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FINANCIAL ANALYSIS OF FOREIGN ECONOMIC ACTIVITY IN THE CONDITIONS OF HYPERDYNAMIC TRANSFORMATION OF INTERNATIONAL COOPERATION POLICY

ABSTRACT

The purpose of the study is to empirically assess the dynamics of foreign economic activity in the conditions of hyperdynamic transformation of international cooperation policy based on official time and structural data. The article uses a combination of time series and structural analysis methods: stationarity testing using the extended Dickey-Fuller test, the Engle-Granger cointegration test, specification of the error correction model for short-term relationships between exports and imports, structural instability tests (cumulative sums and Chow test), and the Herfindahl-Hirschman index to assess commodity concentration. The empirical base consists of annual data on exports and imports of Ukraine for 2000–2024 and structural sections for 2024. The results show that export levels behave as trend-stationary, while imports have the characteristics of a process with a unit root. At the same time, the long-term relationship between trade aggregates is not confirmed at the standard significance level in the full sample. At the same time, the error correction model reveals a statistically significant short-term response of exports to changes in imports and a significant error correction term, which indicates a regime (rather than globally stable) equilibrium. The financial analysis establishes a moderately high concentration of exports by commodity section and a somewhat higher concentration of imports by partner countries, which increases sensitivity to political and logistical shocks on the supply side. The practical significance lies in substantiating the need to synchronize trade diplomacy and regulatory instruments with the policy of diversifying sales and supply markets, as well as in the formation of monitoring indicators (speed of correction, elasticity, Herfindahl-Hirschman index), which can be built into the system of analytical support for decision-making. The methodology is reproducible, computationally transparent, and compatible with further expansion of the model, including the inclusion of additional determinants, time-varying parameters, and subsample analysis.

Keywords: foreign economic activity, export, import, international cooperation policy, hyperdynamic transformation, financial analysis, foreign trade

JEL Classification: F14, F15, F17, C22, C32

INTRODUCTION

Conducting foreign economic activity in modern realities occurs in the conditions of significant hyperdynamic transformation of the policy of international cooperation, when the speed of change significantly exceeds the capabilities of traditional planning. It should be noted that in the current realities, the strategic priorities of states in international associations are increasingly formed not only in the context of economic feasibility, but also from the point of view of security aspects and priorities. In our opinion, this radically changes the essence and features of the process of enterprises entering foreign markets. Taking this into account, there is a change in priorities for maximizing short-term efficiency to the formation of sustainable partnerships and effective risk management strategies. Thus, it can be argued that this kind of optimization of activities will form the prerequisites for maintaining an acceptable level of economic security, while opening up opportunities for innovation, new formats of cooperation, and mastering new market niches.

In the aftermath of the pandemic and against the backdrop of the full-scale armed invasion of Ukraine, foreign economic activity has undergone several turning points. It should be emphasized that global supply chains have become more fragmented and sensitive to political, regulatory, and logistical shocks. In addition, market access rules have changed, and the role of compliance, sanctions regimes, and non-financial reporting has increased. The digitalization of trade procedures has also accelerated, and personal and corporate data have acquired the status of a strategic asset. For such open socio-economic systems as enterprises, this implies the need to rapidly reconfigure distribution channels and to diversify currency and institutional risks. Equally important in this context is the development of recruitment competencies in global labor markets and the implementation of digital solutions for management systems, logistics, and settlements. It should be noted that without the integration of anti-crisis management and clear risk frameworks into foreign economic processes, even the most promising deals may lose value due to the cumulative effect of shocks.

Analysis of Ukraine's foreign economic activity is extremely relevant in the context of the challenges of war, the rupture of russian-Ukrainian trade relations, the processes of European integration, and economic and socio-political events of a global nature. Research into the state and trends of Ukraine's foreign trade is a necessary and important basis for the formation/definition of a sound foreign economic policy at the state level; for making effective management decisions regarding the implementation of foreign economic activity taking into account modern realities and the expansion of sales markets by business entities; for forecasting the development of foreign economic activity, substantiating options for effective strategic interaction of foreign trade partners in conditions of instability by scientists.

LITERATURE REVIEW

The proposed approach to selecting indicators for assessing the development of foreign economic activity of an enterprise guides researchers and practitioners towards building a comprehensive information and analytical system, where the relevance, comparability, and sensitivity of indicators to structural shifts are of decisive importance (Kniaz, Kosovska, Shayda, Novosad, Yaremko, & Fedyuk, 2021). In our view, an indicator-based foundation delineates the bounds of forecasting, enables the appropriate revision of scenarios, and facilitates the timely adjustment of international cooperation policy at the enterprise level, including small and medium-sized enterprises, for which measurement errors can lead to significant negative consequences. Theoretical and practical research proves that strategic management of "balanced interaction" between subjects of foreign economic activity and state institutions is a condition for reducing transaction costs, increasing transparency, and strengthening trust, which directly affects the potential of the enterprise (Rudnichenko, Savina, Franchuk, Nestoryshen, Savin, & Havlovska, 2021). We argue that such results are especially important for the post-pandemic period and for the conditions of a full-scale armed invasion of Ukraine, when the range of regulatory instruments is expanding (sanctions regimes, enhanced compliance, non-financial reporting), and the information asymmetry between the private sector and the state is growing. It should be noted that studies of regulatory changes during wartime underscore the need to implement operational adaptations in customs, foreign exchange, tax policies, as well as in supply chain control procedures and counterparty verification (Matveev, Lebedchenko, & Gaidai, 2022). In our opinion, this creates a new regulatory and institutional framework for market participation, where the cost of non-compliance grows faster than the traditional benefits of rapid market entry, and therefore, the enterprise needs appropriate mechanisms for assessing existing risks.

