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The Influence of Foreign Trade with EU Countries on Ukraine's Economic Growth

Abstract. *The purpose of the article is to analyse special characteristics of Ukraine's foreign trade in goods with EU countries and identify how it affects the country's economic growth. Emphasis is placed on benefits for domestic exporters derived from the existence of the Deep and Comprehensive Free Trade Area. The author analyses trends, dynamics and structure of domestic commodity exports to EU countries in the face of global challenges. EU member states are found to be Ukraine's largest trading partners. Econometric analysis is used to measure the share of exports to the EU in total Ukrainian exports. The author uses Python scripts to measure the influence of exports and imports of goods between Ukraine and the EU on the country's GDP and finds that it is mainly affected by exports. A number of organisational and economic measures to support domestic manufacturers in terms of successful implementation of export deliveries are also proposed.*

Keywords: *export of goods, import of goods, Association Agreement between Ukraine and the EU, free trade area, foreign trade, customs and tariff policy*

1. Formulation of the problem

On January 1, 2016, the Deep and Comprehensive Free Trade Area of Ukraine with the EU began to function in the mode of implementation of the provisions of the Association Agreement between Ukraine and the EU. During this period, a number of positive changes in mutual trade could be observed: the European market has become a key one for Ukrainian exports of goods; the number of companies exporting goods to the EU Member States has increased significantly; expanding potential opportunities to join European markets is considered a priority for the development of foreign economic policy.

It should also be noted that there have been radical changes in the field of customs and tariff regulation, in particular in the direction of gradual reduction of import duty rates, administration of determining the country of origin of goods, introduction of a mechanism of duty-free tariff quotas. Steps to liberalize foreign trade and the practical implementation of policy documents are carried out synchronously by both parties. Thus, in 2014, the European party began to simplify the application of customs regimes for most Ukrainian goods by providing autonomous trade preferences, namely the abolition of import duties on some industrial goods, agricultural and food products. Since the establishment of the free trade area, Ukraine has also begun the process of abolishing import duties on certain goods from the EU, establishing duty-free tariff quotas and gradually reducing import duties on the so-called sensitive commodity groups during the transition period.

These measures has contributed to successful structural changes in mutual foreign trade, since 2016 the trend of trade has begun to grow steadily, domestic exporters have confirmed their focus on European markets by obtaining the status of authorized exporters, certification of products to established standards and so on. At the present stage, there is a need to develop a set of organisational and economic measures to support mutual trade in order to prevent a slowdown in the annual growth of Ukraine's foreign trade with EU member states.

2. Aims and methodology of the study

The aim of the study is to identify the influence of Ukraine's foreign trade in goods with the EU member states on the country's economic growth. Achieving this goal involves the implementation of the following tasks: analysis of trends, dynamics and structure of domestic commodity exports to the EU countries in a dynamically changing environment; application of economic and mathematical tools to estimate the dependence of Ukraine's gross domestic product on exports of goods from Ukraine and imports of goods from the EU, as well as the influence of exports to the EU on total Ukrainian exports. The theoretical and methodological basis of the study are the postulates of modern scientific thought, works of domestic researchers on the problems of stimulation and development of export activities, strategic policy documents, analytical and scientific reports of official institutions.

3. Main results of the study

Nowadays, the development of export activities of domestic economic entities is becoming relevant; at the same time, their presence in world markets for goods and services is associated with a number of threats that need to be taken into account. Among the most important global trends and events of the current stage

there are aspects of international and regional levels: politicization of international trade, strengthening of protectionism, rapid development of undocumented international trade, innovative trading platforms and financial technologies, further development of China's strategic Belt and Road Initiative, definition of the terms of trade between the UK and the EU after Brexit, ratification of a new tripartite trade agreement between Canada, the US and Mexico [Zviahin 2019].

