International Journal of Innovative Research and Scientific Studies, 8(3) 2025, pages: 4700-4709

ISSN: 2617-6548

URL: www.ijirss.com

Multilateral trade agreements as a basis for foreign economic cooperation by the example of EU countries

Zhaxat KENZHIN[1], Karlygash KAMALI[2], Saule KARGABAYEVA[3*], Altynshash ZAMANBEKOVA[4], Zhanat YERNIYAZOVA[5]

[1]*Department of Social Humanities, Academy of Physical Education and Mass Sport, Astana, Kazakhstan.*
[2]*Department of Business Technology, Al-Farabi Kazakh National University, Almaty, Kazakhstan.*
[3]*Graduate School of Marketing and Logistics, Turan University, Almaty, Kazakhstan.*
[4]*Department of Hospitality Management, Kazakh Ablai khan University of International Relations and World Languages, Almaty, Kazakhstan.*
[5]*Department of Economics and Management, Korkyt Ata Kyzylorda University, Kyzylorda, Kazakhstan*.

Corresponding author: Saule KARGABAYEVA (*Email: ksauleshka@gmail.com*)

Abstract

This study investigates the impact of multilateral trade agreements on the gross domestic product (GDP) of EU countries in the context of foreign economic cooperation. The objective is to assess whether the number of such agreements correlates with GDP levels while considering related factors. The analysis applies the Pareto principle to classify EU countries into two groups based on GDP volume. It reveals that both groups display similar levels of economic freedom (69–72%), while countries with higher GDP and lower tax revenues report a greater number of trademark applications from foreign companies. Correlation analysis identifies a strong dependence of GDP on exports, imports, and economic freedom, with correlation coefficients exceeding 90%. These factors are thus considered key drivers of GDP growth. A regression model ($R^2 = 0.862$) confirms a significant positive relationship between the number of multilateral trade agreements and changes in export volumes. The findings suggest that such agreements are instrumental in shaping economic policies and fostering integration within the EU. The study underscores the practical relevance of these results for policymaking, particularly in designing strategies aimed at enhancing national competitiveness and promoting sustainable economic growth across the region.

Keywords: Economic freedom index, EU, Export volume, GDP, Multilateral trade agreements.

DOI: 10.53894/ijirss.v8i3.7589
Funding: This study received no specific financial support.
History: Received: 7 April 2025 / **Revised:** 9 May 2025 / **Accepted:** 13 May 2025 / **Published:** 3 June 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Publisher: Innovative Research Publishing

1. Introduction

The development of foreign economic cooperation is one of the important factors influencing both the growth of the world economy in the context of globalization and the GDP of individual countries. In recent years, the dynamic development of ties between countries has encountered many obstacles, including financial crises, pandemics, and armed conflicts. Some countries have begun to implement various trade barriers, prioritizing protectionism.

Organization of an effective process of interaction between countries, the globalization of the world economy requires multilateral regulation of foreign economic cooperation, which is carried out through agreements and international organizations. A vivid example is the EU, which was created to strengthen its economic systems and ensure the sustainable development of Europe on the basis of balanced economic growth and price stability, achieving a high degree of a competitive social market economy [1].

The establishment of international standards helps to create a level playing field for all participants in international trade. The creation of international institutions provides assistance to countries to stabilize their economies and stimulate foreign economic cooperation. Effective mechanisms for resolving trade disputes build confidence and stability in international economic relations, allowing countries to resolve conflicts peacefully. In addition, digitalization and technological innovations are significantly changing the way countries interact with each other in foreign trade, which creates the need for additional regulation.

All this requires the study of multilateral mechanisms for regulating foreign economic cooperation, which will contribute to the development of both the world economy and individual countries.

The actual problems of this sphere are in the following plane:

1) Heterogeneity of countries' economies: the factors affecting the GDP of countries differ;

2) Identifying the similar needs of countries and building systems of relationships that satisfy the interests of all participants and help to make the best use of the resources of each state;

3) Differences in the level of freedom of economic activity in different countries. Countries with a low index of economic freedom may have difficulties in establishing foreign economic relations and attracting foreign investment. This can lead to the isolation of such countries from global markets and limit their economic growth.

The solution to the problems outlined will make it possible to create a more harmonious and sustainable system of foreign economic cooperation, which will promote economic growth, optimize the use of resources, improve the investment climate, and strengthen international ties.