An equally important strategic vector is the integration of sustainability principles in the management of foreign economic activity. Thus, in scholarly literature devoted to the peculiarities of management in modern conditions, sustainability is interpreted not as a separate goal, but as a holistic constructive principle for designing modern business models at all stages of an enterprise's activity (from the integration of supply policy and greening of production to the management of energy and logistics risks) (Lagodiienko, Popelo, Zybareva, Samiilenko, Mykytyuk, & Alsawwafi, 2022). This interpretation, therefore, implies a combination of the economic and environmental planes, which will ensure compliance with the hyper-dynamic nature of international cooperation, where compliance with environmental standards, optimization of chains, and the transition to digital protocols are becoming an integral part of market access. Expanding this approach, studies of integration and economic resilience in the current digital era demonstrate how foreign economic activity acts, on the one hand, as a catalyst for integration into the international space, and on the other hand, as a test of the enterprise for its ability to maintain long-term resilience (Akbayan, Baigon, Saule, & Özen, 2025). In our opinion, the integration of environmental criteria and standards, transparency protocols, and digital tools into export-import strategies can ensure the maintenance of an adequate level of economic security at the enterprise.

Ukraine's foreign economic activity has been and is the subject of numerous studies by scientists. In particular, the authors of publications (Kvasha et al., 2024) drew attention to the complexity of Ukraine's foreign economic activity in wartime. In

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the publication (Salii, 2023), an analysis of Ukraine's foreign economic activity was carried out, and problems that negatively affect the development of Ukraine's foreign economic activity were identified; directions for the development of innovative activity and an increase in the share of high-tech export goods were identified, which are still relevant today. The publication (Tarusa, et al., 2025) is devoted to the issue of forecasting macroeconomic indicators, in particular, exports and imports of Ukraine; the authors outlined the factors for the successful development of the Ukrainian economy in the long term; however, the decisive factor was determined to be the fact of cessation or continuation of the russian-Ukrainian war.

The problems of the development of foreign economic activity of enterprises are mostly studied in general contexts, within which existing barriers to access to the market, limitations of infrastructure, and problems of human resources in financial support instruments are classified (Zinchenko, 2021). In this context, it should be noted that these findings have acquired even more weight after the end of the pandemic, which has highlighted the vulnerability of supply chains and accelerated the digitalization of key trade procedures. The war has also led to a series of changes, causing new risks, disruption of logistics routes, and a change in the geography of partnerships. Under these conditions, the issue of foreign economic security comes to the forefront. Thus, the study of mechanisms for strengthening foreign economic security in the context of geopolitical transformations reinforces the importance of market diversification, logistics development, scenario planning, and institutionalization of cyber- and information security procedures (Fleychuk, Ganski, Kutsyk, & Tsybouski, 2019). In our view, this directly correlates with the needs of small and medium-sized enterprises that do not have capital reserves at their disposal, and therefore are forced to resort to searching for effective and efficient security instruments in their own foreign economic operations. Existing expert assessments of the mechanisms for implementing state regional policy indicate that the quality of institutional interaction, access to infrastructure, as well as individual ability to attract investment, ultimately form the heterogeneous capabilities of an enterprise to enter foreign markets (Pastukh, 2020). In this context, it should be noted that the impact of the pandemic, and subsequently the outbreak of war, has entailed significant changes at the regional level. This concerns the entire spectrum of activities from ensuring the security of logistics routes to special support regimes, which are often decisive processes that enable an enterprise to successfully implement its own foreign economic strategy.

Consequently, modern scientific and practical literature is gradually moving from the traditional vision of foreign economic activity as a set of export-import operations to its understanding as a system of strategic decisions under the constraints of a dynamically changing international cooperation policy.

To summarize, despite the significant legacy of modern works, the topic of foreign economic activity in the context of a hyperdynamic transformation of international cooperation policy retains high scientific and practical relevance, especially today in the context of protracted active hostilities.

AIMS AND OBJECTIVES

The purpose of the study is an empirical assessment of the dynamics of foreign economic activity in the conditions of hyperdynamic transformation of the policy of international cooperation based on the specified data and parameters. The task involves preparing and unifying data, checking the stationarity of series, assessing long-term dependence and cointegration, constructing an error correction model for short-term dynamics, checking structural breaks, calculating the Herfindahl-Hirschman index by commodity sections, and performing a sliding analysis of parameters.

METHODS

The research methodology is based on a combination of classical time series econometric tools with a structural analysis of the composition of foreign trade, which together allow tracking both long-term and short-term relationships in the context of hyperdynamic transformation of international cooperation policy. Therefore, first, a detailed revision and unification of data by years, goods and countries of partnership is carried out, then the presence of unit roots in the levels and first differences of exports and imports is checked using the extended Dickey-Fuller test, after which the basic long-term relationship between exports and imports is estimated using the least squares method and checked (Camba, 2021). The basic test equation for the y_t series (1):

$$\Delta y_t = a + \beta_t + \rho\, y_t - 1 + \Sigma \phi_i \Delta y_t - i + \varepsilon_t \quad (1)$$

The null hypothesis is the presence of a unit root.

The relationship (2) is tested:

$$E_{xport}t=\alpha+\beta\, I_{mport}t+u_t \quad (2)$$

where stationarity of the residuals u_t indicates cointegration (Engle-Granger test).

If there is a long-term relationship (or we assume its quasi-constancy over time subranges), the short-term dynamics can be conveniently described by (3):

$$\Delta Export_t=\alpha+\gamma\, ECT_t-1+\varphi\, \Delta Export_t-1+\theta\, \Delta Import_t-1+\kappa\, \Delta Import_t+\varepsilon_t \quad (3)$$

where $ECT_{t-1}=Export_{t-1}-\beta\, Import_{t-1}$ — error correction deadline. Parameter $\gamma<0$ means returning to equilibrium.

For particle distribution s_i (4):

$$H=\sum_i S_i^2 \quad (4)$$

The higher the index, the greater the concentration and sensitivity to external transformations and changes.

