%.

The Kharkivska Oblast has significant economic potential and is one of the most industrialized regions. In terms of GRP size, it ranked third in 2021 after the Kyivska and Dnipropetrovska Oblasts. Therefore, the dependence of its economy on the sale of goods in foreign markets is one of the lowest among the regions. The import component in the region's domestic consumption is also relatively insignificant, it was an average of 20% in 2019-2021. In the Zakarpatska Oblast, this indicator fluctuated within 66-73% during the studied period, and in the Donetska Oblast, which in 2019 and 2021 took the 24th place in the ranking, in 2020 it was the 22nd place, the level of import dependence was 30-43%.

An important characteristic of foreign trade security is also the share of the main partner country in the total volume of goods export. Among the regions of Ukraine, the least diversified geographically is the export of the Zakarpatska Oblast, more than 50% of the export of which is directed to Hungary. In the Chernivetska and Ternopil'ska Oblasts, the leading trading partner accounts for more than a third of exports. The most diversified is the export of the Kyivska and Odeska Oblasts.

The excessive dependence of the economy on exports increases the risk of instability because of the influence of fluctuations in world markets, especially raw materials (Kyzym et al., 2019). High dependence on imports of final products contributes to the imbalance in foreign trade. Dependence on imports of intermediate products, which is necessary for the production of final products of domestic consumption, leads to significant price shocks in the domestic market caused by external factors.

The defining feature of the economy of the Zakarpatska Oblast is the highest level of not only export but also import orientation among the regions of Ukraine. The region's economy depends significantly on imports of finished products, raw materials, components, and fixed capital. It illustrates the indicator of the share of imports in total consumption. Foreign economic activity of the region's enterprises is fully oriented to the EU market. Exports to Hungary provide more than 56% of revenues from export operations. About 10% is the share of exports to Slovakia, Poland, and Romania in the region's total exports. The geographical structure of commodity imports of the region is dominated by products from the EU countries. The spatial factor of the region's development (a common border with four EU member states, international transport corridors passing through the territory of the region, etc.) is a decisive competitive advantage of the Zakarpatska Oblast, the implementation of which will contribute to the social and economic development of this region (Prytula, 2019).

Before the war, the Chernivtsi Oblast was characterized by the lowest share of foreign trade in the country's total trade, which was less than 0.4%. In 2022 the export to import coverage ratio was 2.39 (in 2021 it was 2.46). Foreign trade partners were companies from 115 countries around the world. Romania remains the unchanged leading trading partner of the region, with which the state border with a length of 226.4 km passes through the territory of the region. More than a third of the region's exports are delivered to Romania.

During 2019-2021, the economy of the regions of Ukraine is becoming increasingly dependent on the sale of products in the Chinese market. As of 2021, China was the leading trading partner for the export of products in 8 regions of the country (Figure 1). Russia took the second place in the number of regions in which the country is a leading trading partner and Poland ranked third.

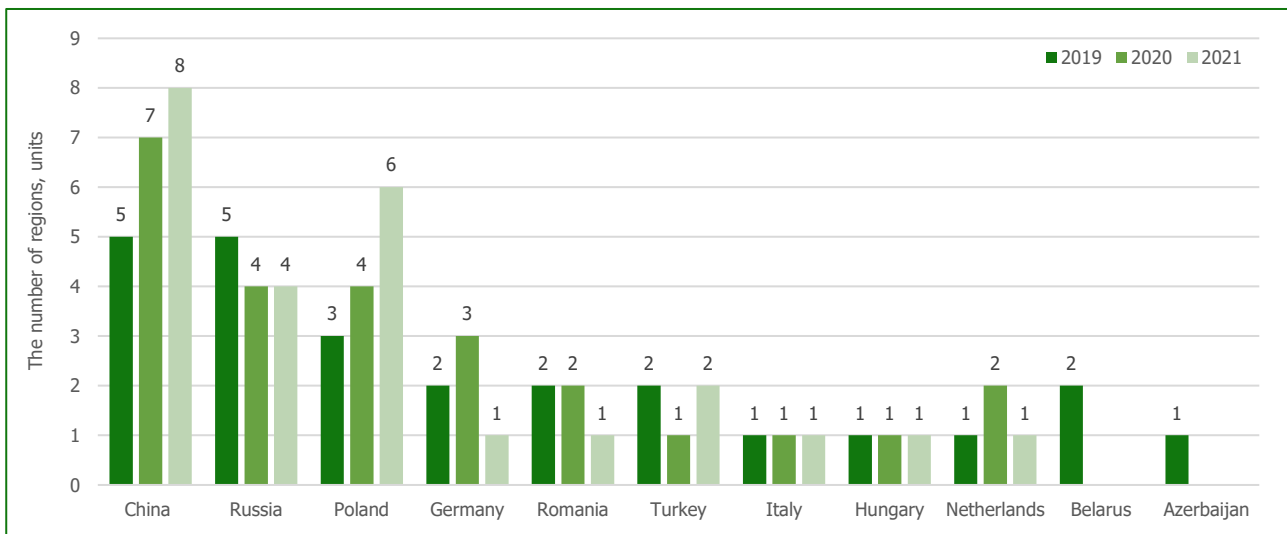


Figure 1. Distribution of regions of Ukraine by the leading partner country in total exports, units. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

Today, in the conditions of russia's full-scale invasion of Ukraine, foreign trade relations with the aggressor country have been reduced to almost zero. In 2023, our country did not export any products, and imports amounted to USD 4557.8 thousand (State Statistics Service of Ukraine, 2022).

