

## Trade Integration Asymmetries of Ukraine and the EU

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**ABSTRACT.** The issue of bilateral trade integration as a result of the implementation of an in-depth and comprehensive free trade area between Ukraine and the EU, which enabled countries to move from partnership and cooperation to political association and economic integration, was revealed. The retrospective of the bilateral cooperation development and the main provisions of the fourth chapter "Trade and Trade-related Issues" are described. It was established that trade and economic relations within the framework of the implementation of the Free Trade Area with the EU create a number of advantages and threats. It is proved that the modernization of Ukraine's trade policy has become a consequence of trade integration, and its main dominants are defined: growth of commodity turnover between the countries and the growing share of European countries in the structure of Ukraine's foreign trade; reduction of import duties; improving market access conditions; harmonization of legislation; establishment of tariff quotas; substantial reduction of non-tariff barriers to trade; arrangements of countries to improve the operation of customs; harmonization of the technical regulation system; standardization, metrology, conformity assessment and market surveillance systems; sanitary and phytosanitary measures; strengthening of the protection of intellectual property rights. The forecasting and modeling of the foreign trade turnover between Ukraine and the EU in goods in general, and in goods of the agro-industrial complex in particular, based on the use of a gravity model has been carried out. A positive growth in turnover due to the implementation of the DCFTA between Ukraine and the EU was projected. It has been determined that the scenario is more optimistic for the goods of the agro-industrial complex, which is explained by the domination of trade preferences for this industry. The growth of the dependence of Ukraine's economic growth on exports is substantiated.

**KEYWORDS.** Trade integration, trade policy, free trade zone, Association Agreement between Ukraine and the EU, the DCFTA, Ukraine, the EU.

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## Introduction

Trade integration is a universal tool for optimizing the cooperation of countries in order to realize bilateral national foreign trade interests. When defining the etymology of the “cooperation” category, we most often interpret them as joint activities or cooperation in a particular institution. International economic integration may be defined as a higher level of development of international economic activities, marked by the deepening of trade and economic cooperation between the countries, resulting in complementarity, interdependence, mutual coordination of actions and convergence of national economic mechanisms with simultaneous establishment of mutual obligations that are realized in the form of interstate agreements, institutionalization of cooperation, implementation of coordinated trade policies in bilateral relations with third countries.

Trade and economic relations are defined as relations between states or integration associations based on exchange and financial transactions, as well as cooperation and joint development<sup>2</sup>. These comprise the most important area of economic cooperation between states. Bilateral trade and economic relations are characterized by conditions of long-term cooperation agreed by both countries and enshrined in international treaties. Such relationships become more effective if they develop on the basis of an established free trade zone – a zone with a special preferential trade regime in place for member countries by eliminating domestic tariffs while keeping them in trade with other countries<sup>3</sup>.

Conclusion of free trade agreements provides for the creation of favorable conditions for cooperation between individual countries or groups of countries. By concluding the relevant association agreements, the European Union (EU) offers its trading partners the deepest level of cooperation provided to third countries. The conclusion of free trade agreements and its full implementation in Ukraine shows the irreversibility of the European vector of state development and commitment to the European model of economic development. This may form the basis of a systematic and comprehensive institutional and legal, social and political, financial and economic and social and demographic modernization of the national economy. Moreover, creation of a comprehensive and in-depth free trade zone should contribute to the gradual integration of Ukraine into the EU internal market.

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<sup>2</sup> Pasmor, M.S., Babenko, V.O., Sidorov, V.I. “Trade and economic component of regional economic processes in the conditions of globalization.” *Business Inform*, no. 4, (2016): 31-37. [In Ukrainian].

<sup>3</sup> Lukyanenko, D.G., Poruchnyk, A.M., Stolyarchuk, Ya.M. *International Economics: Textbook*. Kyiv: KNEU, 2014. [In Ukrainian].

The many-faceted aspects of the issue of trade and economic cooperation in the context of global challenges are reflected in the works of such scientists as: L. Antoniuk<sup>4</sup>, P. Bosch<sup>5</sup>, J. Bhagwati<sup>6</sup>, D. Irwin<sup>7</sup>, T. Kalchenko<sup>8</sup>, P. Krugman<sup>9</sup>, D. Lukianenko<sup>10</sup>, J. Pigman<sup>11</sup>, R. Pomfret<sup>12</sup>, A. Poruchnyk<sup>13</sup>, V. Sidenko<sup>14</sup>, P. Smith<sup>15</sup>, E. Helpman<sup>16</sup>, M. Hart-Landsberg<sup>17</sup>, A. Filipenko<sup>18</sup>, T. Tsyhankova<sup>19</sup>, O. Shvydanenko<sup>20</sup>,

<sup>4</sup> Poruchnik, A. M., Antonyuk, L. L. "Formation of the European Innovation Space." The European Union and Ukraine: Materials of the International. sci. pract. Conf., Foundation for the Advancement of Europe. Integration, InWent Foundation. Edited by Chuzhikov, V.I., Kyiv: KNEU, June 17 (2004): 70-81. [In Ukrainian].

<sup>5</sup> Peter Van den Bossche, Warner Zdouc. The Law and Policy of the World Trade Organization: Text, Cases and Materials. — 3rd edition, United States of America by Cambridge University press, New York and University printing house, Cambridge, United Kingdom. — 2013. — 1045 p

<sup>6</sup> Bhagwati, J. In defense of globalization / Jagdish Bhagwati; Per. from english ed. V.L.Inozemtseva; The center is exploring. postindustry vol., magazine "Free thought XXI". M.: Ladomir, 2005. [In Russian].

<sup>7</sup> Irwin, D. Free Trade under Fire / Douglas A Irwin // Fourth Edition. Princeton university press, Princeton and Oxford, USA. — 2015.

<sup>8</sup> Kalchenko, T., Global Economy: *The Methodology of System Studies monograph*. K.: KNEU, 2006. [In Ukrainian].

<sup>9</sup> Krugman, P. Maurice Obstfeld, Marc J. Melitz. International Trade: Theory and Policy. / Paul R. Krugman // Princeton University, Maurice Obstfeld, University of California, Marc J. Melitz, Harvard University. — 10th edition, USA. — 2015

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<sup>10</sup> Lukianenko, D.G., Poruchnik, A.M., Stolyarchuk, Ya. M. International Economics: Textbook. Kyiv: KNEU, 2014. [In Ukrainian].

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<sup>12</sup> Pomfret, R. International Trade: Theory, Evidence and Policy / Richard Pomfret // World Scientific Publishing Co. Pte. Ltd., USA, London. — 2016.

<sup>13</sup> Poruchnik, A.M., Stolyarchuk, Y.M. "Global Imperatives of the Transnationalization of National Economies". Formation of a Market Economy: Sb. sciences etc. Edited by O. Belyaev, Kyiv: KNEU, no. 21, (2009): 257-278. [In Ukrainian].

<sup>14</sup> Sidenko, S.V., "Problems of Ukraine's Cooperation with the European Union: The Social Aspect". International Economic Cooperation of Ukraine (legal issues): materials of international relations. sci. pract. conf. Edited by Opryshko, V.F., Kyiv: KNEU, (2004): 114-122. [In Ukrainian].

<sup>15</sup> Pamela J. Smith. Global Trade Policy: Questions and Answers. 1st edition, Wiley Blackwell, USA. — 2014

<sup>16</sup> Grossman, G. Innovation and growth in the global economy / Grossman Gene M., Helpman, Elhanan// MIT press, 1993.

<sup>17</sup> Hart-Landsberg, M. "Neoliberalism." Myths and Reality, 2007.[http://www.ukrstat.gov.ua/operativ/operativ2008/zd/dseip/dseip2007\\_u.htm](http://www.ukrstat.gov.ua/operativ/operativ2008/zd/dseip/dseip2007_u.htm).

<sup>18</sup> Filippenko, A., Filippenko, V. "Theory of International Economic Integration." European Integration: Experience of Poland and Ukraine: Count. Monograph. Eastern Europe. nats Uni of the name of Lesia Ukrainka, Rada Center. region of independent self-government. prof. Union "Solidarity"; Edited by N. V. Pavlyh. — Lutsk ; Lublin: Drukarnia Kolor Lublin, (2013): 349-358. [In Ukrainian].