2. Literature Review and Problem Statement

The article Walentek [2] presents the results of the study of factors influencing the cooperation of countries in the field of foreign economic activity, provides examples of successful and unsuccessful cooperation, but insufficiently explores the internal factors that can influence decisions about participation in foreign trade.

The study Obstfeld [3] discusses current challenges and opportunities for multilateral cooperation, emphasizing the need to adapt international institutions to the current realities of complex economic interactions. A deep historical context is provided, but the influence of new economic powers is underestimated.

The ways of global trade development in the current economic challenges are analyzed in Froman [4]. Adaptation of trade agreements to new realities and the development of multilateral agreements after the epidemic are discussed. The paper offers practical solutions, but there are unresolved issues regarding the validity of the proposed measures. This problem can be solved with the help of economic and mathematical reasoning.

The article Song and Agarwal [5] it also examines in detail the changes in multilateral relations after the pandemic, discussing new priorities for countries in the face of global challenges. The article does a good job of illustrating changes in economic policy but lacks specificity in terms of economic outcomes.

New forms of multilateralism emerging in response to crises are discussed in the article Schuette and Dijkstra [6]. The authors emphasize the need to adapt multilateral structures. However, they do not provide examples of successful multilateral initiatives that have emerged in response to a pandemic to illustrate their ideas.

The assessment of the role of multilateral cooperation in global trade is reflected in Nanda [7]. The authors highlight the impact of non-standard economic situations on foreign trade relations. However, attention should also be paid to how countries adapted to the new conditions and which mechanisms proved to be the most effective.

The study Norring [8] examines the impact of geo-economic fragmentation on multilateral relations, discusses the implications for international trade and the sustainability of existing multilateral structures. However, no examples of successful cooperation based on foreign trade agreements are provided.

Current challenges related to export controls in the context of global trade are discussed in the article Bown [9] emphasizing the need for a balanced approach to such controls to protect national interests. Export controls should not create unnecessary barriers to trade that could negatively affect economic development. The peculiarities of export control within multilateral associations of countries remain unresolved issues in this direction.

The topic of the impact of multilateral cooperation on the resolution of modern economic problems is studied in Hooijmaaijers [10]. The interaction of various countries and organizations within the framework of multilateral agreements and their impact on economic stability is considered in detail. Justifications are presented for economically developed countries, but it is important to take into account that successful cooperation requires the harmonization of the interests of all parties and a willingness to compromise to achieve common goals. This problem can be solved if the study is conducted using the example of a broad regional organization, including countries with different levels of economic development.

Changes in competition policy against the background of growing global protectionism are analyzed in Mariotti [11]. The consequences of protectionist measures for international trade and competition are shown in detail. However, the author focused only on a random sample of countries, which limited generalizations and conclusions regarding multilateral foreign economic activity.

Contradictions between multilateral and protectionist approaches in global trade are reflected in the study Pugachevska et al. [12] emphasizing the need for a balanced approach to achieve sustainable development, the paper argues that despite the efforts of the institutions of the multilateral trading system, the list of protectionist barriers is growing. The development of multipolarity in world trade, in the future, will rely on megaregional trade agreements. The authors provide up-to-date statistics on regional trade agreements but do not analyze them economically and statistically.

The need to revise existing trade agreements to take into account new realities, such as digital trade and environmental standards, is discussed in the article Lewis [13]. It is emphasized that the fragmentation of world trade can lead to increased transaction costs and reduced economic efficiency. Agreeing with this position, let us add that multilateral cooperation helps to reduce the fragmentation of world trade, as countries can work to harmonize regulations and standards.

The paper Zhappassova et al. [14] discusses how multilateral cooperation can be combined with regional and bilateral cooperation. It raises the issue that new technologies and global challenges, including the revision of established foreign economic relations, require a new approach to the construction of vectors of foreign economic activity. However, the paper lacks an analysis of the specific mechanisms through which multilateralism can adapt to these changes.

The study of the impact of various EU trade agreements on the economic growth and development of the member states is presented in the book [15]. Both the positive and negative effects of such agreements on the EU internal market are analyzed. The authors provide a historical analysis of the impact of trade agreements on the EU economy, but a quantitative assessment of the conclusions drawn is not conducted.

Paper Zhao [16] also discusses the current challenges and opportunities facing EU trade policy in the context of global uncertainty. The consequences of Brexit and its impact on the EU's trade relations with the UK are highlighted, as well as new agreements and their potential impact on the EU economy. However, few practical examples are provided to illustrate its arguments and statistics are presented for informational purposes only.