RESULTS

The war of the russian federation against Ukraine affected the functioning of all sectors of the national economy, the activities of individual business entities in Ukraine (some of them moved their activities to relatively safe parts of the territory of Ukraine, some business entities ceased their activities, some were destroyed or occupied by russia). The war affected the volumes and directions of foreign economic activities not only of Ukraine, but also of most countries of the world. The full-scale invasion of the russian federation into the territory of Ukraine necessitated the need for rapid regulatory actions aimed at creating conditions for the functioning of sectors of the national economy and ensuring people's livelihoods in the difficult realities of war. To analyze the state and trends of Ukraine's foreign economic activity, we present data on exports and imports of goods in Table 1.

Table 1. Foreign trade balance of Ukraine, 2000-2024, USD million. *(Source: State Statistics Service)*

Year	Export	Import	Foreign trade balance
2000	14572.5	13956.0	616.6
2005	34228.4	36136.3	-1907.9
2010	51405.2	60742.2	-9337.0
2011	68394.2	82608.2	-14214.0
2012	68830.4	84717.6	-15887.2
2013	63320.7	76986.8	-13666.1
2014	53901.7	54428.7	-527.0
2015	38127.1	37516.4	+610.7
2016	36361.7	39249.8	-2888.1
2017	43264.7	49607.2	-6342.5
2018	47335.0	57187.6	-9852.6
2019	50054.6	60800.2	-10745.6
2020	49191.8	54336.1	-5144.3
2021	68072.3	72843.1	-4770.8
2022	44135.6	55295.7	-11160.1
2023	36182.9	63567.0	-27384.1
`	41733.1	70751.2	-29018.1

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Analysing the data from the State Statistics Service of Ukraine, we observe that the foreign trade turnover of Ukraine has a negative balance, as the volume of imports exceeds the volume of exports in most years of the studied period (Table 1). From 2000 to 2004, the foreign trade balance was positive. From 2005 to 2014, the volume of imports exceeded the volume of exports, resulting in a negative foreign trade balance for Ukraine. The annexation of Crimea, parts of the territories of Luhansk and Donetsk regions since 2014, and the full-scale invasion of the russian federation into the territory of Ukraine since 2022, caused extremely negative consequences for Ukraine in all spheres of the economy and in people's lives. The pandemic caused by COVID-19 led to disruptions in logistics and supplies and the complication of international interaction, which led to a reduction in foreign economic activity worldwide and in Ukraine in particular (export and import volumes decreased in 2020). In 2021, positive dynamics of exports and imports resumed. However, the full-scale invasion of the russian federation into the territory of Ukraine in 2022 caused unprecedented challenges for Ukraine, for the functioning of sectors of the national economy and people's lives. The volume of Ukrainian exports in 2022-2023 was decreasing. Let us present a direct linear graph of the annual dynamics of exports and imports, constructed directly from Table 1 (Figure 1).

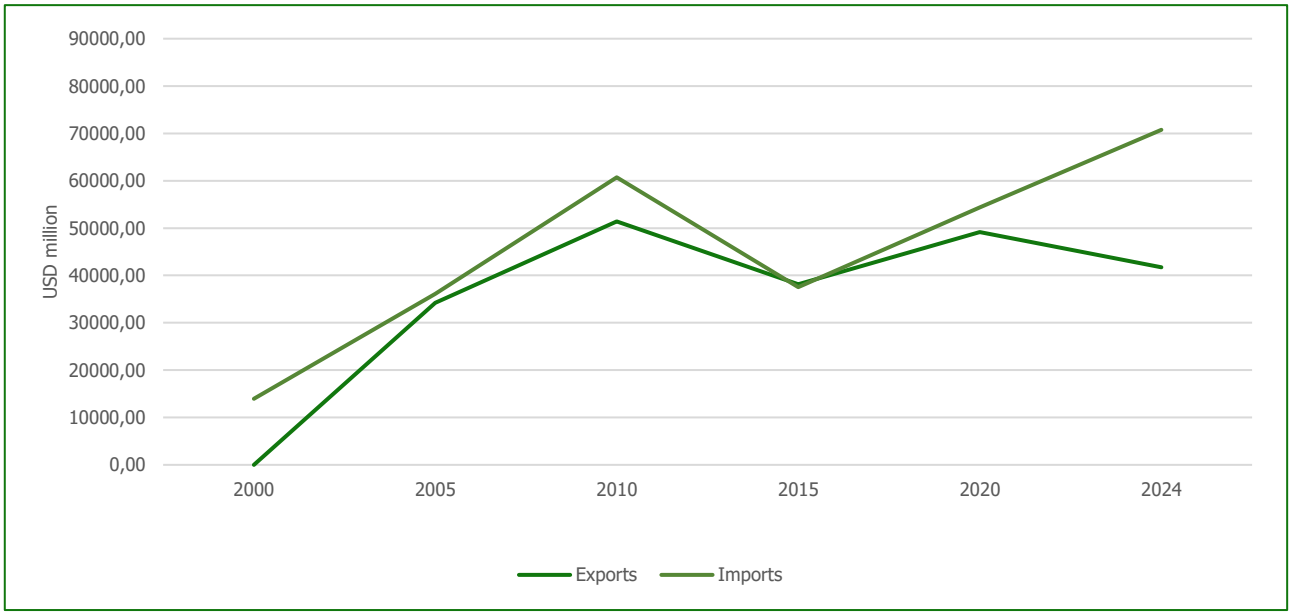

Figure 1. Ukraine: Exports & Imports (USD million).

Analyzing the data in Table 2, we see that the main groups of goods that Ukraine exported in 2024 were as follows:

1. "Plant products" - 32.4%, (including 22.6% - cereals).
2. "Animal or plant fats and oils" - 13.8%.
3. "Base metals and preparations thereof" - 10.7% (including 7.4% - ferrous metals).
4. "Finished food industry products" - 9.0%.
5. "Mineral products" mineral products - 8.2% (including 7.0% - ores, slags, ashes).