<sup>19</sup> Tsygankova, T. Dominants of Ukraine's foreign trade intellectualization // Tetiana Tsygankova, Oleksandr Iatsenko/ Management Theory and Studies for Rural Business and Infrastructure Development. eISSN 2345-0355. 2018. Vol. 40. No. 2: 274–282. Article DOI: <https://doi.org/10.15544/mts.2018.26> <http://mts.asu.lt/mtsrbid/article/view/1126/1112>; UNCTADstat. Mode of access: <http://unctadstat.unctad.org/EN/>

<sup>20</sup> Shvidanenko, O., Savchenko, I.A., "Modern tools of the system of regulation of competitive relations of the subjects of the global market." Business Economics: Theory and Practice = Economy of enterprise: theory and experience: Sb. materials V International sci. pract. Conf., Kyiv: KNEU, Oct. 10 (2014): 327-330. [In Ukrainian].

etc. The unevenness and asymmetry of global economic development were studied by N. Kravchuk<sup>21</sup>, M. Spence<sup>22</sup>, M. Ya. Stoliarchuk<sup>23</sup>; etc. Issues related to the study of threats and opportunities of cooperation between Ukraine and the EU were studied by: I. Burakovskiy<sup>24</sup>, V. Heits<sup>25</sup>, O. Holovachova, M. Emerson<sup>26</sup>, T. Zinchuk<sup>27</sup>, O. Ostashko<sup>28</sup>, S. Kvasha<sup>29</sup>, I. Klymenko<sup>30</sup>, T. Melnyk<sup>31</sup>, V. Movchan<sup>32</sup>, N. Karasov<sup>33</sup>, V. Chuzhykov<sup>34</sup>, etc.

The trade and economic cooperation between Ukraine and the EU has passed a long period of formation, and a retrospective excursion shows that

<sup>21</sup> Kravchuk, N.Ya. "Asymmetries and imbalances of global development: the ideological, theoretical and fundamental principles of research." *International economic policy*, no. 1-2, (2011): 170-210. [In Ukrainian].; Lutsyshyn, Z. O., Kravchuk, N. Ya. "System determinants of modern gravitational processes in the geoeconomic space". *International economic policy*, no. 2, (2015): 29-49. [In Ukrainian].

<sup>22</sup> Spence M. *Job Market Signaling* //Quarterly Journal of Economics. – 1973. – Vol. 87 (3). – P. 355–374. <http://www-bcf.usc.edu/~shaddin/cs590fa13/papers/jobmarketsignaling.pdf>

<sup>23</sup> Anti-cyclical regulation of a market economy: the globalization perspective: monograph [D. G. Lukianenko, A. M. Poruchnik, Y. M. Stolyarchuk and others.]; Edited by D.G. Lukyanenko and A.M. Poruchnik; Ministry of Education and Science of Ukraine, K: KNEU, 2010. [In Ukrainian].

<sup>24</sup> "Association Agreement between Ukraine and the EU." Ministry of Foreign Affairs of Ukraine, 2018. <https://mfa.gov.ua/ua/about-ukraine/european-integration/ua-eu-association>. [In Ukrainian].

<sup>25</sup> Geits, V.M., "Evaluation of the impact of the Association Agreement / FTA between Ukraine and the EU on the Ukrainian economy": scientific report. Edited by National Academy of Sciences of Ukraine V.M.Geits, Corr. NAAS of Ukraine, Dr. Econ. T.O.Ostashko, Corr. NAS of Ukraine, Dr. Econ. Sciences Shynkaruk L.V.; National Academy of Sciences of Ukraine, Institute of Economics and Prognosis of the National Academy of Sciences of Ukraine. – K., 2014. [In Ukrainian].

<sup>26</sup> Emerson, M., Movchan, V. "Ukraine and Europe." Center for European Political Studies (CEPS), Brussels; Institute for Economic Research and Policy Consulting (IER), Kyiv, 2016. [http://www.3dcftas.eu/system/tdf/ua\\_brochure\\_EU\\_UKR\\_1.pdf?file=1&type=node&id=258&force=](http://www.3dcftas.eu/system/tdf/ua_brochure_EU_UKR_1.pdf?file=1&type=node&id=258&force=). [In Ukrainian].

<sup>27</sup> Zinchuk, T.O., Problems of adaptation of the agrarian sector of the economy to the conditions of the EU-Ukraine Free Trade Agreement, 2015. [http://ir.znau.edu.ua/bitstream/123456789/2482/1/Ec%20APK\\_2015\\_5\\_79-87.pdf](http://ir.znau.edu.ua/bitstream/123456789/2482/1/Ec%20APK_2015_5_79-87.pdf). [In Ukrainian].

<sup>28</sup> Ostashko, T. O. "Markets of agricultural goods under the influence of expected changes in trade regimes." *Economy and Forecasting*, no. 3, (2013): 105-115. [http://nbuv.gov.ua/UJRN/econprog\\_2013\\_3\\_9](http://nbuv.gov.ua/UJRN/econprog_2013_3_9) [in Ukrainian].

<sup>29</sup> Kvasha, S.M., "The signing of the Association Agreement between Ukraine and the European Union: Challenges and Prospects. NSC". Institute of agrarian economy, 2014. [fem.sumdu.edu.ua/.../presentation\\_2014\\_last.p](http://fem.sumdu.edu.ua/.../presentation_2014_last.p). [In Ukrainian].

<sup>30</sup> Klymenko, IV "Risks of the European Integration Project: Challenges and Opportunities for Ukraine", K. : NISS, 2014. <http://www.niss.gov.ua/articles/1003/>. [In Ukrainian].

<sup>31</sup> Melnyk, T., Holovachova, O. "Regulatory foreign economic policy in the field of agroindustrial complex: domestic and foreign experience." *Economic Annals-XXI*, 3- 4(2), (2015): 12-16. [in Ukrainian].

<sup>32</sup> "Association Agreement between Ukraine and the EU." Ministry of Foreign Affairs of Ukraine, 2018. <https://mfa.gov.ua/ua/about-ukraine/european-integration/ua-eu-association>. [In Ukrainian].

Emerson, M., Movchan, V. "Ukraine and Europe." Center for European Political Studies (CEPS), Brussels; Institute for Economic Research and Policy Consulting (IER), Kyiv, 2016. [http://www.3dcftas.eu/system/tdf/ua\\_brochure\\_EU\\_UKR\\_1.pdf?file=1&type=node&id=258&force=](http://www.3dcftas.eu/system/tdf/ua_brochure_EU_UKR_1.pdf?file=1&type=node&id=258&force=). [In Ukrainian].

<sup>33</sup> Yatsenko, O., Nitsenko, V., Karasova, N., James, H.S.Jr., & Parcell, J.L. "Realization of the potential of the Ukraine– EU free trade area in agriculture". *Journal of International Studies* 10, no. 2 (2017): 258-277. doi:10.14254/2071-8330.2017/10-2/18 c. 258-2777. doi:10.14254/2071- 8330.2017/10-2/18

<sup>34</sup> Regional Policy of the European Union : Textbook. Edited by Chuzhikov. V.I., Kyiv: KNEU, 2016. [In Ukrainian].

the transition of the system to a qualitatively new stage of development is accompanied by transformations. Regional trade integration provides new opportunities for the development of national economies, and at the same time deepens the existing asymmetries. The aim of the study is to predict and determine the effectiveness of using the potential of economic cooperation and to define the asymmetries of trade integration of Ukraine and the EU. The choice of the research topic, its logic and structure were determined by the relevant provisions.

### **Retrospective of the Formation of Trade and Economic Cooperation between the Countries**

Negotiations on a new basic agreement between Ukraine and the EU to replace the valid Partnership and Cooperation Agreement began in March 2007 (in 2008, the parties agreed on the name of the future transaction – the Association Agreement). On November 11, 2011, the final twenty-first round of negotiations on the conclusion of the Association Agreement took place in Brussels, at which all provisions of the text of the Agreement were agreed on<sup>35</sup>.

The Association Agreement was concluded with the aim of modernizing the institutional framework of cooperation between Ukraine and the EU, which was meant to contribute to the deepening of relations in all spheres, simultaneously strengthening political association and economic integration on the basis of mutual rights and obligations. The negotiation process between Ukraine and the EU began in 2008 following Ukraine's membership in the World Trade Organization (WTO). In 2011, the final twenty-first round of negotiations took place in Brussels, at which all the provisions of the text of the Agreement were agreed on, and the Association Agreement was initialled in March 2012, that is, all conditions were technically harmonized. The Association Agreement between Ukraine, on the one part, and the European Union and its member states, on the other part, allowed the parties to move from partnership and cooperation to political association and economic integration. On March 21, 2014, the political part of the Association Agreement was signed, followed by the economic part of the Agreement on June 27, 2014, which enabled the operation of a free trade zone. The EU's decision to abolish and reduce 98% of customs tariffs for the export of Ukrainian products came into force on April 22, 2014. On September 16, 2014, the Association Agreement between Ukraine and the EU was ratified by the Verkhovna Rada and the European Parliament. The Association Agreement,

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<sup>35</sup> "Association Agreement between Ukraine and the EU." Ministry of Foreign Affairs of Ukraine, 2018. <https://mfa.gov.ua/ua/about-ukraine/european-integration/ua-eu-association>. [In Ukrainian].

containing the provisions of the Deep and Comprehensive Free Trade Area (DCFTA) Agreement, entered into force in full on September 1, 2017, although some of its parts have been provisionally applied from November 1, 2014, and the provisions of the DCFTA Agreement – from January 1, 2016. Thus, the introduction of a free trade regime with promising trade and economic partners allows Ukraine to diversify the geography and nomenclature of national exports in the long term.