The study Schmitz and Seidl [17] analyzes the economic impact of EU trade agreements on various sectors of the economy, including the agricultural sector and high technology. It discusses recommendations for improving trade policy to enhance the EU's competitiveness in the global arena. However, the impact of trade agreements on real economic changes after the implementation of the agreements is not considered.

Thus, we can conclude that the significance of multilateral trade agreements in the framework of foreign economic cooperation has been investigated in economic science, but insufficiently substantiated by methods of economic and statistical analysis. Emphasis is placed on the importance of economic freedom as a basic element for achieving sustainable growth and development. Given the variety of approaches and methods used in these studies, it becomes obvious that in order to build an effective system of multilateral cooperation, it is important to take into account their impact on the national performance of individual countries. Therefore, this paper will focus on identifying the key factors that influence both economic performance and the effectiveness of cooperation.

3. Aims and Objectives of the Research

The aim of the study is to identify key indicators that have the maximum impact on the volume of GDP in different countries and assess the impact of multilateral mechanisms of regulation of foreign economic cooperation on them.
To achieve this aim, the following objectives are accomplished:

- To carry out a comparative analysis of indicators using the example of EU countries;
- To identify the main factors affecting the volume of GDP in the EU countries;
- To determine the extent to which the number of multilateral trade agreements affects the change in GDP, exports, imports, and the composite index of economic freedom in the EU countries.

4. Materials and Methods of Research

The following methods are used in this study: analysis, classification, generalization, comparative statistical analysis, correlation analysis, variance, and regression analysis.

The study period is 2010-2023 (the time horizon allows for taking into account the impact of external shocks such as the COVID-19 pandemic, trade wars, and sanctions regimes). The sample of countries to be analyzed includes EU members as of 2023. The EU countries are divided by GDP volume into two groups using the Pareto rule.

The following coefficients are used to assess the quality of regression models:

Coefficient of determination (R^2) – shows what proportion of the variation in the dependent variable is explained by the independent variables.

F-statistic (F) – checks the overall significance of the model: whether there is at least one significant predictor.

Durbin-Watson (DW) – checks for the presence of autocorrelation of residuals (how much the model's errors depend on each other).

The following indicators are used for analysis: GDP, exports of goods and services, foreign direct investment, imports of goods and services, economic freedom index, trademark applications filed by non-residents, share of tax revenues, and the number of multilateral agreements concluded.

Indicators measured in billion dollars (hereinafter – billion dollars). USD (hereinafter - billion dollars) are given taking into account inflation as of 2015 according to World Bank data. GDP-weighted average by volume was used to determine the average for the group of countries.

The information and empirical basis of the study is represented by statistical and analytical reports from the World Bank, WTO, and reports from consulting companies (KPMG Consulting, Ernst & Young Global Limited, PricewaterhouseCoopers, McKinsey, Accenture).

Data processing was performed using Python in the Jupiter notebook environment.

5. Practical Analysis of the Impact of Multilateral Trade Agreements on Economic Growth in EU Countries

5.1. Comparative Analysis of Indicators on the Example of EU Countries

For convenience of calculations, we introduce the following variables:

1. GDP – GDP, gross domestic product, bln. USD.
2. EGS – Exports of goods and services, bln. USD.
3. FDI – Foreign direct investment, net inflow, bln. USD.
4. IGS – Imports of goods and services (current), bln. USD.
5. IEX – Economic freedom index, %.
6. TAN – Number of trademark applications by companies not registered in this country.
7. TAX – Tax revenues (% of GDP).
8. RTA – (Regional Trade Agreement refers to a regional trade agreement. It is an agreement that sets the terms of trade and may include aspects such as tariff reductions, elimination of trade barriers, and coordination of economic policies.)

First of all, let us analyze the dynamics of the number of concluded regional trade agreements with the EU member states (Figure 1).