In 2024, Ukraine's exports were traditionally low-tech, raw materials, and were characterized by an agricultural orientation. Comparing the exports of goods in 2024 with the exports of goods in 2019, which was analyzed in the publication, we note that the export of plant products increased significantly (from 25.8% in 2019 to 32.4% in 2024). That is, despite the problems of wartime, the agricultural sector demonstrated its resilience. Exports of the group of goods "Base metals and preparations thereof" decreased (from 20.5% in 2019 to 10.7% in 2024). The reduction in exports of the group of goods "Base metals and preparations thereof" is due to the fact that some of the enterprises that exported these products were destroyed or found themselves in temporarily occupied territories.

Table 2. Commodity Pattern of Foreign Trade of Ukraine, 2024.

Commodity code and title by Ukrainian Classification of Commodities in Foreign Trade	Exports			Imports		
	USD thousand	in % to 2023	% of the total volume	USD thousand	in % to 2023	% of the total volume
Total	**41733116.1**	**115.3**	**100.0**	**70751215.5**	**111.3**	**100.0**
of which						
I. Live animals and livestock products	1643521.5	120.6	3.9	1474656.2	109.9	2.1
II. Plant products	13527637.7	115.5	32.4	2227632.4	105.4	3.1
III. Animal or plant fats and oils	5756425.8	101.9	13.8	280046.2	113.3	0.4
IV. Finished food industry products	3755722.9	114.8	9.0	3657677.3	112.5	5.2
V. Mineral products	3432356.1	142.1	8.2	9162140.9	86.2	12.9
VI. Products of chemical and allied industries	973130.1	109.6	2.3	8065086.2	108.4	11.4
VII. Polymeric materials, plastics, and articles of them	348751.1	107.8	0.8	3880852.8	104.0	5.5
VIII. Raw leather and curry leather	105532.1	135.1	0.3	252355.1	97.7	0.4
IX. Wood and articles of wood	1465659.5	98.1	3.5	227719.1	109.9	0.3
X. Paper bulk from wood or other vegetable fibres	239829.2	104.5	0.6	918705.0	113.7	1.3
XI. Textile materials and articles of textiles	610921.2	172.4	1.5	2398679.6	100.3	3.4
XII. Footwear, hats, umbrellas	145120.2	217.0	0.3	467743.1	94.5	0.7
XIII. Products from stone, gypsum, cement	326033.2	110.2	0.8	734291.2	106.0	1.0
XIV. Natural or cultured pearls, precious stones, metals, and preparations thereof	43411.8	299.6	0.1	80713.1	69.4	0.1
XV. Base metals and preparations thereof	4456346.9	113.8	10.7	3873905.2	115.2	5.5
XVI. Machines, equipment, and mechanisms, electric and technical equipment	3142905.5	119.9	7.5	15037055.4	133.6	21.3
XVII. Ground, air, and water transport facilities	431747.3	125.8	1.0	9088603.7	115.8	12.8
XVIII. Optical, cinematographic apparatus	104139.8	100.1	0.2	1768752.2	120.9	2.5
XIX Arms and ammunition; parts and accessories thereof	1833.0	65.8	0.0	49689.3	90.3	0.1
XX Different industrial products	1061082.4	113.5	2.5	1042392.5	111.2	1.5
XXI. Art articles	15155.0	1358.1	0.0	96751.3	12541.4	0.1
Goods purchased in (sea) ports	628.1	110.0	0.0	44807.8	101.7	0.1

Comparing the commodity structure of Ukraine's imports in 2024 with the commodity structure of imports in 2019, which is analyzed in the publication [3], we note that imports of the "Mineral products" group of goods have significantly decreased (from 21.4% in 2019 to 12.9% in 2024). Such changes are due to the refusal to import energy resources from the russian federation. In recent years, the volumes of foreign economic activity of Ukraine and russia have been decreasing, and with the beginning of russia's full-scale invasion of the territory of Ukraine, a complete embargo on imports of goods from the russian federation was introduced, as noted above. The product structure in terms of the weightiest groups in the total volume of exports and imports of Ukraine is presented in Figure 2.

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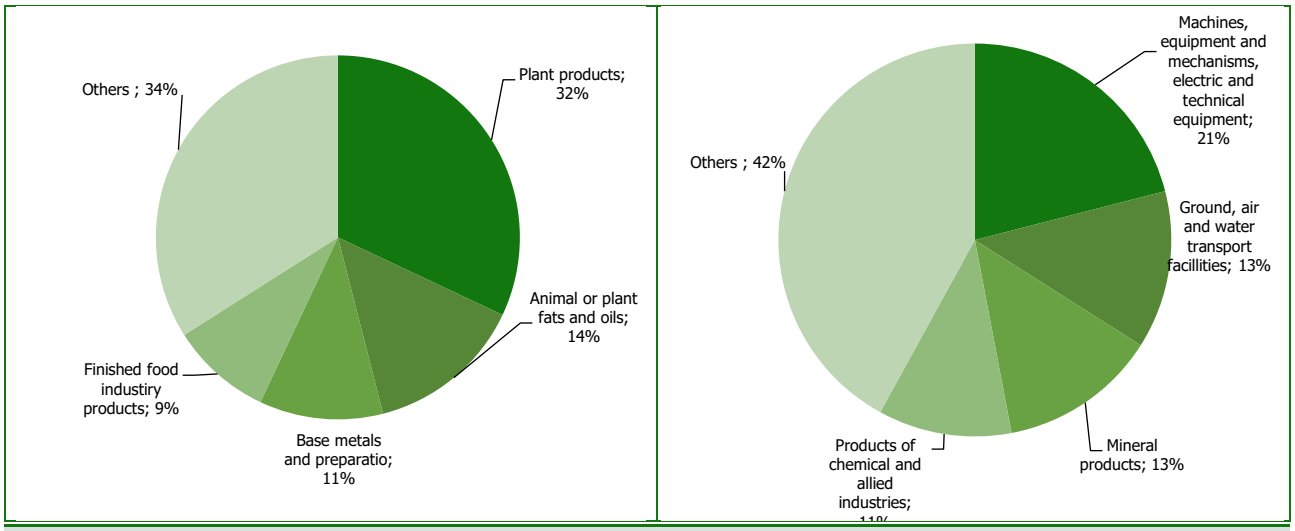

Figure 2. Commodity structure of Ukrainian exports and imports, 2024, %.