### **Key Provisions of the Association Agreement between Ukraine and the EU**

In the Association Agreement, two main objectives are clearly defined: first, a political component of integration for the purpose of subsequent accession to membership in the EU, and second, an economic component. Article 1 of the economic integration goal assumes the “introduction of conditions for strengthening economic and trade relations leading to the gradual integration of Ukraine into the EU internal market”, including through the creation of an in-depth and comprehensive free trade area (DCFTA). This goal also provides support for Ukraine’s efforts to complete the transition to a market economy, also by gradually adapting its legislation to the EU law. In this regard, the dominant component of the Agreement is its economic part for the implementation of the integration processes.

The Association Agreement between Ukraine, on the one part, and the European Union and its member states, on the other part, consists of about 2000 pages: Preamble, 7 main sections, 43 annexes and 3 protocols. The Agreement consists of the following 7 sections: I. General Principles; II. Political Dialogue and Reforms, Political Association, Cooperation and Convergence in the Field of Foreign Policy and Security; III. Justice, Freedom and Security; IV. Trade and Trade Issues; V. Economic and Sectoral Cooperation; VI. Financial Cooperation and Anti-Fraud Regulations; VII. Institutional, General and Final Provisions.

The economic content of the reforms is embedded in the economic parts of this Agreement (Sections IV and V), namely, the FTA Agreement, which will have a positive impact on the development of trade and will create prerequisites for competition and expanding the presence of Ukrainian producers in European markets, undoubtedly contributing to trade economic integration. Provisions of Section IV “Trade and Trade Issues” defines the “in-depth and comprehensive free trade zone” Ukraine-EU. This section is the largest and accounts for 2/3 of the total volume of the main part. The DCFTA envisages the liberalization of trade in goods, services, capital movements and certain aspects of the labor movement. The section is devoted to the definition

of the terms of trade and the application of trade policy instruments, namely, the abolition of duties, fees and other payments, non-tariff measures, technical barriers, including labeling, sanitary and phytosanitary measures, in particular, certification procedures and protective measures, as well as specific provisions on goods, administrative cooperation and cooperation with third countries, protective trade measures (specific protective measures, anti-dumping and countervailing measures), etc. A distinct feature of the DCFTA of countries is a comprehensive program for adaptation of regulatory standards in the areas related to trade to relevant EU standards, which is designed to provide mutual enhanced access to the EU and Ukraine's internal markets and to level non-tariff (technical) barriers to trade.

In turn, Section V "Economic and Sectoral Cooperation" contains provisions on trade and economic cooperation in the fields of energy, public finance management, taxation, statistics, agriculture and rural development, environment, transboundary and regional cooperation, transport, space, science and technology, industry and business policies, mining and metallurgical industry, financial services, legislation on the establishment and activities of companies, information society, tourism, consumer protection, education and training, culture, participation in programs and agencies of the European Union, etc. It should be noted that Chapter 17 "Agriculture and Rural Development" refers to the cooperation of countries in the development of agriculture and rural areas. Cooperation should promote sustainable agricultural production, however, in view of the protection of the environment and animals, in particular through the spreading of organic production methods; improving the competitiveness of the agricultural sector, efficiency of markets, conditions for investment; promotion of agricultural products quality policy, etc. Section IV of the Association Agreement provides for the gradual creation of a free trade zone during the transition period of a maximum of 10 years, starting from the date of entry of this Agreement into force.

### **Modernization of Trade Policies of Countries in the Process of Trade Integration**

Ukraine carries out foreign trade operations with partners from 226 countries around the world, including exports of goods and services – to up to 198, and imports from 207 countries. The subjects of foreign economic activity (enterprises), which carried out foreign trade in export, amounted to 15.6 thousand units, and to 24.9 thousand units in import<sup>36</sup>. When studying the features of trade and economic cooperation

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<sup>36</sup> Statistical collection "Ukraine's foreign trade in goods and services in 2016". State Statistics Service of Ukraine, 2017. [http://www.ukrstat.gov.ua/druk/publicat/kat\\_u/publ110\\_u.htm](http://www.ukrstat.gov.ua/druk/publicat/kat_u/publ110_u.htm). [In Ukrainian].

of countries, it should be noted that the EU is actively and dynamically developing and maintaining relations with Ukraine. The share of EU countries in 2017 increased and amounted to 40.0% in exports and 43.8% in imports compared to 2016. Foreign trade turnover between Ukraine and the EU countries amounted to 38,3 billion US dollars in 2017, including exports – 17,5 billion US dollars and imports – 20.8 billion US dollars. The trade turnover increased by 22.5% compared with 2016: goods grew by 25.1%, services – by 7.5%. Total exports grew by 26.7%, including goods by 29.9%, and services by 10.8%. Total imports grew by 19.1%, incl. goods by 21.3%, and services by 3.4%. Identification of the main groups of goods and services in the export and import nomenclature of foreign trade of Ukraine and the EU with the definition of the geographical structure is of some interest. We focus attention in each category only on five main groups with the aim of a better understanding of trends and determining trade dominants. We can distinguish the top 5 product groups, exported to the EU by Ukraine in 2017: ferrous metals – 19.9%, electrical machinery and equipment – 11.9%, grain crops – 9.5%, fats and oils of animal or vegetable origin – 8.9%, ores, slags and ash – 7.1%, other – 42.6%. It should be noted that the growth of exports to the EU in 2017 led to a positive impact on the growth of real GDP of Ukraine. The share of processed products also increased in the reporting year, and its share was 7,6 billion US dollars (43 %) of exports to the EU.

With regard to goods imported by Ukraine from the EU in 2017, they are dominated by energy materials, oil and its distillation products – 14.6%, boilers, machines, devices and mechanical devices – 14.2%, ground vehicles, excl. rail transport – 10.4%, electrical machinery and equipment – 7.6%, pharmaceutical products – 6.2%, other – 47.0%. Regarding the geographical component, the share of EU countries in trade with Ukraine was: Germany – 18.8%, Poland – 16.1%, Italy – 10.7%, Hungary – 6.5%, the Netherlands – 6.1%, France – 5.2%, Spain – 4.8%, Czech Republic – 4.1%, Romania – 3.4%, UK – 3.3%, others – 21.1%.

When defining the main groups of services that Ukraine exported to the EU for the relevant period, we can note that transport services dominated – 36.9%, processing services for material resources – 24.7%, telecommunications services, computer and information services – 19.0%, business services – 12.7%, repair and maintenance services – 2.1%. Analysis of the corresponding indicator on imports of Ukraine from the EU in 2017 allows us to note the dominance of the following groups: transport services – 26.7%, business services – 17.2%, travel services – 12.3%, royalties and other services related with the use of intellectual property – 12, 1%, services related to financial activities – 10.2%. The share of EU countries in the trade in services in Ukraine is represented by the following



countries: UK – 18.4%, Germany – 15.3%, Cyprus – 8.5%, Poland – 7.2%, the Netherlands – 4.8%, Austria 4, 6%, Malta – 3.4%, France – 3.3%, Estonia – 3.2%, Hungary – 2.9%, others – 29.6%<sup>37</sup>.

It should be noted that, in relation to Ukraine with the EU, the top 5 import and export groups of goods and services fully coincide with the top 5 import and export groups of goods and services in the structure of Ukraine's trade with other countries of the world<sup>38</sup>.

When analyzing the transformation of trade policy as a result of the implementation of the deep and comprehensive free trade zone (DCFTA), we can note the first results of the introduction of the Association Agreement between Ukraine and the EU for the national economy. The first dominant is the growth of commodity turnover between the countries and the growing share of European countries in the structure of foreign trade of Ukraine. For the first time since 2014, the EU's share in 2017 exceeded 40% of Ukraine's total merchandise exports, and the corresponding transformations could be seen as well, so the share of EU countries increased in comparison with 2015 and comprised 37.1% in exports, and in imports – 43.7% (31.5% and 38.7% in 2014).

In determining the features of the transformation of trade policy for the past four years, when the free trade zone with the EU was de facto introduced for the Ukrainian exporters, we recall that the de jure provisional application of section IV of the Association Agreement began only on January 1, 2016. However, the EU autonomous trade preferences entered into force from the end of April 2014, providing access to the European market for Ukrainian goods under the same conditions as within the framework of the deep and comprehensive free trade zone.

Reducing import duties is the main starting point for creating a free trade zone. The DCFTA has almost completely liberalized trade in goods between Ukraine and the EU, however, with a significant asymmetry, since the EU has already abolished import duties for most goods immediately, while Ukraine will be opening the market for many commodities within three to seven years. This is a unique opportunity for Ukrainian manufacturers to increase their exports to the EU market before the competition becomes full-fledged on the domestic market. However, for many agricultural products, duty-free trade remained limited due to the existence of tariff quotas.