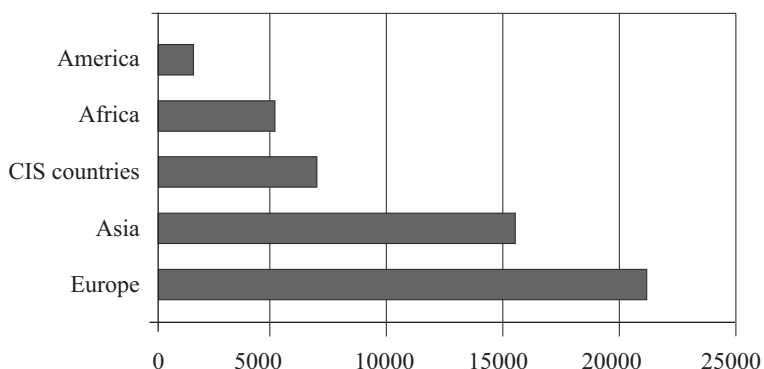
Challenges for Ukraine's foreign trade are considered by domestic scientists in terms of two groups: favourable (deepening Ukraine's integration into the global trade space, removing barriers in foreign markets, development of IT technologies, growth of e-commerce, implementation of the Association Agreement between Ukraine and the EU, increasing the number of international agreements in the field of trade) and unfavourable or threatening (suspension of industrial production in Donetsk and Luhansk regions, slowing of the dynamics of the world economy, increasing risks of cooperation with Ukrainian residents due to political and economic instability) [Deineko 2018: 144].

The total export of goods and services of Ukraine in 2019 amounted to 63.7 billion USD and increased by 11.2% compared to 2018, while 78.6% is accounted for by goods in the structure of this indicator. Export deliveries are characterized by a high level of geographical differentiation, the total number of partner countries exceeds 200, while 37.7% of the total volume of goods and services go to EU member states.

Globally, European countries account for 42.4% of exports of goods from Ukraine, Asian countries – 30.8%, Commonwealth of Independent States (CIS) – 13.5%, Africa – 9.9%, America – 2.9%, Australia and Oceania – 0.1% (Chart 1).

General exports of goods in 2019 amounted to 50.1 billion USD (increased by 5.8% compared to the previous period), and imports of goods amounted to 60.8

Chart 1. Exports of goods from Ukraine by continent in 2019 (million USD)

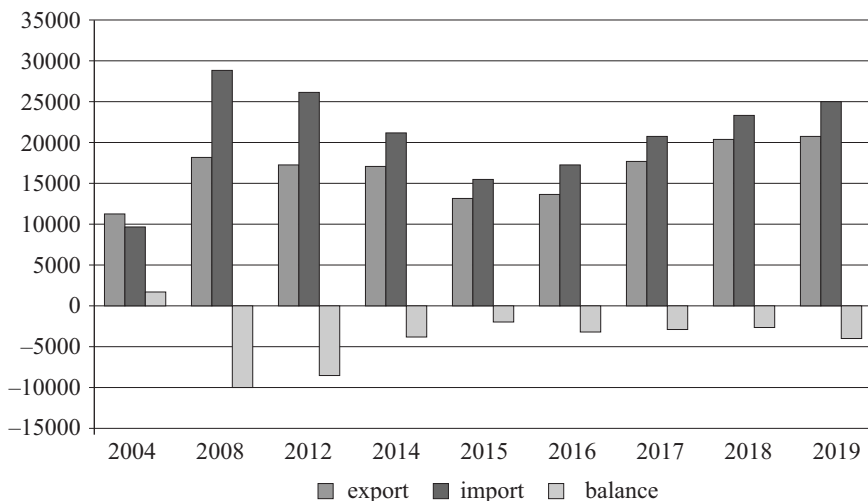


Source: based on Ukrainian statistical data for 2019.

billion USD. The structure of domestic exports for the period under study is as follows: agricultural products and food industry (44.2% of the total), metallurgical products (20.5%), mechanic engineering products (11.0%), mineral products (9.7%), chemical industry products (5.3%), wood and paper pulp (3.7%), various industrial goods (3.2%), light industry products (2.4%) (based on Ukrainian statistical data for 2019). It is possible to note a significant orientation of domestic exports to raw materials, which simultaneously demonstrates the dependence of exports on the influence of external factors and the situation on world commodity markets and is directly reflected in the volume of foreign exchange earnings of the country.

The EU member states are one of Ukraine's largest trading partners. The total exports of goods and services to the EU member states from Ukraine in 2019 amounted to 24.0 billion USD (goods – 20.8 million USD), and the balance of trade in goods has remained negative for a long time (Chart 2). The Association Agreement between Ukraine and the EU provides for the Deep and Comprehensive Free Trade Area, which not only forms the institutional and legal basis for the movement of goods, services, etc., but also determines the areas of harmonization with the gradual entry of Ukraine's economy into the EU internal market. As noted, the free trade area, on the one hand, is an instrument of systemic reforms in trade and economic spheres, and on the other hand it will ensure the gradual integration of Ukraine's economy into the EU internal market [Kuzo et al. 2015: 24].