Among the leading trading partners are also Germany, Romania, Turkey, Italy, Hungary, the Netherlands, etc.

Until February 2022, russia and Ukraine maintained close economic ties. Thus, in 2021, Ukraine ranked 15th in russia's foreign trade - its share was almost 2%, and trade turnover between the countries exceeded USD 12 billion (Ormotsadze, 2023). In 2021, Ukraine, according to Rosstat, delivered goods for USD 4.2 billion to russia. Russia exported to Ukraine goods and services worth USD 7 billion. Russia was among the three top trading partners of Ukraine.

Since 1991, the Ukrainian economy has remained focused on the russia market. The power system of Ukraine was synchronized with the power system of russia; russia was the main supplier of nuclear fuel, petroleum products, raw

materials for the production of fertilizers (ammonia and natural gas). The largest share of Ukrainian exports to Russia was in mechanical engineering. In particular, in 2013 mechanical engineering accounted for more than 26% of all exports to this country. In 2021, this share decreased to 23% (Ornotsadze, 2023).

Such a threat as the high level of integration of the Ukrainian economy with the Russian one was greatly underestimated and awareness of the scale of the consequences of this came only after the outbreak of war. By 2021, Russia remained the leading trading partner of many regions of Ukraine (Annex A).

The security dimension of the development of foreign trade in the regions is also determined by the geographical structure of imports. The most dependent on one trading partner during 2019-2021 was the Luhanska Oblast, 43-58% of imports of which were provided by Russia.

Until 2014, the Luhanska Oblast was one of the five most powerful industrialized economic regions of Ukraine, all major economic indicators corresponded to the average national level in Ukraine. The development of the region was in close relationship with the development of coal, chemical, and steel industries. After 2014, the military aggression of Russia and a gradual reduction in foreign trade with the aggressor country caused a chain reaction imbalance of all macroeconomic indicators of the region's development. Against the background of a general decline in exports of ferrous metals and growth in agricultural exports, the geography of the region's exports has undergone changes. During 2017-2018, the share of EU countries decreased from 50.4% to 36.5% (one of the main exports to these countries was ferrous metals) and the share of Asian countries (supplies of agricultural products) increased. Today, about 95% of the Luhanska Oblast's territory is occupied.

Ternopil'ska Oblast is also characterized by a high level of dependence on several leading trading partners. Poland, Germany, China, and Lithuania are the main suppliers of imported products to this region.

About 70% of imports to the Donetsk Oblast came from two countries, the United States and Russia. Historically, the economy of the Donetsk Oblast was characterized by significant dependence on foreign trade. The structure of regional goods exports was dominated by base metals and products made from them, while imports were dominated by mineral products, the share of which, inclusive, continued to grow until 2021.

The Kyiv'ska Oblast is characterized by the most diversified geographical structure of imports: the share of one leading trading partner ranges from 12-15%, three - 36-39%, and five - 51-55%, it was the same in the export of products. Less dependence on individual countries - trading partners is also inherent in the Kirovograd'ska, Mykolaiv'ska, Sumska, and Khmelnytska Oblasts.

China, Russia, Belarus, and Poland prevailed among the trading partners for import products in 2019-2021 (Figure 2). Today the situation is very different in the context of the termination of trade and economic relations with Russia and Belarus as it is observed the reorientation of Ukrainian markets primarily to the European market.

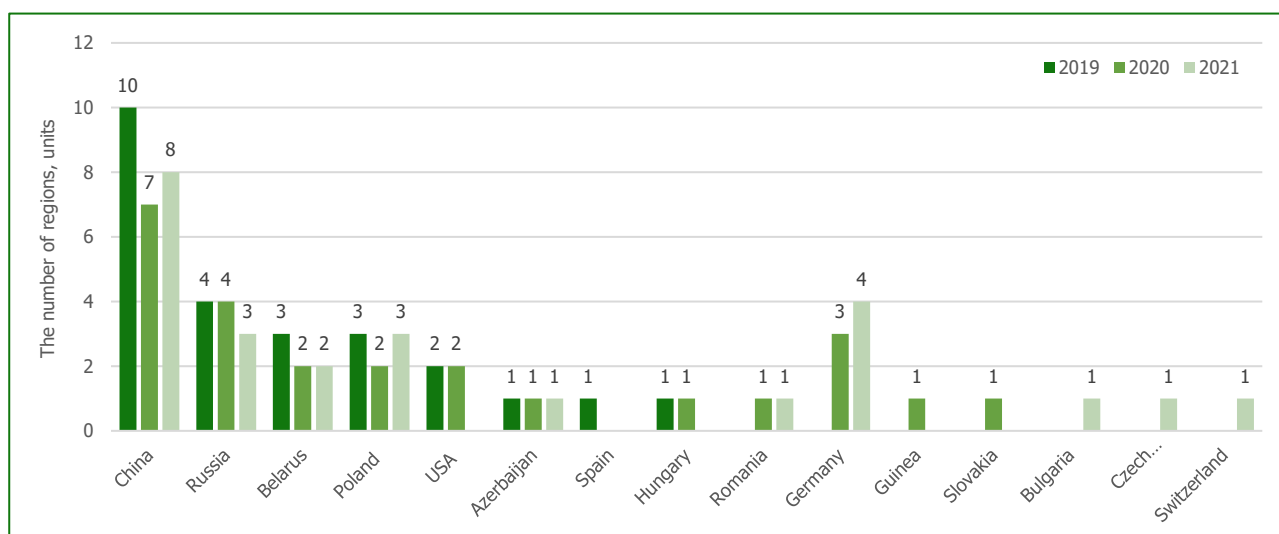


Figure 2. Distribution of regions of Ukraine by the main partner country in the total import volume, units. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

The model of the national economy was formed on the wreckage of the soviet command-administrative model, which provided for the control of large rental businesses over state institutions and relied on profit from the export of mainly raw and low-tech products (Zhilinska & Melnychuk (Eds.), 2017). In 2019, the leading commodity group in most regions of Ukraine were: group 10. Cereals (in 9 regions), group. Ferrous metals (in 3 regions), group 2. Meat and edible by-products, group 15. Animal or vegetable fats and oils, group 26. Ores, slag, and ash, group 44. Wood and wood products, and group. 48/ Paper and cardboard. They accounted for from 20 to 75% of the total export structure of the regions (Figure 3).