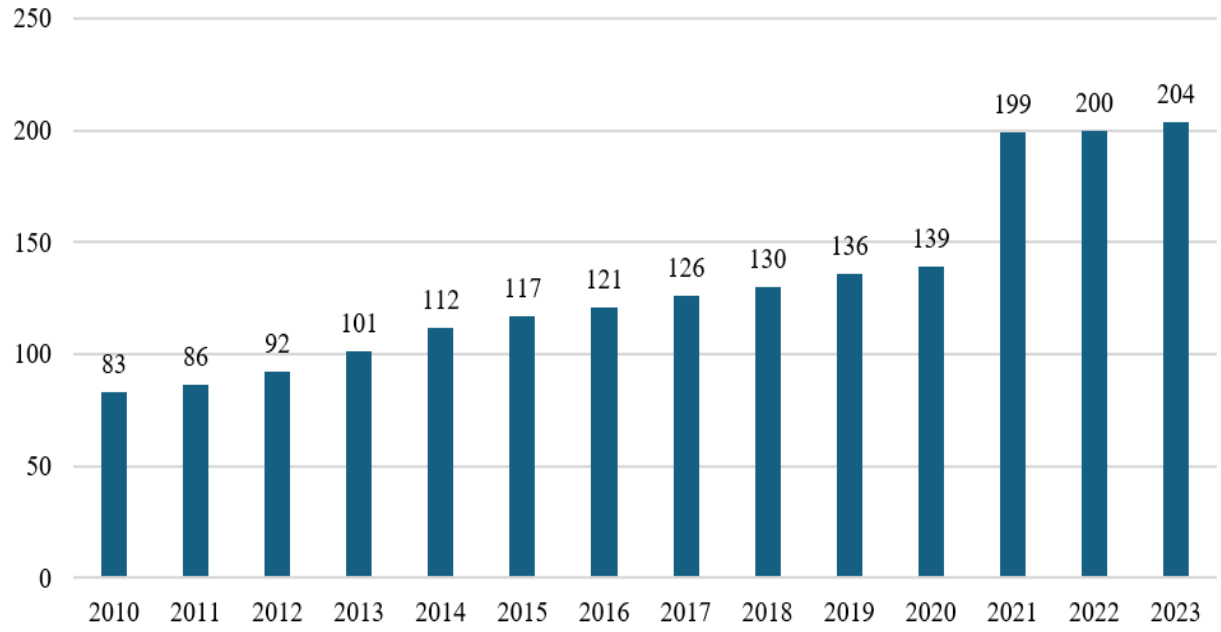

Figure 1.
Number of RTA with EU countries

From the figures obtained, it is clear that the EU experienced an increase in RTAs in 2021, largely due to the need to revise supply chains following the COVID-19 epidemic, as well as increased tensions between major economies (the US and China), prompting EU countries to seek new partners and regional agreements for market access.

A comparison of the selected indicators for 2023 of the EU countries is shown in Table 1.

Table 1.
Indicators for 2023 by EU countries.

Country	EGS	FDI	GDP	IEX	IGS	TAN	TAX
Germany	1654.2	19.5	3692.4	73.7	1783.0	26213.0	10.8
France	897.0	8.8	2671.2	63.6	1107.2	16626.3	24.3
Italy	653.3	42.0	2011.0	62.3	748.0	11099.7	24.6
Spain	494.7	43.0	1381.3	65.0	553.0	9195.3	14.6
Netherlands	817.4	-309.0	917.2	78.0	893.1	0.0	23.7
Poland	374.5	34.3	638.0	67.7	423.6	6618.7	17.8
Sweden	302.4	23.0	573.7	77.5	299.5	4518.0	27.3
Belgium	445.2	-2.8	527.3	67.1	546.5	0,0	22.6
Medium group 1	958.6	-0.8	2302.3	68.6	1076.3	14746.8	19.0
Ireland	703.3	-140.0	486.4	82.0	563.3	0.0	16.4
Austria	257.1	2.9	423.2	71.1	293.4	8815.7	25.5
Denmark	238.3	4.6	364.5	77.6	243.5	4165.7	33.3
Czech	255.9	8.2	330.9	72.0	378.5	4240.0	19.0
Finland	104.3	-0.3	254.6	77.1	125.7	3386.0	20.7
Romania	113.1	8.7	236.3	64.5	154.1	4548.7	15.1
Slovakia	97.5	2.7	116.5	69.0	83.6	8780.0	21.0
Portugal	110.6	9.7	235.8	69.5	134.2	5168.7	22.3
Greece	82.1	4.7	220.0	56.9	118.0	0.0	26.1
Hungary	153.1	-72.2	156.2	64.1	161.6	3951.3	22.6
Luxembourg	144.6	-23.7	70.9	78.4	155.8	0.0	25.7
Croatia	36.9	3.3	66.2	66.4	46.2	3776.7	21.2
Bulgaria	44.5	4.1	63.3	69.3	59.2	3894.3	20.8
Slovenia	47.7	1.4	54.5	68.5	53.1	3212.3	18.1
Lithuania	50.6	3.8	53.7	72.2	57.9	3193.0	20.7
Latvia	21.9	1.7	31.4	72.8	29.9	3201.3	23.2
Cyprus	30.7	-8.9	30.0	72.3	32.5	2242.0	22.6
Estonia	23.6	5.4	27.6	78.6	31.8	2918.0	20.9
Malta	23.6	25.1	18.2	67.5	23.4	338.7	22.0
Medium group 2	240.3	-21.2	291.0	72.1	247.0	3871.8	22.2