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<sup>37</sup> Statistical collection "Ukraine's foreign trade in goods and services in 2016". State Statistics Service of Ukraine, 2017. [http://www.ukrstat.gov.ua/druk/publicat/kat\\_u/publ10\\_u.htm](http://www.ukrstat.gov.ua/druk/publicat/kat_u/publ10_u.htm). [In Ukrainian].

"Indicators of Ukraine's trade with the EU in 2017." Ministry of Economic Development and Trade of Ukraine, 2018. <http://www.me.gov.ua/Documents/Detail?lang=uk-UA&id=dd1eba41-9aeb-433e-97b2-5acce57561f&title=PokaznikiTorgivliUkrainiZsZa2017-Rik> [In Ukrainian].

<sup>38</sup> Trade structure of international trade State Statistics Service of Ukraine, 2018. [http://www.ukrstat.gov.ua/operativ/operativ2016/zd/tsztt/tsztt\\_u/tsztt1216\\_u.htm](http://www.ukrstat.gov.ua/operativ/operativ2016/zd/tsztt/tsztt_u/tsztt1216_u.htm); [In Ukrainian]

"Dynamics of the structure of export-import of services." State Statistics Service of Ukraine, 2018. [http://www.ukrstat.gov.ua/operativ/operativ2008/zd/dseip/dseip2007\\_u.htm](http://www.ukrstat.gov.ua/operativ/operativ2008/zd/dseip/dseip2007_u.htm) [In Ukrainian]

However, these are not a key restriction of Ukrainian exports to the EU, until EU food safety standards are introduced<sup>39</sup>.

When analyzing market access, it should be noted that the reduction of duties or their cancellation stimulates bilateral trade, however, the harmonization of legislation is usually prolonged in time and the consequences become apparent later. Thus, the commodity structure of Ukraine's exports to the EU has remained constant in recent years, despite the annexation of the Crimea and military operations in the east of the country. However, the reduction in EU import duties has not lead to striking changes in the structure of foreign trade. Experts attribute this to the fact that those manufacturers who have already exported to the EU primarily benefited from the reduction in duties<sup>40</sup>. It is noted that structural changes in the national economy are going to be more noticeable only after a few years, because the establishment of new connections and the promotion of new products requires additional time, most often 4-5 years. In this context, trade asymmetries can be seen. The current structure of exports and imports shows a technological disproportion dangerous for Ukraine: raw materials imports from Ukraine and high-tech exports of the EU; maintaining a negative balance in foreign trade for most groups of goods; limited access of domestic business to the European markets.

Regarding the study of import duties, according to the Ministry of Economic Development and Trade, within the framework of autonomous trade preferences, the EU duties were zeroed by 94.7% of the commodity range of industrial goods, the EU abolished duties for 83.4% of agricultural goods and food industry products, and tariff quotas came into force for 15.9%. The latter is interpreted as a ban on export, that is, if the tariff quota is exceeded, a fee is applied. In accordance with the calculations of the Institute for Economic Research and Political Consultation (IEI), the average duty rate for Ukrainian goods fell from 4.9% to 0.5%, and the weighted average – from 5.0% to 2.6%<sup>41</sup>.

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<sup>39</sup> Emerson, M., Movchan, V. "Deepening EU-Ukrainian Relations" Center for European Policy Studies (CEPS), Brussels Institute for Economic Research and Policy Consulting (IER), Kyiv; Rowman & Littlefield International, London, 2016. <http://www.3dcftas.eu/system/tdf/Ukraine%20eversion%20with%20covers.pdf?file=1&type=node&id=242&force=>

Emerson, M., Movchan, V. "Ukraine and Europe." Center for European Political Studies (CEPS), Brussels; Institute for Economic Research and Policy Consulting (IER), Kyiv, 2016. [http://www.3dcftas.eu/system/tdf/ua\\_brochure\\_EU\\_UKR\\_1.pdf?file=1&type=node&id=258&force=](http://www.3dcftas.eu/system/tdf/ua_brochure_EU_UKR_1.pdf?file=1&type=node&id=258&force=). [In Ukrainian].

<sup>40</sup> What has changed in the Ukrainian economy from the Association Agreement. European truth, 2017. <https://www.eurointegration.com.ua/articles/2017/05/18/7049377/> [In Ukrainian].

<sup>41</sup> Project "Understanding Association Agreements between the EU and Ukraine, Moldova and Georgia". Institute for Economic Research and Policy Consulting, 2018. <http://www.ier.com.ua/ua/3dcftas>. [In Ukrainian].

Status of implementation of the EU-Ukraine Association Agreement: Trading Part. Ministry of Economic Development and Trade of Ukraine, 2017. file:///D:/2ТВ/2.%20Старий/OLD%20Е/1%20Мой%20ПУБЛІКАЦІЇ/ 2.%20ВАК-кі%20публ/1.%20ВАК-кі/2018\_МЕП\_Белажентас\_я/все/ресурси/HPP\_1910Final\_NM.pdf. [In Ukrainian].

From 2016, Ukraine reduced the average import duty on industrial goods from 3.8% to 1.1%, and from 8.6% to 5.6% on agricultural and food products. In general, a reduction and zeroing of fees affected 70% of the commodity nomenclature. In subsequent years, duties on manufactured goods will gradually decrease to zero, but remain non-zero for private agricultural products. Also, Ukraine will apply tariff quotas to three products – two types of meat and sugar.

The largest decrease occurred in the field of agriculture and light industry. However, the abolition of duties does not mean an automatic improvement of market access for certain goods, as the issue regarding the fulfillment of product safety requirements is actualized. At the same time, duties on certain commodity items, such as shoes, hats; products made of stone, gypsum, etc.; products of plant origin and vehicles, etc. have been preserved, but there will be a smooth reduction of duties on these goods in the future. First, it should be noted that the initial conditions for the creation of an FTA between the EU and Ukraine are asymmetrical and even discriminatory towards Ukraine. The EU is characterized by a large number of specific and combined import duty rates, while the import duty rates in Ukraine are predominantly *ad valorem*. In contrast to Ukraine, the EU applies a complex structure of combined import duty rates and the input price system. In addition, the EU uses export subsidies and special protective measures for agricultural products, which Ukraine is not entitled to. However, it should be noted that the agricultural sector plays a much more important role for the economy of Ukraine than for the EU countries.

The issue of tariff quotas was also part of the arrangements within the framework of the Agreement. Within the tariff quotas, zero import duty rates are provided, and the same tariffs that were in force prior to conclusion of the Association Agreement are applied outside of their volumes. Thus, there are 36 categories of goods to which the EU applies tariff quotas, in particular a number of products of animal origin (meat, honey, etc.); plant products (grain, mushrooms, garlic, etc.); several items of finished food and other products, such as sugar, juice, processed tomatoes, ethanol and cigarettes. These goods are sensitive for the EU and are usually exempt from the liberalization regime when concluding free trade agreements, that is, they fall under the general tax regime for customs clearance. At the same time, Ukraine now has the opportunity to import certain volumes of these goods without import duties as a result of negotiations. In this case, we are talking not about limiting the volume of imports, but only about the fact that the import of these goods over and above a certain volume should be subject to the general import regime, that is, be taxed under the same conditions that apply to Ukraine today. These circumstances will

contribute to the growth of exports of goods, growth in exports of agricultural and food products may be the most noticeable. The process of gradual liberalization of trade will last ten years, although there are long transition periods for some Ukrainian goods.

In the face of increasing neo-protectionism, non-tariff barriers play an important role in the development of trade and economic cooperation. One of the most important aspects of the DCFTA is the convergence of the regulatory systems of Ukraine and the EU, which will lead to a significant reduction in non-tariff barriers to trade. Arrangements of the countries concern improvements in customs operations; harmonization of the technical regulation system; standardization, metrology, conformity assessment and market surveillance systems; sanitary and phytosanitary measures; enhancing intellectual property rights.

### **Prospects and Effectiveness of Trade Integration of Ukraine and the EU**

To assess the effectiveness of using the potential of economic cooperation between countries, the gravity model is often used as a common econometric model. This model was first proposed by J. Tinbergen in 1962. The author suggested that there is a relationship between the trade turnover of countries and the size of their economies and showed this dependence in the form of equation 1.1<sup>42</sup>:

$$F_{ig} = G \frac{M_i^\alpha M_j^\beta}{d_{ij}^\delta} \varepsilon_{ij}, \quad (1.1)$$

where  $F_{ig}$  – trade turnover between countries  $i$  and  $j$ ,

$M_i$  and  $M_j$  – gross domestic product of countries  $i$  and  $j$ ,

$d_{ij}$  – factor of trade expenses, including logistics costs,

$\varepsilon_{ij}$  – all other factors that affect the turnover, but not included in the equation,

$\alpha, \beta, \delta$  – constants (model parameters).