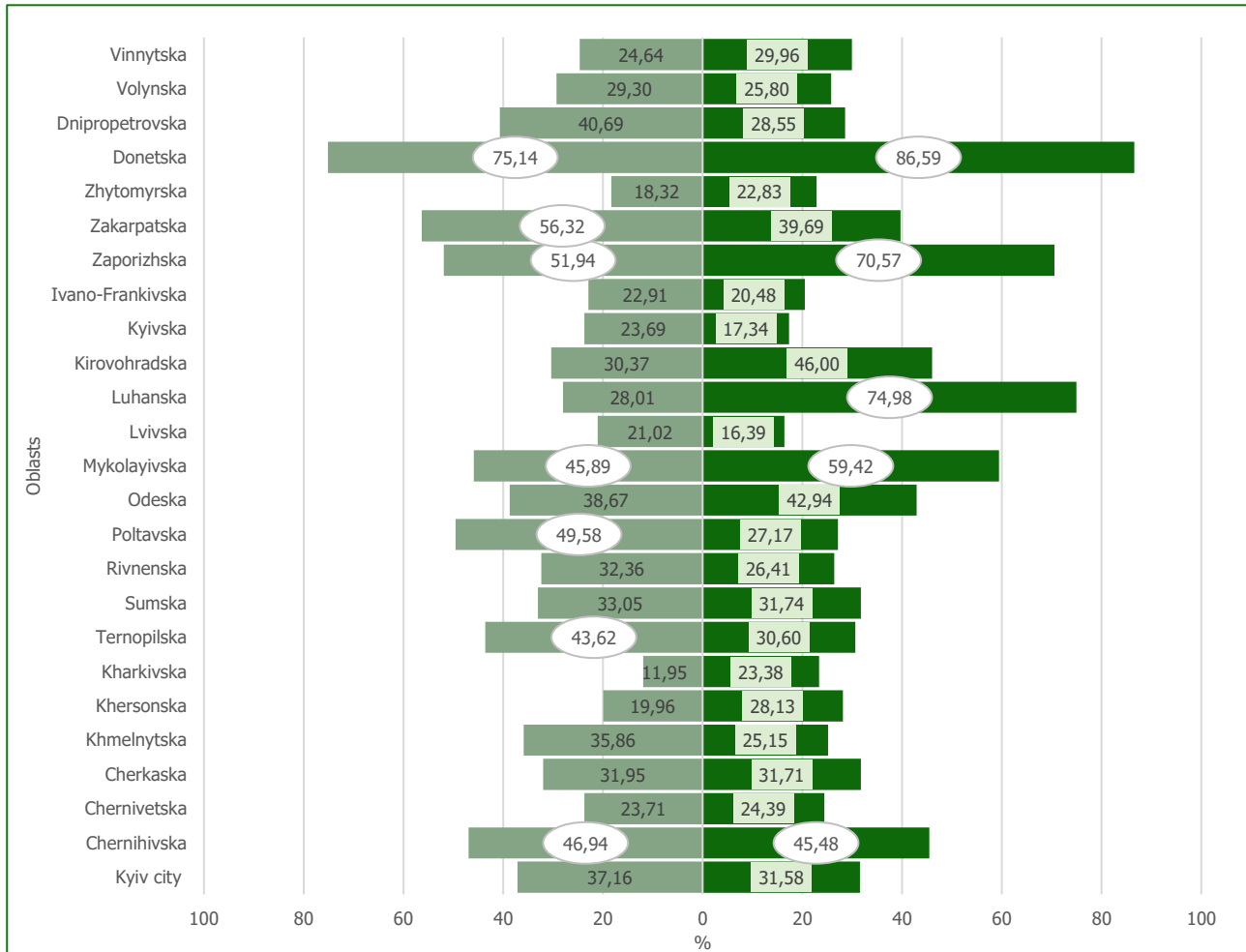


Figure 3. Share of the main commodity group in the total export volume of the regions of Ukraine in 2019 (left column) and 2023 (right column). (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

Diversification of the commodity structure of Ukraine's foreign trade and the entry of domestic participants in foreign economic activity into new markets strengthen the country's competitive position in international markets. An important indicator of the country's dependence on the situation in foreign markets is the export concentration index (Herfindahl-

Hirschman Index, which is calculated by the formula:
$$H_j = \frac{\sqrt{\sum_{i=1}^n \left(\frac{x_i}{X_j}\right)^2} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}}$$
, (where, H_j - index of export concentration, x_i -

export of a certain commodity group (positions), X_j - total export, n - number of commodity groups (positions). The results of the Index calculation in terms of regions are shown in Figure 4.