The data in Table 3 show that Ukraine exported the largest share of goods to Poland (11.28% of Ukraine's total exports in 2024). High shares of Ukraine's exports were to Spain (6.86% of Ukraine's total exports in 2024) and to Germany (6.81% of Ukraine's total exports in 2024). The volume of exports to Poland decreased slightly in 2024 compared to its volume in 2023 (-1.0%). We note a high growth in Ukraine's exports in 2024 compared to its level in 2023:

- to Belgium (+138.0);
- to India (+82.6%);
- to the United Kingdom of Great Britain and Northern Ireland (+70.1%);
- to the United States of America (+68.7%).

There was also a positive trend in the export of goods from Ukraine to Spain, Germany, the Netherlands, Italy, Egypt, Bulgaria, Moldova, France, and Austria.

Exports from Ukraine to Romania decreased significantly (-53.2%). Exports from Ukraine to Slovakia (-12.2%) and the Czech Republic (-7.7%) also decreased.

The leader among the importing countries of Ukraine is China; a fifth of Ukraine's imports are goods from China (20.30% of the total volume of imports of Ukraine in 2024). The arrival of goods from China to Ukraine demonstrated positive dynamics (imports increased by 37.5% in 2024 compared to their level in 2023). Poland is in second place among Ukraine's importers (9.88% of the total volume of imports of Ukraine in 2024). A high share of Ukraine's imports was made up of goods from Germany (7.61% of the total volume of imports of Ukraine in 2024). As we can see from the data in Table 4, most of the main importing countries of Ukraine increased the volume of supplies of goods to Ukraine in 2024 compared to the level of supplies in 2023. The reduction in import volumes occurred from India (-30.9%), from the Netherlands (-21.5%), from Turkey (-10.2%), from Lithuania (-8.1%), from France (-7.9%), and from Spain (-3.9%).

Table 3. Main partner countries of Ukraine by volume of exports and imports of goods in 2024.

Exports				Imports			
Total	**USD thousand**	**in % to 2023**	**% of the total volume**	**Total**	**USD thousand**	**in % to 2023**	**% of the total volume**
	41733116.1	**115.3**	**100**		**70751215.5**	**111.3**	**100**
of which				of which			
1. Poland	4708910.6	99.0	11.28	1. China	14363334.0	137.5	20.30
2. Spain	2863457.0	142.6	6.86	2. Poland	6988059.3	106.2	9.88
3. Germany	2840752.1	140.7	6.81	3. Germany	5385047.3	106.4	7.61
4. China	2393840.8	99.5	5.74	4. Turkey	4240783.5	89.8	5.99

(continued on next page)

Table 3. Continued.

Exports				Imports			
5. Turkey	2207967.0	93.2	5.29	5. United States of America	3471586.1	121.3	4.91
6. Netherlands	1990368.4	133.5	4.77	6. Italy	2575840.4	113.1	3.64
7. Italy	1935653.7	125.9	4.64	7. Czechia	2475898.3	138.4	3.50
8. Romania	1762025.1	46.8	4.22	8. Bulgaria	2360110.8	106.2	3.34
9. Egypt	1636386.3	150.8	3.92	9. Greece	2066264.7	150.4	2.92
10. Hungary	1152058.1	97.2	2.76	10. Slovakia	2001052.5	119.3	2.83
11. Bulgaria	1133587.5	125.3	2.72	11. Romania	1709532.4	109.1	2.42
12. India	991167.3	182.6	2.38	12. France	1620807.6	92.1	2.29
13. Republic of Moldova	945614.4	115.5	2.27	13. Hungary	1620420.9	116.8	2.29
14. Slovakia	942632.1	87.8	2.26	14. India	1300506.2	69.1	1.84
15. Czech	919775.6	92.3	2.20	15. United Kingdom of Great Britain and Northern Ireland	1269922.2	116.4	1.79
16. United States of America	874892.8	168.7	2.10	16. Lithuania	1194393.3	91.9	1.69
17. Belgium	854415.4	238.0	2.05	17. Sweden	994583.1	131.4	1.41
18. France	737760.1	153.2	1.77	18. Japan	948072.5	104.4	1.34
19. Austria	626913.3	103.4	1.50	19. Netherlands	916503.0	88.5	1.30
20. United Kingdom of Great Britain and Northern Ireland	611214.8	170.1	1.46	20. Spain	853520.5	96.1	1.21
Share of Ukraine's exports to other countries			23.0	Share of Ukraine's imports to other countries			17.5

Now we proceed directly to modeling using the selected methods described above within the framework of our methodology. To begin with, we present the extended Dickey-Fuller test (test of stationarity of the series). Therefore, Table 4 contains the test statistics, the number of lags used, and the sample size, based on which a conclusion is made about the presence or absence of a unit root. The interpretation is simple: if the significance level indicates a deviation of the unit root, the series can be considered trend-stationary (its fluctuations do not diverge over time); if the unit root does not deviate, the levels are unstable and the correct working variable is the first difference. In our data, export levels demonstrate trend-stationary behavior, while import levels have signs of a process with a unit root.

Table 4. Augmented Dickey-Fuller test (test of stationarity of series).