Chart 2. Exports, imports and the balance of foreign trade in goods of Ukraine with EU member states in 2004-2019



Source: based on Ukrainian statistical data for 2019.

In 2019, the share of these countries in domestic exports of goods was 41.4%, imports of goods – 41.1%, exports of services – 28.1%, imports of services – 54.6%. The share of European investments in the total volume of foreign direct investment in Ukraine as of January 1, 2019 was 78.9%. The growth of trade in goods between Ukraine and the EU, which resumed after 2016, is gradually showing signs of moderation, i.e. the growth rate is slowing down compared to other countries. According to experts, the shock caused by the launch of the Deep and Comprehensive Free Trade Area is likely to be offset by a number of non-tariff barriers.

According to the results of 2019, 15 regions of Ukraine showed an increase in exports of goods to the EU countries, the largest positive contribution being observed in Kyiv, Lviv, Cherkasy, Kirovohrad, Sumy, Vinnytsia and Chernihiv regions.

In exports of goods, the largest partners of Ukraine are Poland (15.8% of total exports to the EU), Italy (11.6%), Germany (11.4%), the Netherlands (8.9%), Hungary (7.5%), Spain (7.2%), and Romania (4.8%). Imports of goods include Germany (23.9% of total imports to the EU), Poland (16.4%), Italy (8.3%), France (6.6%), Hungary (4.9%), the Czech Republic (4.6%), and Lithuania (4.5%) (Table 1). Ukraine maintains a positive balance of foreign trade in goods with Belgium, Bulgaria, Spain, Italy, Cyprus, Latvia, Malta, the Netherlands, Portugal, Romania, Slovakia and Hungary.

Table 1. Ukraine's largest partner countries in exports and imports in goods from the EU member states in 2019

Export of goods			Import of goods		
Country	thousand USD	%	Country	thousand USD	%
Poland	3296,538.7	15.8	Germany	5991,518.9	23.9
Italy	2418,878.1	11.6	Poland	4102,572.3	16.4
Germany	2383,393.7	11.4	Italy	2074,744.4	8.3
Netherlands	1848,433.2	8.9	France	1652,790.6	6.6
Hungary	1562,810.3	7.5	Hungary	1241,628.8	4.9
Spain	1500,801.3	7.2	Czech Republic	1165,505.0	4.6
Romania	1005,645.8	4.8	Lithuania	1144,529.5	4.5

Source: based on Ukrainian statistical data for 2019.

The structure of exports of goods from Ukraine to the EU in 2019 was dominated by: products of the agro-industrial complex and food industry, products of the metallurgical complex and mechanical engineering, mineral products, wood and paper pulp, light industry products, various industrial goods and chemical products (Table 2). The TOP-15 products, the volume of which has increased in the current period, are maize, sunflower oil, rapeseed, oil cake, electrical power,

Table 2. The largest commodity groups in Ukraine's foreign trade with the EU countries in 2019

Code and name of goods	Export		Import	
	thousand USD	% of total volume	thousand USD	% of total volume
I. Live animals; products of animal origin	347,127.6	1.7	507,746.2	2.0
II. Products of plant origin	4480,044.4	21.6	579,986.8	2.3
III. Fats and oils of animal or vegetable origin	1544,502.7	7.4	68,899.9	0.3
IV. Ready-made food	943,107.3	4.5	1683,962.5	6.7
V. Mineral products	2697,635.9	13.0	2784,144.8	11.1
VI. Products of the chemical and allied industries	559,879.7	2.7	4384,673.2	17.5
VII. Polymeric materials, plastics and articles thereof	203,837.1	1.0	1682,650.3	6.7
IX. Wood and wood products	1004,968.9	4.8	151,883.7	0.6
XI. Textile materials and textile products	706,607.7	3.4	760,622.2	3.0
XV. Base metals and products thereof	3796,718.3	18.3	1325,238.7	5.3
XVI. Machines, equipment and mechanisms; electrical equipment	2825,048.7	13.6	5435,945.3	21.7
XVII. Land vehicles, aircrafts, floating vehicles	203,422.1	1.0	3366,689.5	13.5
XX. Various industrial goods	709,618.9	3.4	328,036.6	1.3

Source: based on Ukrainian statistical data for 2019.

barley, soybeans, soybean oil, nitrogen fertilizers, electric water heaters, furniture and furniture parts, rods, bars and beams of steel and hot rolled products, parts for railway locomotives, bottles and glass containers, turbojet engines.