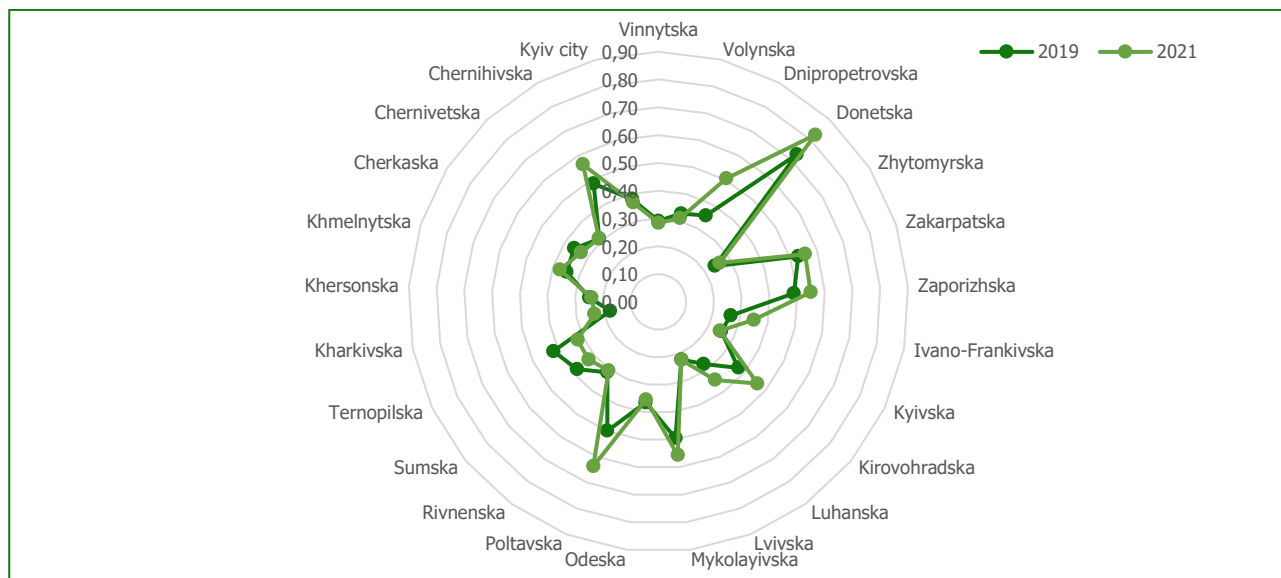


Figure 4. Regional export concentration index in 2019 and 2021. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

An index value closer to 1 indicates a low level of diversification of a country's export-import operations. In contrast, index values closer to 0 demonstrate export or import structures that are represented by a wide range of goods. The most diversified is the export of the Kharkivska, Lvivska, Zhytomyrska, Khersonska, and Kyivska Oblasts. The value of the Index in these areas in 2019-2021 ranged from 0.18 to 0.26. The Donetsk, Poltavska, and Zakarpatska Oblasts are the regions with the smallest list of commodity nomenclature. At the same time, the regions are characterized by variable trends regarding the level of diversification of their exports.

Figure 5 shows the share of the main commodity group in the total volume of goods imports in the regions in 2019 and 2021.