Row	Value of test statistics	Level of statistical significance	Number of lags	Number of observations
Export (level)	-7.8284	1.7815	5	11
Import (level)	-2.6335	0.2647	0	16
Export (first difference)	-5.3996	3.6274	5	10
Import (first difference)	-3.1549	0.0938	5	10

Below, we present the results of the basic regression, where the export levels are explained by the import levels and constant values. That is, we estimate the absolute term, estimate the coefficient on imports, and the coefficient of determination together with the number of observations. In terms of content, the sign and magnitude of the coefficient on imports show how much exports change in the long-run relationship with the change in imports. This estimate is used to construct the error correction term in the short-run model and to test for the presence of a long-run relationship (Table 5).

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Table 5. Long-run least squares regression of "Exports on Imports."

Indicator	Value
Constant	8077.0041
Import coefficient	0.6921
Determination coefficient	0.7837
Number of observations	17

Below, we present the result of testing whether there is a stable long-term relationship between the levels of exports and imports. Therefore, first the long-term regression is estimated, then the stationarity of its residuals is tested. The values of the test statistics and the significance level are entered directly in Table 6. The essence of the interpretation is that if the residuals are stationary, then exports and imports form a general equilibrium around which short-term fluctuations occur. If the residuals are unstable, the long-term relationship is not confirmed in the entire sample, and it is necessary to either focus on the short-term dynamics or model regime changes in the parameters. In our data, long-term cointegration in the full period was not confirmed at the standard significance level, which is consistent with hyperdynamic changes in the policy of international cooperation.

Table 6. Testing cointegration using the Engle-Granger method.

Meaning of cointegration statistics	Level of statistical significance
-2.7075	0.1969

Next, we obtain Table 7, which provides numerical estimates, standard errors, and significance levels for all components of the short-term model. Statistically significant coefficients with logical signs confirm the presence of effective short-term channels of influence and a correction mechanism. Comparison of their values allows us to rank the strength of each channel.

Table 7. Error correction model.

Parameter	Parameter Estimate	Standard Error of Estimate	Standard Error of Estimate
Constant	12192.2533	5133.9459	0.0390
Error correction period (previous period)	-1.2743	0.4752	0.0230
Change in export with a lag of one period	1.3064	0.4784	0.0212
Change in import with a lag of one period	-1.0322	0.4013	0.0278
Current change in import	0.7371	0.1024	2.93001

Next, we present the results of the model stability check over time (Table 8), Statistics, and significance level for the cumulative residual sum test (assesses global stability) and two Chow tests for fixed year's corresponding to political breaks. This table should be read according to the principle "the smaller the p-value, the more evidence for a structural break." In our data, the Chow test for 2022 indicates a statistically significant break in the parameters, while for 2014, there is no convincing evidence of a break in the full sample.

Table 8. Structural stability tests of parameters.

Test	Statistical Meaning	Level of Statistical Significance	F-Statistic
Cumulative Sum Test for Residuals	1.1756	0.1260	1.5068
Chow Test for 2014	0.3679	0.6984	0.3679
Chow Test for 2022	6.2072	0.0131	6.2072

Next, we will present the sequence of estimates of the coefficient for imports from the Export~ImportExport model, calculated on a sliding seven-year window, with reference to the middle year of each window. These values show how the elasticity of exports with respect to imports changed over time: an increase in beta indicates an increase in the short-term dependence of exports on imported components (raw materials, components, technologies), while a decrease indicates its weakening. Sharp fluctuations in beta are synchronized with political and logistical shifts (Table 9).

Table 9. Sliding regression.

Midpoint of the seven-year window, year	Sliding coefficient on imports (seven-year window)
2011	0.7535
2012	0.6729
2013	0.6692
2014	0.6807
2015	0.6762
2016	0.6594
2017	0.6435
2018	0.8121
2019	0.9085
2020	0.8225
2021	0.4979

Let us calculate the Herfindahl-Hirschman index itself using (4). Table 10 shows that the commodity structure of exports has a moderate concentration of 0.154 (large weight of several sections), while the commodity structure of imports is well diversified, with a concentration of 0.057. By supply partners, imports are somewhat more concentrated, 0.102, than export sales, 0.094, but both indicators are in the low concentration zone.

Table 10. Herfindahl-Hirschman indices.

Index	Value
Herfindahl-Hirschman Index - goods (export, 2024)	0.154
Herfindahl-Hirschman Index - goods (import, 2024)	0.057
Herfindahl-Hirschman Index - partners (export, 2024)	0.094
Herfindahl-Hirschman Index - partners (import, 2024)	0.102

Taking into account the fact that short-term export dynamics are sensitive to changes in imports, a stable long-term equilibrium was not confirmed in the full sample, a clear structural gap was recorded in 2022, and the concentration of imports is higher than that of exports, we propose a policy aimed at increasing the stability and manageability of foreign economic activity through the model presented in Figure 3.