It can be seen that for both groups of EU countries, the level of economic freedom is almost the same (69-72%), and the number of trademark applications by companies not registered in that country is higher in countries with large GDP and low tax revenues.

5.2. Identification of the Main Factors Affecting the Volume of GDP in Different EU Countries

Correlation analysis was used to determine the relationships between the factors: statistics for the last 14 years were collected for all countries. Matrices reflecting the dependencies between the indicators were compiled. A high correlation between the indicators (more than 70%) was obtained for the following groups of indicators by country (Table 2):

Table 2.
Correlation of EGS.

Country	FDI	GDP	IEX	IGS	TAN	TAX
Austria		0.996		0.834		
Belgium		0.962		0.831		
Bulgaria		0.956	0.911	0.850		0.927
Croatia		0.968	0.800	0.943		
Cyprus		0.959		0.978		
Denmark		0.979		0.885		
Estonia		0.949	0.782	0.936		
Finland		0.977	0.815			
France		0.971		0.704		0.811
Germany		0.993	0.746			
Greece	0.866					
Hungary		0.991		0.871		
Ireland		0.999		0.969		
Latvia		0.982	0.873	0.879		
Lithuania		0.978		0.923		0.928
Luxembourg		0.995		0.958		0.702
Malta	0.989	0.753	0.991			
Netherlands		0.956	0.844	0.837		0.911
Poland		0.997	0.729	0.927		0.752
Portugal		0.838		0.777		
Romania	0.858	0.976		0.899		
Slovenia	0.762	0.975		0.876		
Spain		0.910		0.717		0.790
Sweden	0.760	0.979	0.892	0.838		

Table 2 shows that in almost all EU countries, there is a correlation between exports and GDP (more than 90% in most countries), imports (more than 85% in most countries), and the economic freedom index (more than 80% in some countries). For other countries, the correlation indicators are lower and appear sporadically (Table 3).

Table 3.
Correlation of FDI.

Country	GDP	IGS	TAX
Croatia	0.708	0.708	
Greece		0.712	
Italy	0.821	0.752	
Lithuania	0.709		0.812
Romania	0.843	0.867	
Slovenia	0.712		
Sweden	0.774		

Table 3 shows that foreign direct investment does not have a significant impact on GDP volumes in EU countries; the correlation is sporadic and at the level of approximately 70%.

The correlation of GDP volume with other economic indicators is shown in Table 4.

Table 4.
GPD correlation.

Country	EGS	IEX	IGS	TAN	TAX
Austria			0,824		
Belgium			0,868		
Bulgaria		0.897	0,909		0.818
Croatia		0.832	0,967		
Cyprus			0.970		
Denmark			0.876		
Estonia		0.834	0.809		
Finland		0.806			
France			0.808		0.795
Germany	0.993	0.735			
Hungary			0.886		
Ireland		0.705	0.963		
Italy			0.846		
Latvia		0.876	0.811		
Lithuania			0.835		0.911
Luxembourg			0.955		0.717
Malta		0.978			
Netherlands		0.923	0.923		0.877
Poland		0.727	0.921		0.758
Portugal		0.737	0.914		
Romania			0.946		
Slovenia		0.748	0.917		
Spain			0.785		
Sweden		0.868	0.743		

Table 4 shows that there is a correlation between GDP volume with imports (but lower than with exports in Table 2) and the index of economic freedom. There is also an occasional correlation with taxes.

The correlation of the index of economic freedom with other economic indicators is shown in Table 5.

Table 5.
Correlation of IEX.