Despite the difficulties with the theoretical substantiation of the model, which has long been tackled by such economists with a worldwide reputation as E. Helpman and P. Krugman, D. Bergstrand, D. Eaton and S. Kortum, D. Anderson and E. van Vinkup and others, the gravity equation turned out to be one of the most stable and reliable empirical predicted patterns in the economy and still remains relevant

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<sup>42</sup> Nasadiuk, I.B. “Gravitational model of international economic relations of Ukraine” Bulletin of Social and Economic Research 44, no. 1, (2012): 94-99. [In Ukrainian].

today<sup>43</sup>. The main idea of the model is based on Newton's law of universal attraction, where the mass of the Earth is replaced by the gross domestic product of the partner countries. That is, trade between the two countries is directly proportional to the size of their economies and inversely proportional to the distance between them.

Due to its empirical accuracy, the gravity model has become widely used in economic science and has received many interpretations. Thus, the gravity equation is expressed by formula 1.2 in its logarithmic form:

$$\ln(F_{ij}) = \beta_0 + \beta_1 \ln(M_i) + \beta_2 \ln(M_j) + \beta_3 \ln(D_{ij}) + \varepsilon_{ij}, \quad (1.2)$$

A distinctive feature of this model is that it allows to add qualitative variables, such as affiliation of the countries to a specific integration group, signing of agreements on free trade zones between countries or others. In connection with the foregoing, based on a detailed analysis of the applications, capabilities and limitations of such models, it is proposed to apply the toolkit of gravity models for evaluating the effectiveness of trade cooperation between Ukraine and the EU taking into account the signing of the Association Agreement between Ukraine and the EU and the entry into force of its economic part, namely, the Free Trade Area between Ukraine and the European Union, from January 1, 2016.

The equation of the gravity model, taking into account the qualitative variables, can be presented as 1.3:

$$\ln(F_{ij}) = \beta_0 + \beta_1 \ln(M_i) + \beta_2 \ln(M_j) + \beta_3 \ln(D_{ij}) + \beta_4 DUMMY_{ij} + \varepsilon_{ij}, \quad (1.3)$$

where  $F_{ij}$  – trade turnover between countries  $i$  and  $j$ ,

$M_i$  and  $M_j$  – gross domestic product of countries  $i$  and  $j$ ,

$d_{ij}$  – factor of trade expenses, including logistics costs,

$DUMMY_{ij}$  – dummy variable of countries belonging to a particular group,

$\varepsilon_{ij}$  – all other factors that affect the turnover, but not included in the equation,

$\alpha, \beta, \delta$  – constants (model parameters).

In order to evaluate the parameters of this model, the statistical data of the EU and Ukraine for the period 1999-2017 were used. The GDP of the EU and GDP of Ukraine respectively were selected as  $M_i$  and  $M_j$  indicators. To measure the distance between countries in this model, various indicators were selected, depending on the objectives and the factual base of the study. This may be either a geographical distance, or

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<sup>43</sup> Polyakova, O. Yu., Shlikova, V.O., "Modeling changes in foreign trade relations in the context of the enlargement of the European Union." Problems of Economics, no. 1, (2014): 330-336. <http://nbuv.gov.ua/UJRN/Pekon-2014-1-50> [In Ukrainian].

the cost of transporting goods, or the level of privacy of the domestic markets of countries to import each other's goods using protectionist tools. In this case,  $D_{ij}$  is world average annual oil prices, as their fluctuations change the cost of transportation. To determine how trade in countries is affected by the Free Trade Agreement between Ukraine and the EU, we used the DUMMY variable. DUMMY is 0 prior to 2015 and 1 from 2016 (Table 1).

*Table 1* **BASIC SOURCE DATA FOR BUILDING GRAVITY MODEL 1 FOR AGRICULTURAL AND NON-AGRICULTURAL PRODUCTS (commodity groups from 01 to 97 under UKT ZED (Sections I – XXI))<sup>44</sup>**

Year	Foreign Trade Turnover Ukraine – EU, million US dollars	EU GDP, million US dollars	Ukraine's GDP, million US dollars	Oil prices, US dollars / barrel
1999	4513.5	9590851	31581	17.9
2000	5235.6	8912444	31262	28.4
2001	8542.7	9009860	38009	24.45
2002	11834.2	9822705	42393	25.01
2003	15631.3	11957244	50133	28.83
2004	20557	13806711	64883	38.1
2005	22425.3	14441217	86142	54.38
2006	28282.5	15405420	107753	65.14
2007	36135.1	17795827	142719	72.52
2008	46997.9	19136673	179992	96.99
2009	24892	17101457	117228	61.51
2010	32153.1	16992731	136013	79.47
2011	43722.9	18352576	163160	111.27
2012	43237.7	17290202	175781	111.63
2013	43805.1	18026765	183310	108.56
2014	38072	18632311	133503	99.03
2015	28345.4	16411317	91031	52.35
2016	30637.1	16491323	93270	43.55
2017	38332.8	16970000	109320	54.25

<sup>44</sup> Official site of the State Statistics Committee of Ukraine. <http://www.ukrstat.gov.ua/> [In Ukrainian]. UNCTADstat. <http://unctadstat.unctad.org/EN/>

As a result of the calculations, the equation of Tinbergen's gravitational model describing the dynamics of Ukraine's foreign trade turnover with the EU for the period 1999-2017, was obtained:

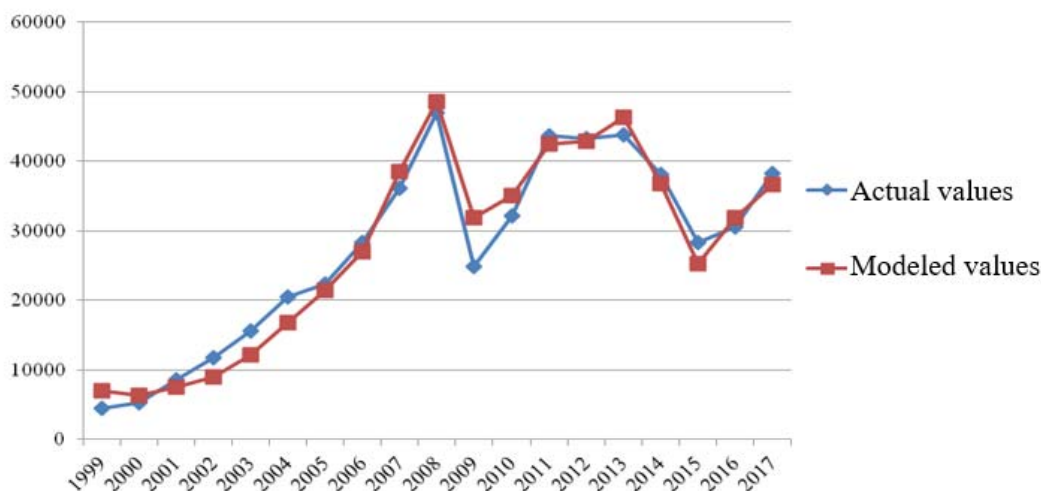
$$\ln(F_{ij}) = -13,902 + 0,887 \ln(M_i) + 0,848 \ln(M_j) - 0,096 \ln(D_{ij}) + 0,194 DUMMY_{ij}.$$

The results of the regression analysis confirmed the hypothesis of the presence of a direct connection between the foreign trade turnover of the partner countries and their gross domestic product and the feedback between the foreign trade turnover and transportation costs. Verification of the model using the Fisher's ratio showed that the model is statistically significant (Table 2).

Table 2 KEY RESULTS OF MODEL 1

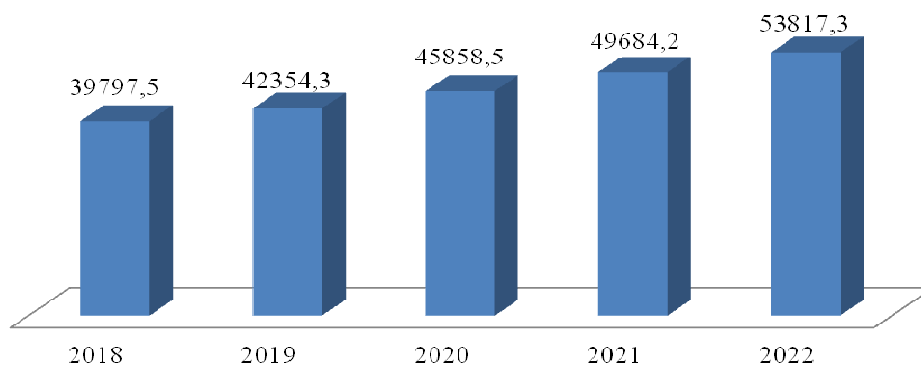
Indicator	Value
$\beta_0$	-13,902
$\beta_1$	0,887
$\beta_2$	0,848
$\beta_3$	-0,096
$\beta_4$	0,194
R <sup>2</sup>	0,942
R	0,971
Fact.	56,84
Fcrit. (0,05)	2,90

The economic interpretation of this model suggests that with an increase in EU GDP by 1 US dollar, bilateral trade increases by 0,887 US dollars; with an increase in Ukraine's GDP by 1 US dollar, foreign trade turnover of the countries increases by 0,848 US dollars; increase in oil prices by 1 US dollar results in a decrease in turnover by 0,096 US dollars; entry into force of the Free Trade Agreement agreement, in turn, increases the foreign trade turnover by 0,194 US dollars per US dollar of the foreign trade turnover. The determination coefficient is close to 1, therefore, it approximates the data well and indicates a significant level of explanation for the causal relationships of the proposed model. For visual image, Foreign Trade Turnover of Ukraine and the EU in 1999–2017 was modelled (Fig. 1).