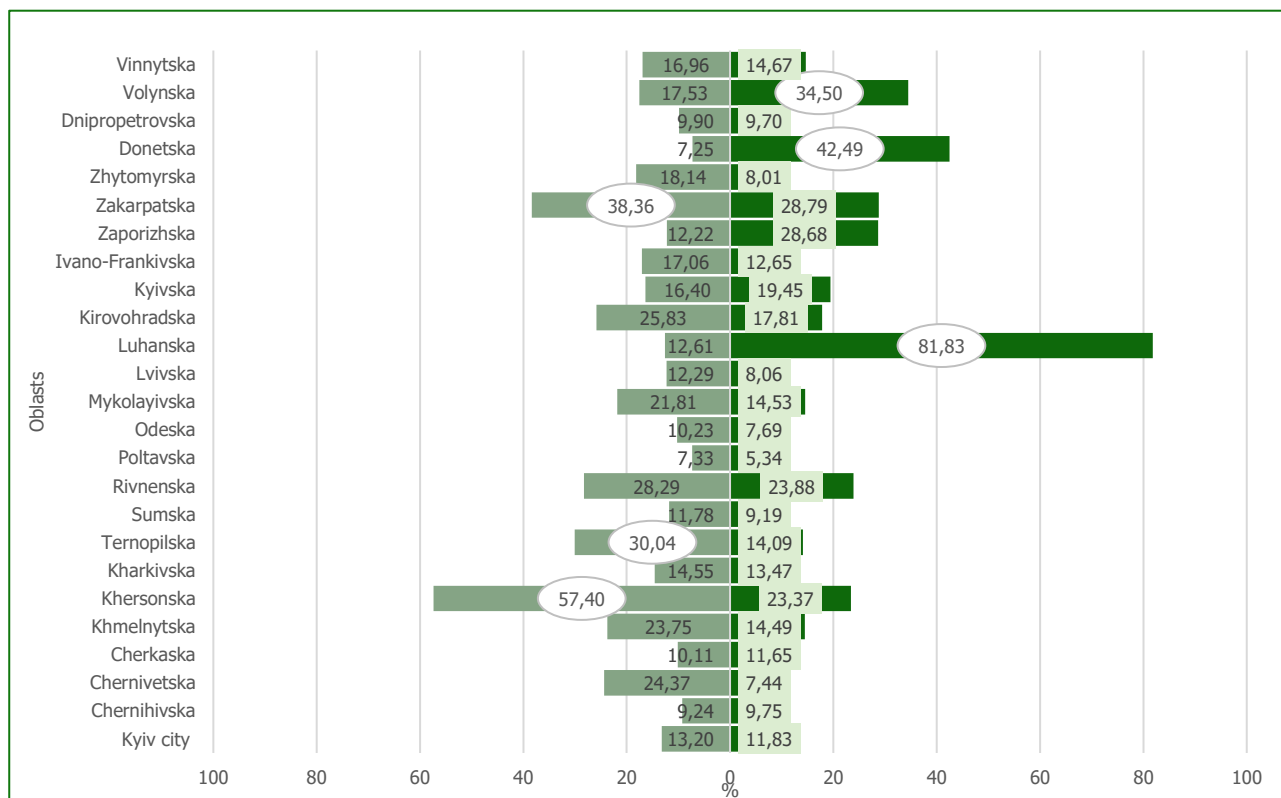


Figure 5. Share of the main commodity group in the total volume of goods imports in 2019 (left column) and 2023 (right column). (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

In general, the dependence of regions on one country of a trading partner for imports is lower compared to exports. In 2019 the largest shares of imports per trading partner were in the Khersonska, Zakapatska, and Ternopil'ska Oblasts, then in 2023, they were in the Luhanska, Donetsk, and Volyn'ska Oblasts.

A significant characteristic of the economic development of the country (region) is the volume of trade in high-tech goods, which is an indicator of the innovative capacity of the country (region). Scientific and technological progress depends largely on the level of funding of research, including in industrial enterprises. This affects the innovative development of the country. The low level of export intellectualization leads to the consolidation of raw material export orientation for Ukraine and its regions. In general, high-tech exports of regions make up a small part of the country's foreign trade, while in developed countries it plays a much more important role (Kharazishvili & Dron, 2014). The modern characteristics of the regions' exports are presented in Figures 6-7.

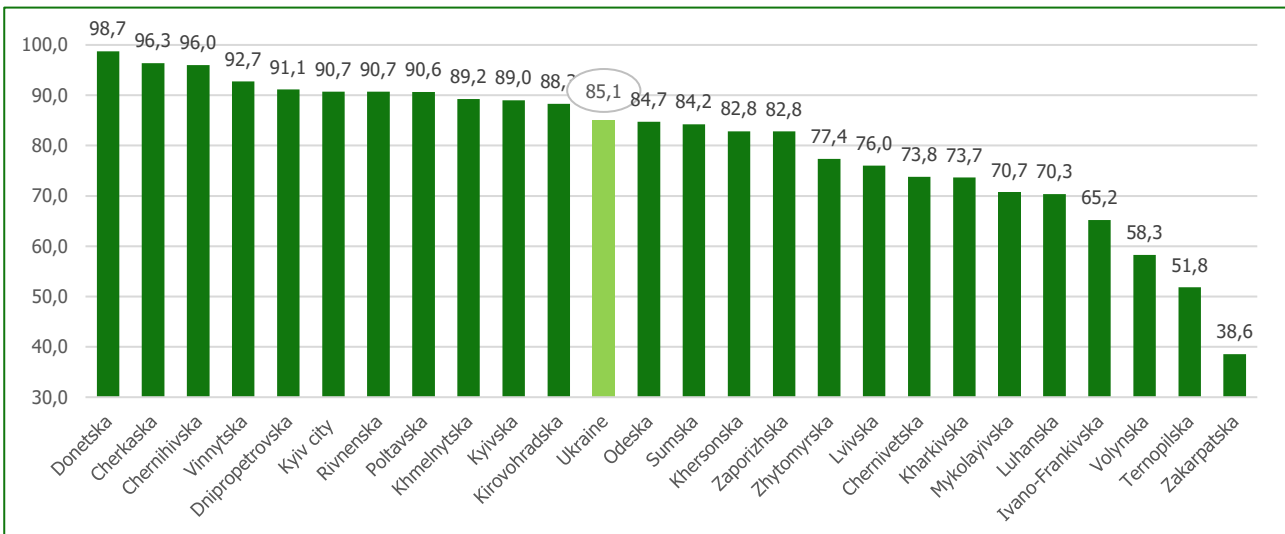


Figure 6. The share of raw materials and low-tech exports; in the total volume of goods exported in 2019, by region, %. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