Country	EGS	GDP	IGS	TAX
Bulgaria			0.784	0.852
Croatia			0.922	
Finland			0.794	
Germany	0.746	0.735		
Ireland			0.702	
Latvia				0.769
Netherlands			0.851	0.869
Portugal			0.786	
Slovenia			0.817	
Sweden			0.798	

Table 5 shows that the index of economic freedom has a correlation with the volume of imports (more than 80%), although the correlation is much less frequent than the correlation with the volume of exports.

Thus, the most significant factor affecting the EU economy is the volume of exports. Next, let us determine the dependence of the EU export volume on the index of economic freedom, imports, and the number of concluded multilateral trade relations.

5.3. Determination of the Degree of Influence of the Number of Rat's on Changes in GDP, Exports, Imports and the Composite Index of Economic Freedom

To solve the problem, let's make a correlation matrix (Table 6).

Table 6.
Correlation matrix showing the dependence of RTA, EGS, IGS and IEX in aggregate in all EU countries.

Indicators	EGS	IEX	IGS	RTA
EGS	1.000000	0.832508	0.829960	0.925106
IEX	0.832508	1.000000	0.785936	0.857688
IGS	0.829960	0.785936	1.000000	0.893282
RTA	0.925106	0.857688	0.893282	1.000000

All correlation indices are above 70%, accordingly, we can conclude that there is a high degree of dependence between the indicators.

In 3.2, it was revealed that the greatest impact on GDP is the volume of exports. Using regression analysis, we will determine the degree of influence of the given variables on it:

$$EGS = \alpha + \beta_1 \times IEX + \beta_2 \times RTA + \beta_3 \times IGS + \mu + \varepsilon, \quad (1)$$

where,
$\beta_1, \beta_2, \beta_3$ – coefficients for independent variables;
GPT – dependent variable GDP;
α – free term of the regression equation, shows the value of GDP if other variables are equal to zero;
μ – fixed effects (accounting for differences between observational objects);
ε – model error (stochastic component).

Regression analysis showed the following characteristics of the regression model (Table 7).

Table 7.
Result of regression analysis

Indicators	coef	std err	t	P>|t|	[0.025	0,975]
const	3191.1765	-1.07e+04	-0.299	0.771	-2.69e+04	2.06e+04
IEX	102.9643	159.479	0.646	-0.533	-252.376	458.305
RTA	17.7549	5.088	3.489	0.006	6.417	29.092
IGS	0.2573	0.131	1.966	0.081	-0.039	0.553

Descriptive statistics to the results of the regression analysis are summarized in Table 8.

Table 8.
Descriptive statistics.

Indicators	Significance
R-squared	0.862
Omnibus	1.310
Durbin-Watson	0.826
Prob(Omnibus)	0.519
Jarque-Bera (JB)	1.039

From Table 8, it can be concluded that the regression analysis confirmed the fact that regional multilateral trade agreements (RTAs) have a significant positive impact on exports in EU countries, which emphasizes the effectiveness of trade integration and cooperation between countries.

6. Discussion of the Results of the Analysis of the Impact of Multilateral Mechanisms for Regulating Foreign Economic Cooperation On GDP

Figure 1 shows that the pandemic led to the need to rethink global supply chains. States began to look for alternative methods to ensure economic stability and protect their economies, which encouraged the signing of new trade agreements. Increased trade tensions between major economies such as the US and China have prompted countries to seek new partners and enter into regional agreements to ensure market access. The UK's exit from the European Union has created a need for new trade agreements with both the EU and other states, which has also contributed to the growth of regional trade agreements (RTA).

From the statistics in Table 1 it can be concluded that countries with high exports such as Germany (1654.2) and France (897.0) have high GDP (3692.4 and 2671.2, respectively). This indicates a possible positive relationship between exports and economic growth. On the other hand, countries such as Cyprus (30.7) and Estonia (23.6) have low exports and GDP, which may indicate less economic activity.

- Imports of goods and services (IGS) are also correlated with the level of GDP. Germany (1783.0) and France (1107.2) have high import values, which may confirm a high degree of integration in international trade. Countries with low imports Estonia (31.8) and Latvia (29.9)—show low GDP values.

Countries with a high economic freedom index - Denmark (77.6) and Sweden (77.5) have high scores in other categories, including GDP and exports. This may indicate that high economic freedom promotes economic growth. On the other hand, countries with a low index also have low GDP and exports, indicating economic problems.