According to the official statistics, export deliveries are actively developing within the framework of duty-free exports under tariff quotas. Thus, in 2019, domestic exporters used the opportunities of 32 of the 40 tariff quotas, 11 of which were used in full and 2 were used by more than 95%. 11 tariff quotas were fully used for maize, wheat, barley, honey, sugar, grape and apple juices, processed tomatoes, processed starch, butter, poultry and starch (based on European integration portal).

In the process of comparing the commodity structure of export and import with the EU countries with the general structure of export and import of Ukraine, domestic researchers found that for some goods with a lower degree of processing, the share of exports to the EU countries is higher than the average for all exports. At the same time, for certain goods with higher added value, the share of the EU countries is lower than the average. The exception is mechanical engi-

neering products. Thus, the European Union exports higher value-added products (e.g. pharmaceuticals, engineering). But in cases where domestic products are competitive in terms of price-quality ratio (including power engineering products), European partners are prone to imports of high-tech products [Romanenko et al. 2017: 74].

It is expedient to investigate how the general export opportunities of Ukraine are determined by the volumes of exported goods that domestic producers sell on the EU markets. In our research, we have built an econometric model of the dependence of Ukraine's total exports on exports to the EU countries. To build the model, time series of relevant indicators for the period 1996-2019 have been used. The linear regression model reflects the relationship between these indicators:

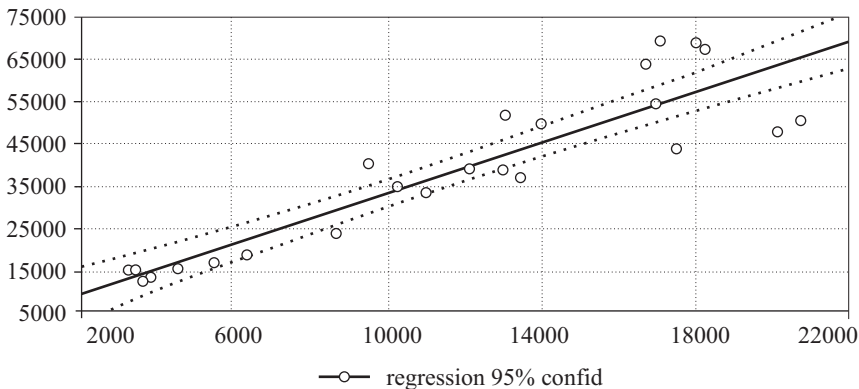
$$Y = 2624,7 + 2994X \tag{1}$$

where:

- Y – total exports of Ukraine,
- X – Ukraine's exports to EU countries.

The intensity of the relationship between the variables included in the model is measured by the correlation coefficient. For our model, its value is 0.9, which indicates that there is a close direct relationship between the variables. The coefficient of determination shows that 82% of the dependent variable is explained by the influence of the independent variables. Checking the reliability of the regression model and the correlation coefficient based on Fisher's criterion gives reasons to conclude about the adequacy of the model, as the observed value of F-statistics 100.87 is greater than the table value at 0.05. The independent variables included in the model are statistically significant. Thus, we can say that the growth of exports to the EU by 1 million USD will increase Ukrainian exports by

Chart 3. Dependence of Ukraine's total exports on exports to the EU

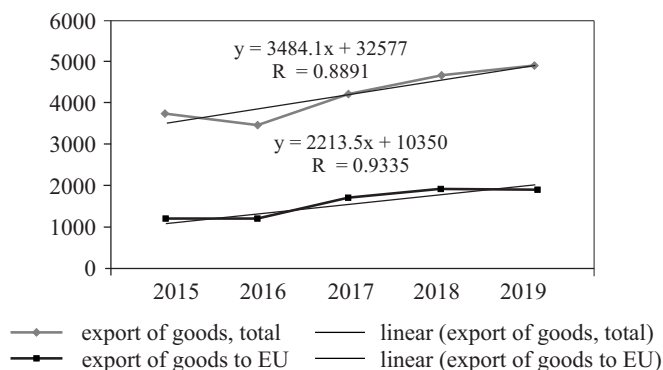


Source: own elaboration.