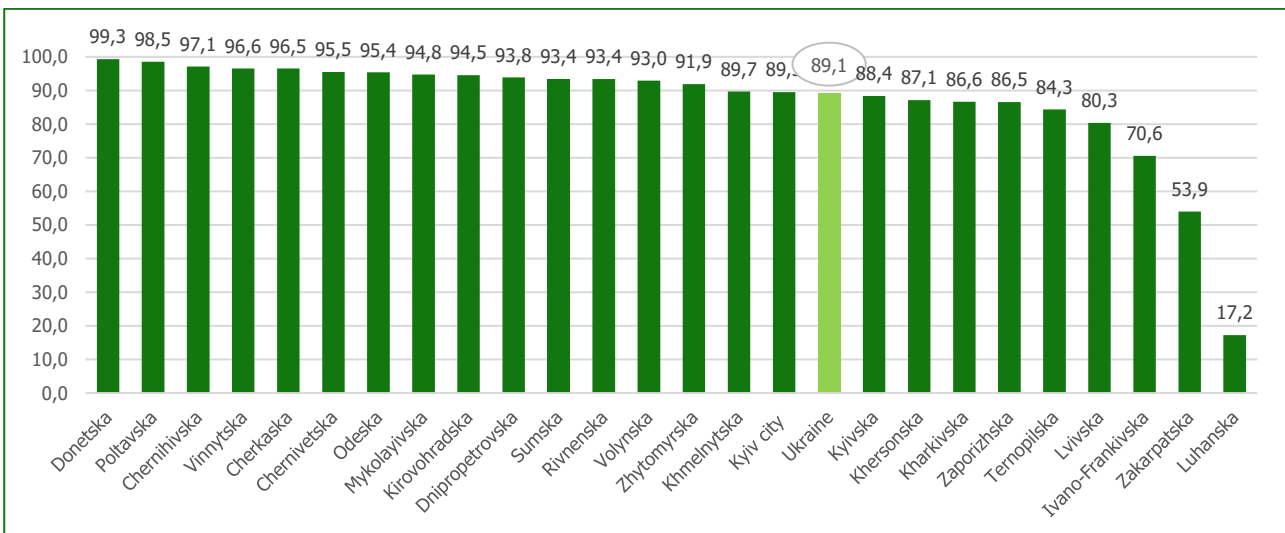


Figure 7. The share of raw materials and low-tech exports; in the total volume of goods exported in 2023, by region, %. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

During 2019-2023, the share of raw materials and low-tech exports in general in Ukraine increased from 85.1% to 89.1%. The prevailing majority of regions of the country are characterized by the raw material nature of exports. Zakarpatska, Ivano-Frankiv'ska, and Ternopil'ska Oblasts were among the top five regions that showed less dependence on the export of low-tech products in the studied years.

30-35% of exports of the Ivano-Frankiv'ska Oblast consisted of goods that belong to the sections of UKT FEA - VI. Products of chemical and related industries and XVI. Machinery, equipment, and mechanisms; electrical equipment. The region has

long been a leader in the production of chemical industry products. The potential of the chemical industry in the region is formed by such enterprises as Karpatnaftokhim, Padana Chemical Compounds, Polikem, Karpatsmoly, Tarkett Vinisin, Polikom, Orisil-Pharm, Gold Drop-Ukraine. In 2019-2021, about 30-40% of exports of the Ternopilska region accounted for the commodity group "85. electric machines". Mechanical engineering and metalworking are the leading industries of the region.

In production, the enterprises use imported metal and produce electrical appliances, lighting equipment, and beet harvesters. The largest enterprises of the industry are OJSC "Vatra" (the most powerful industrial enterprise in Ukraine for the production of lighting equipment for industrial, cultural, and household purposes) as well as OJSC Ternopil plant "Orion," which specializes in the production of radio communication equipment.

A country is "commodity-dependent" when its exports are largely focused on primary commodities. According to the definition given by UNCTAD, countries are considered dependent on commodity exports if they account for more than 60% of the country's total exports (Rodrigo et al., 2023). This situation may be related to the constant or structural conditions of the country, such as its availability of resources and the composition of factors, institutional structure, geographical location, historical background. Such dependence creates various negative consequences for the welfare and development of the country and its regions.

First, countries dependent on commodity exports (particularly developing countries) are sensitive to external shocks that affect the volume and price conditions of exported goods. Secondly, commodity dependence can negatively affect the country's economy, as it undergoes a sharp reduction or even a reverse capital inflow (this phenomenon is often called a "sudden stop"). There may also be short- and medium-term negative consequences for consumption, welfare, inequality and inflation. Since prices for the commodity are often changed by constant multi-year cycles, the relationship with capital inflows over multi-year periods may be particularly important for countries that are more closely related to international capital markets (Rodrigo et al., 2023).

Another indicator of foreign trade security in the regions of Ukraine is the share of knowledge-intensive services in the total volume of services exports in the region. Services occupy a relatively small share in the total export of products of the regions, so this indicator can be considered as an auxiliary in the analysis and assessment of the foreign trade security of the regions. Among the regions that during all the studied years occupied a leading position in the share of knowledge-intensive services but only in different sequences are the Kharkivska, Vinnytska, Luhanska, Kyivska, Cherkaska, Lvivska, Dnipropetrovska, and Sumska Oblasts.

At the beginning of the millennium, a positive trend of activation of the national economy on an innovative basis was an increase in export-import operations in the field of intellectual property (in 2005-2014 exports increased almost tenfold, while imports of services related to the use of intellectual property increased more than four times). This showed the gradual entry of Ukrainian producers into international networks by creating high-tech and knowledge-intensive products. However, since 2015 the indicated trend has changed to the reverse, export and import operations of services related to the use of intellectual property have a decline dynamic. If this trend is maintained, Ukraine and its regions will remain technologically backward, which will lead to a deterioration of its competitiveness in the long term (Zhilinska & Melnychuk (Eds.), 2017).

DISCUSSION

Foreign economic activity of the country and its regions plays a decisive role in economic development in the context of globalization and strengthening integration processes. It provides opportunities for increasing production by expanding demand in foreign markets, increasing foreign exchange earnings, attracting foreign investment, creates prerequisites for the development of domestic enterprises based on innovations.

The study substantiates the importance of ensuring the foreign trade security of the regions of Ukraine to build the resilience of national economies in the conditions of a sharp decline in export potential, the termination of established logistic supply chains, the underdevelopment of border infrastructure for freight transportation, the prevalence of raw materials in the export structure, the lack of human resources, the aggravation of the general security situation, etc. This correlates with the basic principles laid down in the Strategy for European Economic Security and the concept of "strategic autonomy" (Alcidi et al., 2023). Josep Borrell noted, "It is crucial for the EU to develop an economic security framework driven by its own objectives and interests, aiming to maximise the benefits of European traditional economic openness, which we want to keep while minimising the risks that stem from excessive dependencies and vulnerabilities" (Borrell, 2023).