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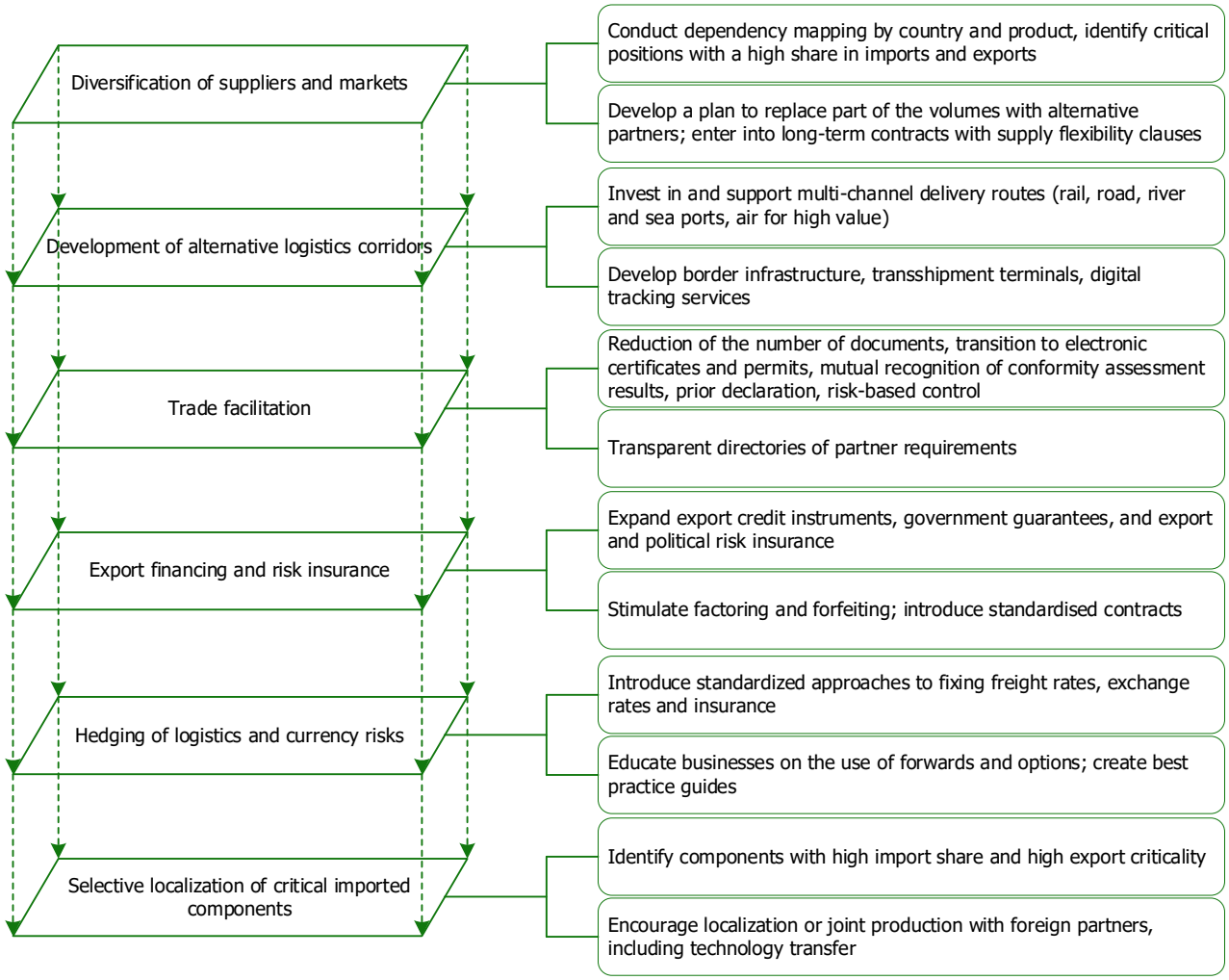

Figure 3. Model for increasing the efficiency of foreign economic activity of Ukraine in the context of hyperdynamic transformation of international cooperation policy.

Thus, to summarize, we believe that the key areas of improvement should be the diversification of suppliers and sales markets, the development of alternative logistics corridors, the simplification of customs and non-tariff procedures, the strengthening of export financing instruments and risk insurance, the approximation of technical regulation to the standards of the European Union, and constant monitoring of key indicators (correction speed, elasticity, Herfindahl-Hirschman index) based on modern analytics and artificial intelligence technologies.

DISCUSSION

Empirical, theoretical, and methodological research of foreign economic activity defines at least two key provisions. Firstly, the performance of foreign economic activity significantly depends substantially on the quality of administrative and legal regulation, in particular, on the transparency of procedures, the predictability of norms, and the ability of institutions to reduce transaction costs for business (Korneva, 2021). Secondly, the inflow of foreign direct investment is considered one of the basic determinants of economic recovery, especially in the phases of post-crisis market reconfiguration (Namliyeva, 2025). From a theoretical point of view, the strategic goals of state regulation of foreign economic activity of industrial enterprises, formulated in the context of the European vector of development, require not only regulatory approximation but also operational compatibility of risk management, compliance, and reporting practices (Shuhalii, 2023). It should be noted that under the influence of the war, structural shifts that scholars describe as a systemic challenge to the stability of the global economy, with the reformatting of trade routes, the growing role of sanctions regimes, changes in price signals, and increased volatility (Mazaraki & Melnyk, 2022). In our opinion, the straightforward transposition of strategic goals into entrepreneurial practice without institutional support for adaptation cycles leads to a gap between normative intentions and actual results.

The practice of accounting for foreign economic activity in partner countries provides an important explanation for the identified heterogeneity. The experience of harmonizing accounting procedures and disclosing information shows that the comparability of metrics and routine operational control procedures has a direct impact on the ability of an enterprise to maintain an acceptable level of its own economic security, as well as on the speed of decision-making by foreign investors (Lahutin, 2025).

An equally pertinent discussion concerns the delineation of the relationship between the current regional policy of activating foreign economic activity and cooperation instruments within the European Union. Existing theoretical and methodological approaches demonstrate that regional cooperation platforms can reduce entry barriers, unify standards and verification procedures, and help shorten and strengthen supply chains (Pavlikha, Zelinska, & Aliieva, 2020). In this context, it should be noted that the existing discussion on the role of foreign direct investment in economic recovery requires thorough clarification in terms of specifying temporal lags and determining the quality and safety of capital. The general conclusion about investment as a factor in economic revival is convincing, but our results show that without coordinating and optimizing the latter with administrative and legal reforms, security mechanisms, and regional activation instruments, the effectiveness of the latter will be leveled or deferred (Namliyeva, 2025; Korneva, 2021; Pavlikha et al., 2020). In our view, strategic capital raising programs should include quantitative risk thresholds, procedures for resolving regulatory conflicts, and mechanisms for joint risk sharing between the state and investors. Long-term forecasts that include both economic and security aspects emphasize that the use of scenario methods is an obligatory component of public policy and corporate strategy. The results of strategic long-term forecasting demonstrate a direct dependence of macroeconomic trajectories on the intensity and duration of security threats, the state's ability to ensure institutional resilience, and the speed of improving critical infrastructure (Taruta, Chernyshova, Marko, & Busel, 2025). In our opinion, this directly correlates with the findings on the global challenges of martial law and details the political and economic logic of decision-making on activities in foreign markets. Enterprises are required to have clear action plans in the event of shocks and crises that combine financial, logistical, legal, and reputational dimensions (Mazaraki & Melnyk, 2022). From the standpoint of the administrative and legal effectiveness of regulation, it is important to distinguish between the nominal and actual effectiveness of existing regulations. In this context, the key is not only the content of a separate legislative document, but also the timeliness of its implementation, consistency with other regulatory acts, and the enterprise's ability to obtain the expected result within specified time limits (Korneva, 2021).