**Fig. 1.** Actual and Modeled Values of the Foreign Trade Turnover of Ukraine and the EU for Agricultural and Non-agricultural Products, million US dollars<sup>45</sup>

The gravity model allows to predict the volume of bilateral trade for years to come (Fig. 2).



**Fig. 2.** Predicted Commodity Turnover of Ukraine and the EU for Agricultural and Non-agricultural Products, million US dollars<sup>46</sup>

Thus, the modelling of the impact of crisis phenomena in the EU or Ukraine's economy on bilateral trade and economic relations has revealed the significance of each of them. In our case, it was found that

<sup>45</sup> commodity groups from 01 to 97 under UKT ZED (Sections I — XXI).

<sup>46</sup> commodity groups from 01 to 97 under UKT ZED (Sections I — XXI)



bilateral trade between the EU and Ukraine is more elastic than the dynamics of economic growth of EU GDP and less elastic than the dynamics of Ukraine's GDP. The study confirmed that the agreement on the FTA between Ukraine and the EU has already significantly influenced the growth of trade between the countries, and the predicted values for 2018-2022 confirm further increase in trade turnover between the countries. The adequacy of the gravity model was confirmed by the main criteria, so it may be used as the basis for a more extensive study on forecasting the development of bilateral trade.

A similar study for agricultural products is also of some interest (Table 3).

*Table 3* **BASIC SOURCE DATA FOR BUILDING GRAVITY MODEL 2 FOR AGRICULTURAL PRODUCTS**  
 (commodity groups from 01 to 24 under UKT ZED (Sections I – IV)<sup>47</sup>

Year	Foreign Trade Turnover Ukraine – EU, million US dollars	EU GDP, million US dollars	Ukraine's GDP, million US dollars	Oil prices, US dollars / barrel
1999	453.9	9590851.4	31580.6	17.9
2000	526.5	8912444.2	31261.5	28.4
2001	859.1	9009859.8	38009.3	24.5
2002	1190.1	9822705.4	42392.9	25.0
2003	1571.9	11957243.6	50133.0	28.8
2004	2067.3	13806710.8	64883.1	38.1
2005	2255.2	14441217.4	86142.0	54.4
2006	2844.2	15405419.7	107753.1	65.1
2007	3647.1	17795826.8	142719.0	72.5
2008	6183.7	19136672.5	179992.4	97.0
2009	4236.5	17101456.9	117227.8	61.5
2010	4433.4	16992731.2	136013.2	79.5
2011	6061.9	18352575.9	163159.7	111.3
2012	8073.7	17290202.2	175781.4	111.6
2013	8077.4	18026765.0	183310.1	108.6
2014	7352.8	18632310.9	133503.4	99.0
2015	5870.0	16411316.9	91031.0	52.4
2016	6146.9	16491323.1	93270.5	43.6
2017	7660.0	16970000.0	109320.0	54.3

<sup>47</sup> Official site of the State Statistics Committee of Ukraine. <http://www.ukrstat.gov.ua/> [In Ukrainian].

The equation of Tinbergen's gravity model describing the dynamics of Ukraine's foreign trade turnover with the EU in the period of 1999-2017 is as follows:

$$\ln(F_{ij}) = -25,518 + 1,693 \ln(M_i) + 0,358 \ln(M_j) + 0,368 \ln(D_{ij}) + 0,637 DUMMY_{ij}$$

The main results of the model are presented in Table 4. Model verification against the main criteria showed that the model is statistically significant. The determination coefficient is close to 1, so it approximates the data well.

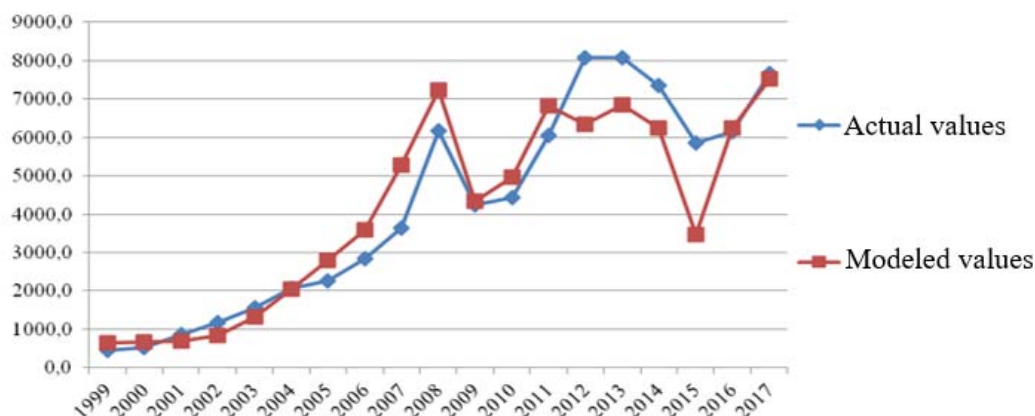
Table 4 KEY RESULTS OF MODEL 2

Indicator	Value
$\beta_0$	-25,518
$\beta_1$	1,693
$\beta_2$	0,358
$\beta_3$	0,368
$\beta_4$	0,637
R <sup>2</sup>	0,933
R	0,966
Fact.	48,37
Fcrit. (0,05)	2,90

This model makes it possible to draw the following conclusions:

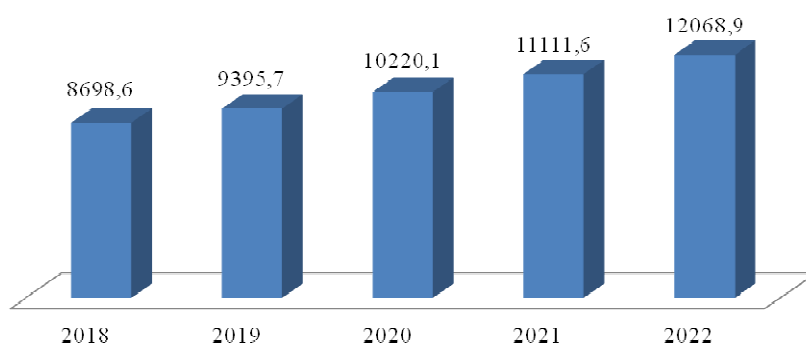
- with an increase in EU GDP by 1 US dollar bilateral trade in goods of agroindustrial complex will increase by 1,693 US dollars;
- with an increase in Ukraine's GDP by 1 US dollar oreign trade turnover of the country by agricultural products will increase by 0,358 US dollars;
- with an increase in oil prices by 1 US dollar bilateral trade in goods of agroindustrial complex will increase by 0,368 US dollars;
- in the presence of the free trade zone between Ukraine and the EU, bilateral trade in goods of agroindustrial complex grows by 0,637 US dollars per US dollar.

For the visual image, the foreign trade turnover of Ukraine and the EU in goods foreign trade turnover was modeled for 1999-2017 (Fig. 3).



**Fig. 3.** Actual and Modeled Values of the Foreign Trade Turnover of Ukraine and the EU for Agricultural Products, million US dollars

By means of the gravity model, the volume of bilateral trade in goods of agroindustrial complex is forecasted for 2018-2022 (Fig. 4).