A high level of openness has been a peculiarity of the economic development of Ukraine and its regions over the past 10 years. In terms of regions, this indicator varies from 20% to 130%. As of 2021, the economies of the Zakarpatska, Mykolaivska Oblasts, and the city of Kyiv were the most open. The positive dynamics of Ukraine's foreign trade in 2015-2021 ensured high average growth rates in the Ivano-Frankivska (+ 20.81%), Cherkaska (+ 19.28%), and Lvivska (+ 18.85%) Oblasts. Russia's full-scale invasion of Ukraine in 2022 provoked a sharp drop in foreign trade, it was by 31%. This especially affected the border regions close to the combat zones. Some regions managed to increase the volume of foreign trade. Throughout the entire understudy period, including 2022, the Kyivska Oblast remains the leader in foreign trade turnover: it concentrates a third of all foreign trade in Ukraine (in 2022 it was 34.04%).

Proponents of globalization argue that open systems are safer than closed ones (Institute of World Economics and Politics, 2024). At the same time, other researchers argue that the promotion of free trade has significantly affected the economic security of countries, especially less developed ones (Nafeez, 2004).

Negative trends in trade in high-tech goods have been identified, which is an indicator of the innovation capacity of the country (region). During 2019-2023, the share of raw materials and low-tech exports in Ukraine as a whole increased from 85.1% to 89.1%. The prevailing majority of regions of the country are characterized by the raw material nature of exports. The Zakarpatska, Ivano-Frankivska, and Ternopil'ska Oblasts were among the top five regions that showed less dependence on the export of low-tech products in the studied years. This situation (Zhilinska & Melnychuk (Eds.), 2017; Rodrigo, Fugazza & Laurent, 2023) makes regional economies more sensitive and less resilient to any external shocks and crises.

CONCLUSIONS

The methodical approach proposed in the work for assessing the foreign trade security of the county's regions allowed us to take into account the complexity of the study object, the heterogeneity of the features that characterize it, and modern security challenges. Its application made it possible to form a rating of regions by the level of their foreign trade security in 2019-2021. The leader in terms of foreign trade security in 2019-2020 was the Kharkiv'ska Oblast, and in 2021 it was the Ivano-Frankiv'ska Oblast. The "outsider" of the rating during the studied years is the Zakarpatska Oblast, whose economy is characterized by the highest level of not only export but also import orientation among the regions of Ukraine.

The economy of the country and its regions are characterized by high dependence on the dynamics and structure of foreign trade activities, as evidenced by import dependence indicators and the degree of dependence on the sale of products in foreign markets. At the same time, in 2015-2021, this dependence decreased a little. In general, during the analysed period, Ukraine and its regions are characterized by variable dynamics of the level of import dependence: for the country as a whole, the range of fluctuations in the values of this indicator did not exceed 10%, and for the most regions it was 20%. Only in the Donetsk, Zakapatska, Zaporizh'ska, and Mykolaiv'ska Oblasts, it ranged from 24% to 46%.

It has been substantiated that diversification of the commodity structure of foreign trade strengthens the competitive positions of the regions of Ukraine and the country as a whole. The calculation of the Herfindahl-Hirschman Index (export concentration index) allowed us to assess the country's dependence on the situation in foreign markets.

In 2019-2021, the exports of the Kharkiv'ska, Lviv'ska, Zhytomyr'ska, Kherson'ska, and Kyiv'ska Oblasts were the most diversified. The Donetsk'ska, Poltav'ska, and Zakarpatska Oblasts were characterized by the commodity structure of exports with the smallest list of nomenclature.

Future research will concern the development of a system of tools to strengthen the foreign trade security of regions in the face of external threats.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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ДОСЛІДЖЕННЯ ЗОВНІШНЬОТОРГОВЕЛЬНОЇ БЕЗПЕКИ РЕГІОНІВ В УМОВАХ ЗОВНІШНІХ ЗАГРОЗ

Глобальні виклики, пов'язані насамперед з війною в Україні, пандемією COVID-19, загострили питання стійкості національних економік до змін зовнішнього середовища. Безпекові чинники стають визначальними у формуванні стратегій економічного розвитку, реалізації зовнішньої політики, здійсненні експортно-імпорتنних операцій. Розгалуженість і масштаби глобальних ланцюгів поставок залишаються відчутним викликом для більшості країн світу та їхніх регіонів. На сьогодні більшість учасників зовнішньоекономічної діяльності намагаються знизити існуючі ризики шляхом диверсифікації товарної номенклатури, розширення кола торговельних партнерів за рахунок «дружніх» країн тощо. Така ситуація актуалізує важливість проведення оцінки зовнішньоторговельної безпеки регіонів України

задля посилення стійкості економіки країни в умовах різкого зниження експортного потенціалу, розірвання налагоджених логістичних ланцюгів постачання, нерозвиненості прикордонної інфраструктури для вантажних перевезень, превалювання сировинних товарів у структурі експорту, нестачі людських ресурсів, загострення загальної безпекової ситуації тощо. Метою дослідження є розробка методичного підходу до оцінки зовнішньоторговельної безпеки регіонів в умовах зовнішніх викликів і здійснення її апробації на прикладі регіонів України. Для оцінки зовнішньоторговельної безпеки регіонів України, дослідження її сучасних ризиків і викликів використано метод таксонометричного аналізу. На основі проведеного в роботі системного порівняльного аналізу зовнішньоторговельної безпеки регіонів України здійснено рейтингову оцінку регіонів країни, що дозволяє визначити місце регіону серед інших регіонів України за рівнем зовнішньоторговельної безпеки, ідентифікувати фактори, які впливають на динаміку зміни основних індикаторів безпеки, виявити особливості економічного розвитку кожного з регіонів та їхню стійкість в умовах зовнішніх загроз. Результати дослідження будуть корисні для дослідників у галузі й зовнішньоекономічної