Summarizing the foregoing, the discussion highlights the complex organization of advantages and constraints for enterprises in the international external environment. An effective administrative and legal framework creates necessary but not sufficient conditions. Foreign investment can be a catalyst, but its effect depends on institutional and regional moderators, while the strategic goals of European integration set the direction but require the operational compatibility of accounting, compliance, and risk management. At the same time, regional cooperation instruments enhance opportunities if supported by high-quality coordination, and scenario forecasting turns uncertainty into a manageable portfolio of solutions (Shuhalii, 2023; Lahutin, 2025; Pavlikha et al., 2020; Taruta et al., 2025). Despite the significant contribution of these studies, we consider that the topic of foreign economic activity under conditions of a hyperdynamic transformation of international cooperation policy remains highly relevant.

CONCLUSIONS

It is established that the short-term behavior of exports is determined not only by the trend but also by operational changes in imports. Consequently, the estimation of the error correction model shows a statistically significant instantaneous reaction of exports to demand and supply shocks passing through import channels, as well as the presence of a mechanism for returning to quasi-equilibrium. This means that policy instruments influencing logistics capacity, customs procedures, access to components and raw materials have a direct short-term effect on export activity. The parameters of long-term relationships are regime-unstable. Thus, the identified structural gap in the period of the most powerful political shifts indicates a reorientation of trade flows, a change in elasticity, and a redistribution of structural particles. Financial analysis shows a moderate commodity concentration of exports and a higher concentration of imports, which increases vulnerability to external shocks on the supply side and requires consistent diversification and risk insurance in supply chains.

Foreign trade cooperation between countries is a powerful tool of geopolitical influence, an instrument of national security and global solidarity. The geoeconomic reset is global in nature and encompasses changes in trade routes, supply strategies, investment flows, energy security, and institutional interaction between countries. In the new geo-economic reality, it is not enough to just know where and what is profitable to buy or sell. It is necessary to analyze risks (sanctions, logistics, reputational); predict the behavior of players (states, TNCs, international organizations); take into account political and cultural factors; develop options for interaction and development. Foreign trade today is an arena where the interests of

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security, morality, ideology, and profit are intertwined. In this reality, the successful will be the one who knows not only how to trade but also to think strategically, adapt to changes, and build trust with partners. Therefore, economic analytics, geopolitical awareness, and proactive planning are key tools for countries, businesses, and citizens. The outlined issues will be the subject of further research.

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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ФІНАНСОВИЙ АНАЛІЗ ЗОВНІШНЬОЕКОНОМІЧНОЇ ДІЯЛЬНОСТІ В УМОВАХ ГІПЕРДИНАМІЧНОЇ ТРАНСФОРМАЦІЇ ПОЛІТИКИ МІЖНАРОДНОЇ СПІВПРАЦІ

Мета дослідження — емпірично оцінити динаміку зовнішньоекономічної діяльності в умовах гіпердинамічної трансформації політики міжнародної співпраці на основі заданих даних і параметрів. У роботі використано поєднання методів часових рядів і структурного аналізу: перевірку стаціонарності за допомогою розширеного тесту Дікі-Фуллера, тест коінтеграції Енгла-Ґрейнджера, специфікацію моделі корекції помилки для короткострокових взаємозв'язків між експортом та імпортом, тести структурної нестабільності (кумулятивних сум і перевірки Чоу) та індекс Герфіндаля-Гіршмана для оцінювання товарної концентрації. Емпірична база складається з річних даних експорту та імпорту України за 2000–2024 роки й структурних зрізів за 2024 рік. Результати показують, що рівні експорту поводяться як тренд-стаціонарні, а імпорт має характеристики процесу з одиничним коренем. При цьому на повній вибірці довгостроковий зв'язок між агрегатами торгівлі не підтверджується на стандартному рівні значущості. Водночас модель корекції помилки виявляє статистично значущу короткострокову реакцію експорту на зміни імпорту й значущий термін корекції помилки, що вказує на режимну (а не глобально стабільну) рівновагу. Фінансовий аналіз установлює помірно високу концентрацію експорту за товарними розділами та дещо вищу концентрацію імпорту за країнами-партнерами, що підвищує чутливість до політичних і логістичних шоків на стороні постачання. Практичне значення полягає в обґрунтуванні необхідності синхронізації торговельної дипломатії та регуляторних інструментів із політикою диверсифікації ринків збуту й постачання, а також у формуванні індикаторів моніторингу (швидкість корекції, еластичності, індекс Герфіндаля-Гіршмана), які можна вбудувати в систему аналітичного супроводу ухвалення рішень. Методика є відтворюваною, прозорою за розрахунками й сумісною з подальшим розширенням моделі, зокрема включенням додаткових детермінант, часово мінливих параметрів і аналізом підвибірок.

Ключові слова: зовнішньоекономічна діяльність, експорт, імпорт, політика міжнародної співпраці, гіпердинамічна трансформація, фінансовий аналіз, зовнішньоекономічна торгівля

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