High values of the indicator "number of trademark applications by companies not registered in this country" in countries such as Austria (8,815.7) and Germany (26,213.0) show active business development and innovation. Countries with low TAN values, such as Luxembourg (0.0) and Ireland (0.0), show less activity in intellectual property registration.

The comparative analysis confirms the hypothesis that there are correlations between different economic indicators in various countries. However, high levels of exports and foreign direct investment tend to correlate with a high GDP and economic freedom index.

The correlation coefficients (Table 2) emphasizing the relationship between exports of goods and services and other economic indicators, high correlation coefficients between EGS and variables such as FDI, GDP, and IEX indicate that exports play a central role in the economic development of countries. This data can be useful for shaping foreign economic cooperation strategies and trade policies.

The correlation coefficients for FDI (Table 3) emphasize the importance of foreign investment for economic growth and development of countries. High correlation values with GDP and tax revenues confirm that foreign investment can play a key role in stimulating economic activity and increasing government revenues. This data can be useful for developing strategies for attracting foreign investment and shaping economic policy.

The correlation coefficients for GDP shown in Table 4 emphasize the relationships between gross domestic product and other economic indicators. High correlation values with EGS, IEX, and TAX indicate that successful economic development is associated with active foreign economic activity, free trade, and effective taxation..

The analysis of correlation coefficients for GDP shows that the gross domestic product is an indicator of economic activity and is interrelated with other key indicators. This data can be useful for the development of economic policies and strategies aimed at stimulating economic growth and improving foreign economic cooperation.

The results of the correlation coefficient analysis for IEX in Table 5 the economic freedom index is an indicator of economic activity and is correlated with other key indicators. This data can be useful for the development of economic policies and strategies aimed at improving the business environment and stimulating economic growth.

The correlation matrix (Table 6) shows a high degree of correlation between the variables RTA, EGS, IGS and IEX. All correlation indicators exceed 70%, indicating significant correlations between these economic indicators in the EU.

Regression analysis (Table 7) confirmed that regional multilateral trade agreements (RTAs) have a significant positive impact on exports, suggesting the need for trade integration and cooperation among countries. Despite the positive coefficient for the Index of Economic Freedom (IEX), its effect on export volume was less significant. This may indicate the need for additional factors to better understand the impact of economic freedom on economic growth. The Durbin-Watson value (0.826) indicates the possible presence of autocorrelation in the residuals of the model, which may require further analysis and adjustment of the model to improve its accuracy.

Overall, the results of the analysis emphasize the importance of export activities and regional trade agreements for economic growth in EU countries.

There is a similar study Nguyen [18] which analyzes the impact of regional trade agreements on global trade, with a focus on the EU and its partners. The study emphasizes that regional trade agreements are an important tool for countries seeking to improve their trade position and economic development. In contrast to this study, in the analysis of Zhao [16] the subject of the evaluation is broader (all EU countries and the features of all RTAs are studied in detail). The advantage of this study is the quantitative assessment of the relationship between the number of concluded RTAs and GDP in the EU countries using the method of correlation and regression analysis.

The difficulties of the study are due to the following:

- Differences in economic indicators between countries;
- Possible autocorrelation indicates insufficient model specification, which requires adjustment in the research perspective;
- High degree of correlation between indicators makes it difficult to understand causal relationships.

The limitations of this study are as follows:

1. Limitation to EU countries. If another regional organization is chosen, there is a possibility of changing the influence of the factors under study within the analysis of variance, which may cause a revision of the weights of the indicators used.

2. Lack of initial aggregated data on the number of concluded RTA in detail by market segments.

The disadvantages of the study are that it may not take into account some aspects, such as the influence of political stability or cultural factors.

7. Conclusions

1. A comparative analysis of the indicators in the EU countries, divided by the Pareto principle into two categories according to the volume of GDP, has been carried out. For all groups, the level of economic freedom is practically not different (69-72%), and the number of applications for trademark registration by companies not registered in this country is higher in countries with large GDP and low tax revenues.

2. Using correlation analysis, the main factors affecting the volume of GDP in different EU countries are identified. The obtained correlation coefficients of more than 90 percent show a high dependence of GDP on the volume of exports, imports, and the economic freedom index in different countries. These factors are selected as the key factors affecting GDP.