2.99 million USD (Chart 3). Therefore, Ukraine should strengthen and reinforce its chosen course on the orientation of domestic exports to the EU market.

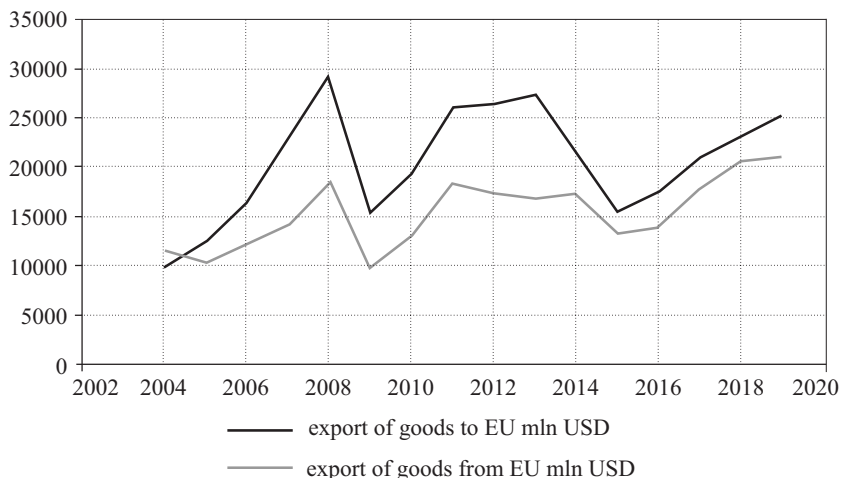
We can also note that in the period after 2015, when, firstly, the Ukrainian economy managed to neutralize the negative impact of the foreign policy factor of the military conflict with Russia and, secondly, the necessary institutional opportunities to intensify foreign trade with the EU emerged, exports in general and exports to the EU show in the dynamics a clear linear growth. This can be confirmed by the corresponding trend linear models we have built (Chart 4).

Chart 4. Time series of indicators of total exports of Ukraine and exports to the EU and the corresponding trend models



Source: own elaboration.

Chart 5. Trends in the dynamics of exports of goods from Ukraine to the EU and imports of goods to Ukraine from the EU in 2004-2019



Source: own elaboration.

We will also consider the results of the formation of a linear regression for estimating the dependence of Ukraine's gross domestic product on exports of goods from Ukraine and imports of goods from the EU to Ukraine, obtained using Python programming and the Sklearn library. For the study, we have selected the official statistics for the period 2004-2019, a graphical representation of which is presented below (Chart 5).

As a result of the study, it has been found that there is a significant correlation (0.83) between the input data (exports of goods from Ukraine to the EU and imports of goods from the EU to Ukraine). It is also obvious that the main positive impact on the gross domestic product is created by exports (both export coefficients are positive and quite large, ≈ 1), in contrast to imports, the impact of which is not so significant compared to exports (Table 3).

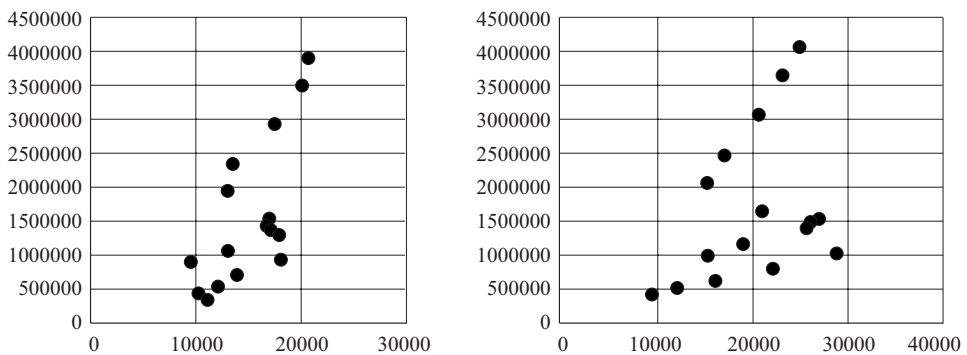
Table 3. The results of estimating the dependence of Ukraine's gross domestic product on exports of goods from Ukraine and imports of goods from the EU to Ukraine

Title	Exports of goods to the EU	Imports of goods from the EU
Correlation of input variables with the GDP	0.71	0.36
Simple linear regression	1.33	-0.75
Linear regression with regularization	1.04	-0.48
Correlation of exports and imports with each other		0.83

Source: own elaboration.