Ключові слова: регіон, безпека, зовнішньоторговельна безпека, зовнішня торгівля, зовнішні загрози

JEL Класифікація: H56, F10, P25, R11

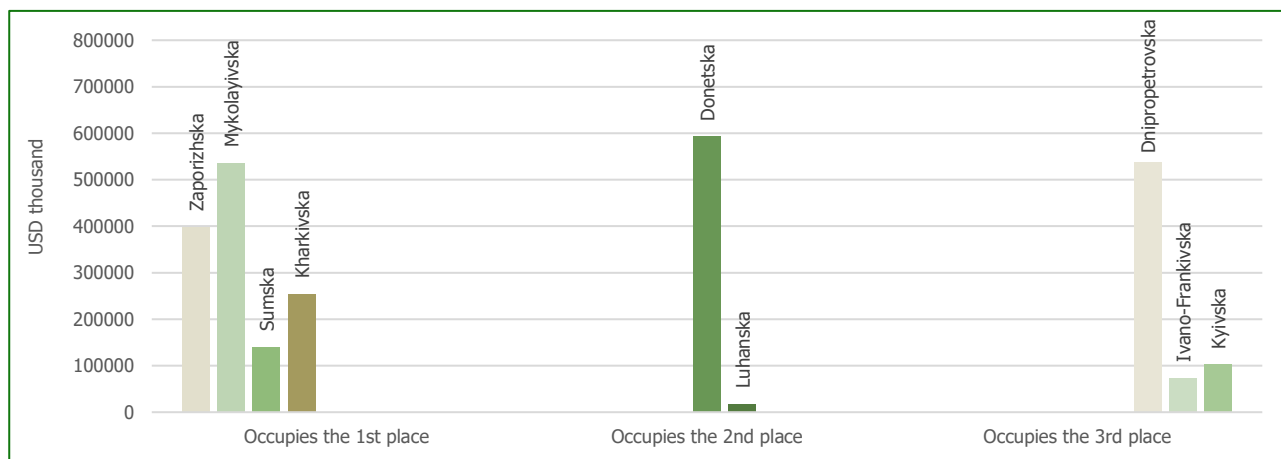


Figure A.1. Russia as a partner country in the total exports of regions of Ukraine in 2019. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023)).



Figure A.2. Russia as a partner country in the total export of regions of Ukraine in 2020. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))

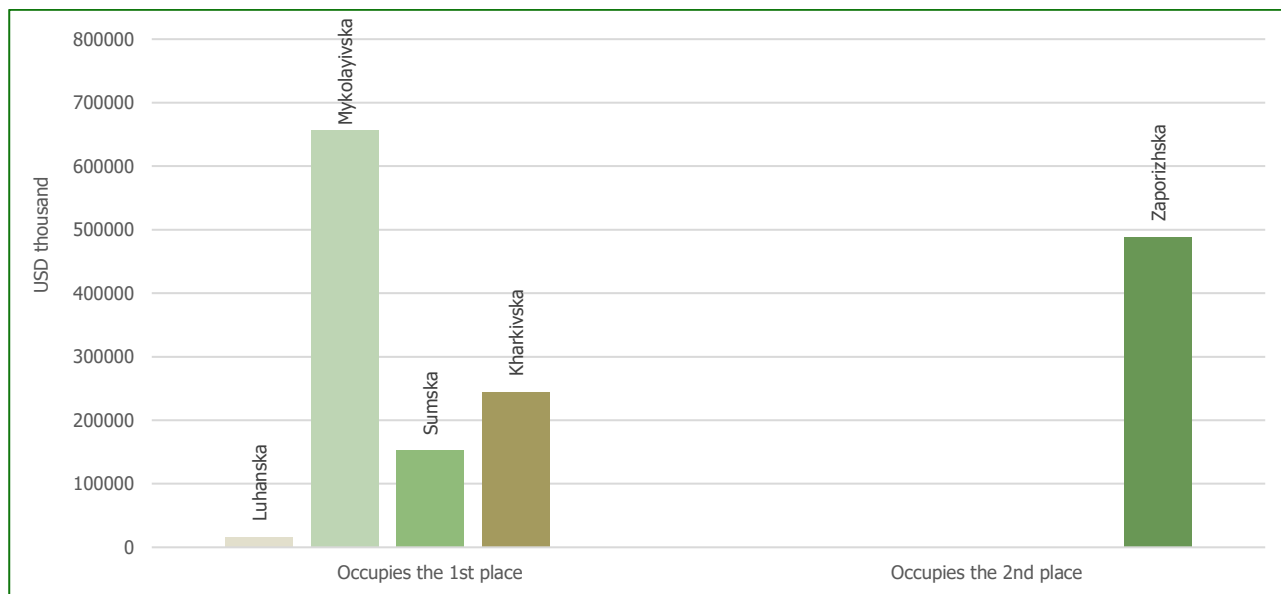


Figure A.3. Russia as a partner country in the total export of regions of Ukraine in 2021. (Source: authors' calculations based on data from the State Statistics Service of Ukraine (2022, 2023))