**Fig. 4.** Predicted Commodity Turnover of Ukraine and the EU for Agricultural Products in 2018-2022, million US dollars

Thus, from the calculations of gravity models of foreign trade turnover, all commodities and goods of the agroindustrial complex, in particular, between Ukraine and the EU, clearly show the significant impact of economic growth of EU GDP. So, with the growth of the EU GDP by 1 US dollar, the foreign trade turnover of all goods will grow by 0,887 US dollars, with the bilateral turnover of the agro commodity products increasing by 1,693 US dollars. Influence of Ukraine's GDP has a much lower impact, which can be explained by the difference in the sizes of the economies of the EU and Ukraine. With the increase of

Ukraine's GDP by 1 US dollar, the foreign trade turnover of the countries increases by 0.848 US dollars, with the bilateral turnover of the agro commodity products increasing by 0.358 US dollars. As for the oil prices, the effect of model 2 is direct, that is, the rise in oil prices contributes to the growth of trade between the countries, although the gravity model assumption's effect is opposite. This phenomenon may be explained by the fact that the countries are at relatively short distances from each other and transportation does not comprise the main part of the costs, which, accordingly, does not have such an importance for the trade turnover between the countries. The dummy indicator of the free trade zone between Ukraine and the EU played an important role in forecasting trade between the countries for 2018-2022, as it is the FTA that allowed Ukraine to increase the volume of exports and imports to the EU in 2016-2017. It is worth noting that the influence of the dummy variable in model 2 is much higher compared to model 1 (0.637 compared to 0.194). This is explained by the fact that the main part of trade preferences belongs to the products of the agroindustrial complex and the total turnover of goods increases due to the considerable growth of turnover of agricultural products.

However, it should be noted that foreign trade in goods of Ukraine is characterized by an excessive share of primary products and a low level of intellectualization of trade relations, marginalizing its role in the development of the world economy. In addition, the legal environment restricts trade digitalization, and inefficient customs procedures burden cross-border trade, leveling the benefits of simplification of its procedures<sup>48</sup>. The cyclically uneven nature of the development of the capitalist market system and the effectiveness of key levers and instruments for the anti-cyclical regulation of the economy, implemented by the trading partner countries, have their effect<sup>49</sup>. Global imperatives, such as: formation of a global market, global monopolization of capital and production, dynamization of technoglobalization, strengthening of regional integration processes, formation of a global information space also play a significant role<sup>50</sup>. In this context, one needs to take into account the peculiarities and dynamics

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<sup>48</sup> Tsygankova, T. Dominants of Ukraine's foreign trade intellectualization // Tetiana Tsygankova, Oleksandr Iatsenko/ Management Theory and Studies for Rural Business and Infrastructure Development. eISSN 2345-0355. 2018. Vol. 40. No. 2: 274-282. Article DOI: <https://doi.org/10.15544/mts.2018.26> <http://mts.asu.lt/mtsrbid/article/view/1126/1112>

<sup>49</sup> Anti-cyclical regulation of a market economy: the globalization perspective: monograph [D. G. Lukianenko, A. M. Poruchnik, Y. M. Stolyarchuk and others.]; Edited by D.G. Lukyanenko and A.M. Poruchnik; Ministry of Education and Science of Ukraine, K: KNEU, 2010. [In Ukrainian].

<sup>50</sup> Poruchnik, A.M., Stolyarchuk, Y.M. "Global Imperatives of the Transnationalization of National Economies". Formation of a Market Economy: Sb. sciences etc. Edited by O. Belyaev, Kyiv: KNEU, no. 21, (2009): 257-278. [In Ukrainian].

of the development of regions in the conditions of global economic asymmetry, the essence of the policy of regional and local development of the EU and Ukraine, their mechanisms and tools<sup>51</sup>. At present, a gradual convergence of regional models of Ukraine and the EU is observed.

In view of the significant difference in the sizes of the economies of the partner countries, we consider it appropriate to conduct a correlation-regressive analysis further and determine whether the export volumes from Ukraine to the EU countries depend on the change in the indicator of the gross domestic product based on the following output data (Table 5).

*Table 5* **OUTPUT DATA ON EXPORTS TO THE EU COUNTRIES AND UKRAINE'S GDP for 2002-2017, million US dollars<sup>52</sup>**

<b>Indicator</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Exports	7358,2	9886,6	12570,8	12001,3	14361,6	16899,4	22248,3	12523,8
GDP	42393	50133	64883	86142	107753	142719	179992	117228
<b>Indicator</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Exports	16168,9	21495,3	20826,2	20954,3	20994,5	15943,1	16501,2	17533,4
GDP	136419	163160	175781	183310	131805	90615	93270	109320

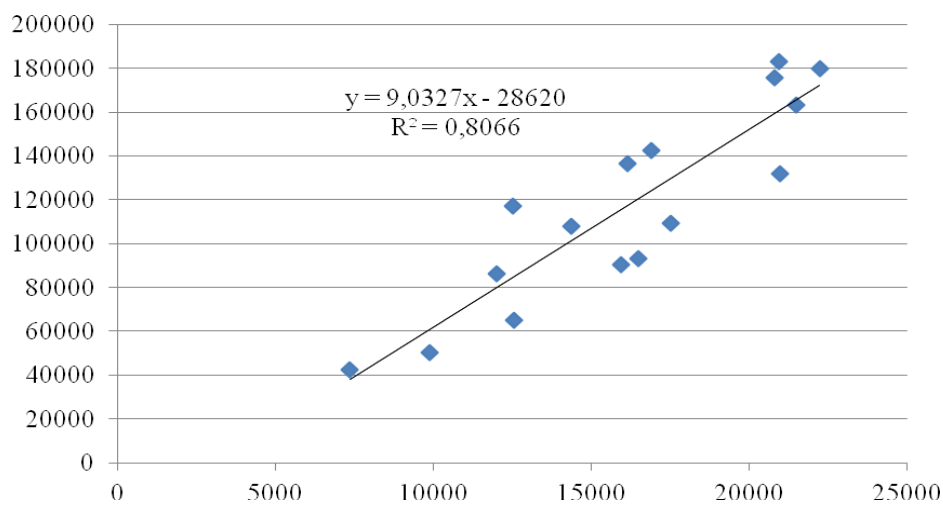
The correlation coefficient ( $r$ ) for a series of sixteen years is 0.898093445. The correlation coefficient is greater than 0, so the relationship between the two indicators is direct, that is, an increase in exports to the EU countries will lead to an increase in GDP. Since the value of the correlation indicator is close to 1, the relationship is characterized as very strong, which is explained by the fact that the EU is our main and priority trading partner. The regression equation has the form:  $y = 9,0327 x - 28620$  (Figure 5), which assumes that we have adopted  $x$  as the value of exports, and  $y$  as the volume of GDP, showing how much the gross domestic product will increase if Ukraine's exports to the EU countries increases by 1 million dollars.

<sup>51</sup> Regional Policy of the European Union : Textbook. Edited by Chuzhikov. V.I., Kyiv: KNEU, 2016. [In Ukrainian].

<sup>52</sup> compiled by the author on the basis of data Official site of the State Statistics Service of Ukraine. <http://www.ukrstat.gov.ua>. Dynamics of GDP of Ukraine. <http://index.minfin.com.ua/index/gdp/2017>. [In Ukrainian].

For Ukraine, as for most emerging market countries, the dependence of economic growth on exports has increased significantly in recent years and continues to grow.

There is a group of countries which demonstrate a constant high dependence of economic growth rates and export growth rates, and the correlation coefficient does not grow. These are, above all, the developed EU countries deeply integrated into world economic relations. In our opinion, these are the countries that have benefited the most from globalization, but the potential for further growth for this factor has probably been exhausted for them. However, this conclusion needs further verification and research in this direction<sup>53</sup>.

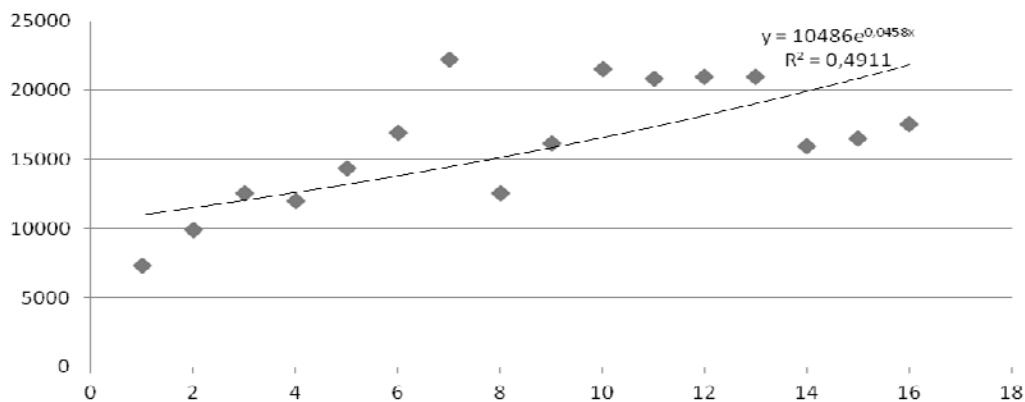


**Fig. 5.** Regression Model of the Dependence of Ukraine's GDP growth from Exports to EU countries<sup>54</sup>

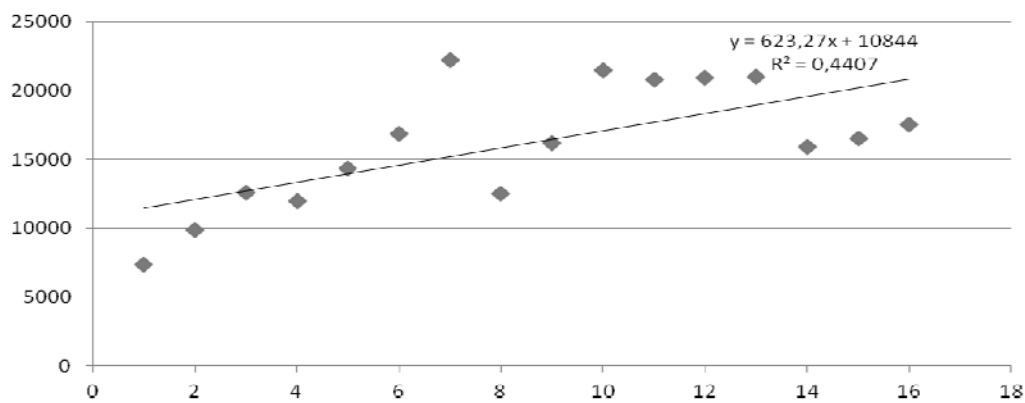
We carry out the forecast of export volumes from Ukraine to the EU countries for 3 years using the time series analysis method. To do this, we consider several trend lines to select the most accurate forecast (Fig. 6).