The graphical representation of the correlation dependence of Ukraine's gross domestic product on exports of goods from Ukraine to the EU and imports of goods from the EU to Ukraine illustrates the estimation results (Chart 6).

Chart 6. Dependence of Ukraine's GDP on exports to the EU



Source: own elaboration.

Thus, the intensification of mutual trade between Ukraine and the EU member states within the framework of the Deep and Comprehensive Free Trade Area has a number of advantages, including: stimulating the country's economic growth, positive impact on macroeconomic indicators, easier access to the European market for domestic producers, transparent competition policy, improving the quality and safety of domestic products, popularisation of Ukrainian brands in Europe and increasing demand for them, qualitative structural changes in Ukraine's foreign trade.

In the conditions of the implementation of the Association Agreement between Ukraine and the EU, the abolition of customs tariffs in the creation of a free trade zone with the EU, the loss of certain markets, the need to meet high technical standards, it is important for Ukraine to develop a set of measures to support domestic manufacturers. Among the priority measures are the following: removal of obstacles to export development; development of information and consulting support for export activities; raising awareness of foreign economic activity by business entities; intensification of exports on an innovative basis to increase the share of high-tech exports; involvement of domestic producers in international chains of added value; implementation of agreements governing the development of trade relations.

4. Conclusions

Since the beginning of the Deep and Comprehensive Free Trade Area between Ukraine and the EU, there have been positive developments in mutual trade between the countries and the liberalization of customs and tariff regulation. EU member states remain one of Ukraine's largest trading partners. The share of EU countries in domestic exports of goods in 2019 is 41.4%, imports of goods – 41.1%, exports of services – 28.1%, imports of services – 54.6%. The balance of trade in goods has remained negative for a long time. However, the growth of trade in goods between Ukraine and the EU, starting after 2016, is gradually showing signs of moderation compared to other countries.

The structure of exports of goods from Ukraine to the EU is dominated by products of the agro-industrial complex and food industry, products of the metallurgical complex and mechanical engineering, mineral products, wood and pulp, light industry products, various industrial goods and chemical products. In exports of goods, Ukraine's largest partners are Poland, Italy, Germany, the Netherlands, Hungary, Spain and Romania; in imports of goods the counterparts are Germany, Poland, Italy, France, Hungary, the Czech Republic and Lithuania.

As a result of programming in Python using the Sklearn library, it is established that the main positive impact on the gross domestic product of Ukraine is

created by the export of goods to the EU compared to imports from the EU, which is a stimulus for economic growth and has a positive effect on macroeconomic indicators. Econometric analysis has confirmed the positive impact of Ukraine's exports to the EU on the overall export opportunities of the domestic economy. In order to prevent a slowdown in Ukraine's foreign trade with the EU member states, it is proposed to identify and eliminate obstacles to the development of exports; advancement of information and consulting support for exporters; implementation of measures to increase the level of manufacturability and technological effectiveness of exports, institutional and organisational support of the existing trade agreements.

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Wpływ handlu zagranicznego z krajami UE na wzrost gospodarczy Ukrainy

Streszczenie. W artykule przedstawiono specyfikę handlu zagranicznego towarami Ukrainy z krajami UE oraz jego wpływ na wzrost gospodarczy kraju. Nacisk położono na korzyści dla krajowych eksporterów, które powstają w strefie wolnego handlu. Przeprowadzono analizę tendencji, dynamiki i struktury eksportu towarów krajowych do krajów UE w warunkach globalnych wyzwań. Udowodniono, że państwa członkowskie UE należą do największych partnerów handlowych Ukrainy. Dokonując analizy ekonometrycznej, zbadano wpływ eksportu do UE na ogólny eksport z Ukra-

iny. Za pomocą skryptów napisanych w języku Python dokonano oceny wpływu eksportu i importu towarów między Ukrainą a UE na produkt krajowy brutto. Ustalono, że główny wpływ na produkt krajowy brutto Ukrainy ma eksport. Zaproponowano szereg środków organizacyjnych i ekonomicznych w celu wsparcia producentów krajowych w realizacji dostaw eksportowych.

Słowa kluczowe: eksport towarów, import towarów, Układ o stowarzyszeniu między Ukrainą a UE, strefa wolnego handlu, handel zagraniczny, polityka celna i taryfowa