3. Further correlation analysis was carried out, which also reveals the relationship between the number of multilateral agreements entered into, export volume (0.925106), economic freedom index (0.857688), and import volume (0.893282). A regression model with a high degree of reliability (R^2=0.862) was developed, reflecting the dependence of exports on the index of economic freedom, the number of multilateral trade agreements, and the volume of imports. A direct correlation between the number of multilateral agreements concluded and the dynamics of changes in the volume of exports was established.

References

[1] Treaty on European Union, "Official journal of the European Union," Retrieved: https://eur-lex.europa.eu/eli/treaty/teu/sign. [Accessed May 15, 2025], 2025.

[2] D. Walentek, "Reputation or interaction: What determines cooperation on economic sanctions?," *International Interactions*, vol. 48, no. 6, pp. 1121-1143, 2022. https://doi.org/10.1080/03050629.2023.2133113

[3] M. Obstfeld, "Economic multilateralism 80 years after Bretton Woods," *Oxford Review of Economic Policy*, vol. 40, no. 2, pp. 307-328, 2024. https://doi.org/10.1093/oxrep/grae009

[4] M. Froman, "Point of view: A way forward for global trade," *Finance & Development*, vol. 60, no. 2, p. 73, 2023. https://doi.org/10.5089/9798400240997.022

[5] L. Song and V. Agarwal, "The future of multilateralism in the post-pandemic world," *China & World Economy*, vol. 31, no. 1, pp. 62-87, 2023. https://doi.org/10.1111/cwe.12459

[6] L. Schuette and H. Dijkstra, "The show must go on: The EU's quest to sustain multilateral institutions since 2016," *JCMS: Journal of Common Market Studies*, vol. 61, no. 5, pp. 1318-1336, 2023. https://doi.org/10.1111/jcms.13466

[7] V. Nanda, *World climate change: The role of international law and institutions*. Routledge. https://doi.org/10.4324/9780429268113., 1983.

[8] A. Norring, *Geoeconomic fragmentation, globalization, and multilateralism*. Helsinki, Finland: BoF Economics Review, 2024.

[9] C. P. Bown, "The challenge of export controls," *Finance & Development*, vol. 60, no. 2, pp. 18-21, 2023. http://dx.doi.org/10.5089/9798400240997.022

[10] B. Hooijmaaijers, "Understanding success and failure in establishing new multilateral development banks: The SCO Development Bank, the NDB, and the AIIB," *Asian Perspective*, vol. 45, no. 2, pp. 445-467, 2021. http://dx.doi.org/10.1353/apr.2021.0008

[11] S. Mariotti, "Competition policy in the new wave of global protectionism. Prospects for preserving a FDI-friendly institutional environment," *Journal of Industrial and Business Economics*, vol. 50, no. 2, pp. 227-241, 2023. http://dx.doi.org/10.1007/s40812-023-00263-3

[12] K. Pugachevska, L. Medvid, N. Goblyk-Markovich, O. Feier, and A. Lyzanets, "Protectionism in conditions of world trade multipolarity," *Financial and Credit Activity Problems of Theory and Practice*, vol. 2, no. 49, pp. 253-263, 2023.

[13] M. K. Lewis, "International Trade Agreements: Laboratories of Innovation or Propellers of Fragmentation?," *Journal of International Economic Law*, vol. 26, no. 1, pp. 110-123, 2023. http://dx.doi.org/10.1093/jiel/jgac050

[14] R. Zhappassova *et al.*, "State and development of integration cooperation between Kazakhstan and foreign countries: Trade, economic, and investment aspects," *Academy of Strategic Management Journal*, vol. 20, pp. 1-6, 2021.

[15] N. Woods, "Multilateralism in the twenty-first century," *Global Perspectives*, vol. 4, no. 1, p. 68310, 2023. http://dx.doi.org/10.1525/gp.2023.68310

[16] J. Zhao, *International development cooperation: Theory, practice, and evaluation*. Singapore: World Scientific. http://dx.doi.org/10.1142/12906 2023.

[17] L. Schmitz and T. Seidl, "As open as possible, as autonomous as necessary: Understanding the rise of open strategic autonomy in EU trade policy," *JCMS: Journal of Common Market Studies*, vol. 61, no. 3, pp. 834-852, 2023. http://dx.doi.org/10.1111/jcms.13428

[18] D. B. Nguyen, "A new examination of the impacts of regional trade agreements on international trade patterns," *Journal of Economic Integration*, vol. 34, no. 2, pp. 236-279, 2019. http://dx.doi.org/10.11130/jei.2019.34.2.236