<sup>53</sup> Kuzminov, S.V., Hluha G.Ya. "The role of exports as a factor of economic growth in a globalizing environment." *Economy and state*, no. 4, (2014): 6-10. [In Ukrainian].

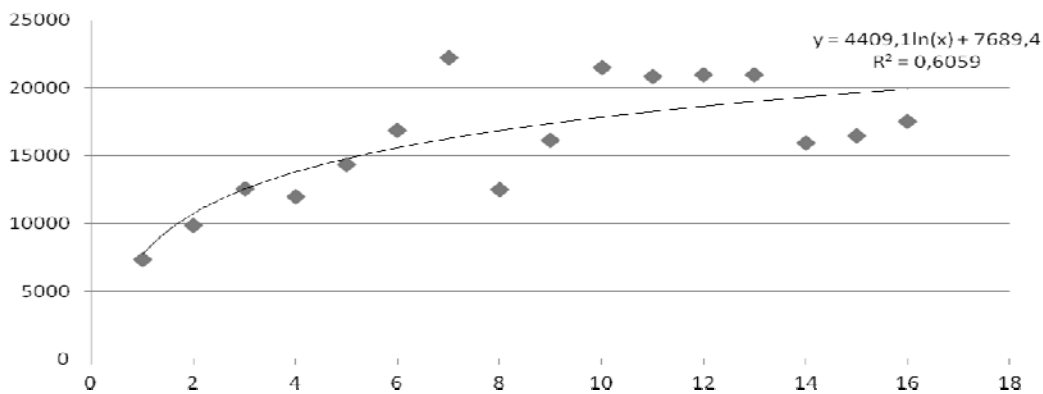
<sup>54</sup> compiled by the author



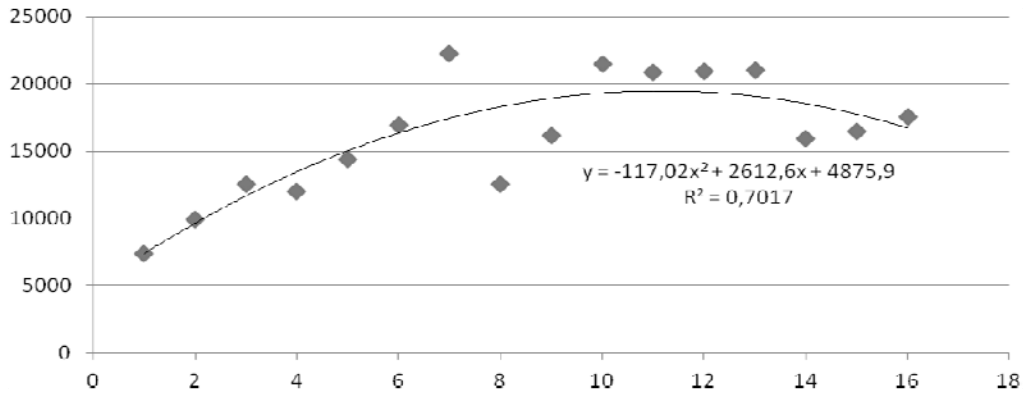
a) Exponential Trend Line of Exports from Ukraine to the EU for 16 years



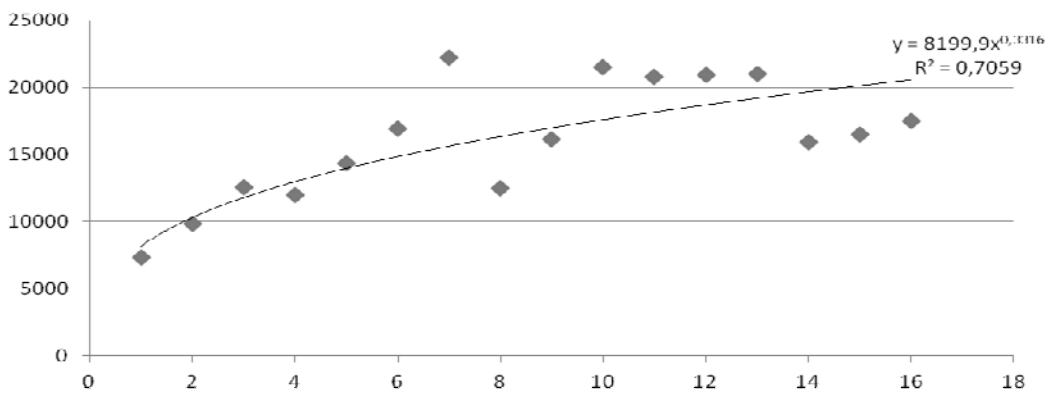
b) Linear Trend Line of Exports from Ukraine to the EU for 16 years



c) Logarithmic Trend Line of Exports from Ukraine to the EU for 16 years



d) Polynomial Trend Line of Exports from Ukraine to the EU for 16 years



e) Power Trend Line of Exports from Ukraine to the EU for 16 years

**Fig.6.** Trend Lines of Exports from Ukraine to the EU for 16 years<sup>55</sup>

In accordance with the considered trend lines, the trend line of export to the EU countries is best described by the power trend line (the value of the R-square is 0.7059, that is, the closest value to the unit of the above, which indicates a high degree of line matching the data). The forecast of exports from Ukraine to the EU countries (Table 6) for 2018-2022 is presented in the table below.

<sup>55</sup> compiled by the author



**Table 6 FORECAST OF EXPORTS FROM UKRAINE TO THE EU COUNTRIES for 2018-2022<sup>56</sup>**

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
7358,2	9886,6	12570,8	12001,3	14361,6	16899,4	22248,3	12523,8	16168,9	21495,3	20826,2
1	2	3	4	5	6	7	8	9	10	11
8199,9	10318,8	11803,8	12985,3	13982,6	14854,0	15633,0	16340,8	16991,6	17595,8	18160,8
2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
20954,3	20994,5	15943,1	16501,2	17533,4	–	–	–	–	–	
12	13	14	15	16	17	18	19	20	21	
18916,7	19633,8	20350,8	21067,9	20563,4	20981,0	21382,4	21769,2	22142,7	22503,8	

The forecast of exports from Ukraine to the EU countries (Table) for 2018 is 20981,0 US dollars, for 2019 – 21382,4 US dollars, for 2020 – 21769,2 US dollars, for 2021 – 22142,7 US dollars, for 2022 – 22503,8 US dollars.

### Conclusion

Bilateral trade and economic relations are becoming more active and effective as a result of the introduction (signing, ratification and implementation) of the free trade area, marked by a special preferential trade regime for the participating countries due to the elimination of domestic tariffs, provided that they continue trading with third countries. The Association Agreement between Ukraine, on the one part, and the European Union and its member states, on the other part, allowed the parties to move from partnership and cooperation to political association and economic integration.

The basic conditions for the modernization of the trade policy of Ukraine and realization of the implementation mechanism to strengthen economic and trade relations, to promote the gradual integration of Ukraine into the EU internal markets are laid down in the DCFTA, Section IV “Trade and Trade-related Issues”. The relevant section is devoted to such key areas as: trade in goods (including technical barriers to trade) trade protection instruments; sanitary and phytosanitary measures; mechanisms to facilitate trade and customs cooperation; administrative cooperation in the field of customs; rules of origin of goods; trade relations in the energy industry; services,

<sup>56</sup> Calculated by the author

company establishment and investments; recognition of qualifications; capital movements and payments; competition policy (antitrust and government assistance); intellectual property rights (including geographical position); government procurement; trade and sustainable development; transparency; trade dispute resolution.

Arrangements within the framework of creating a free trade area with the EU provides a number of advantages and threats, so the mechanism for realizing the potential of a free trade area between Ukraine and the EU will contribute to the deepening of trade integration and access of national commodity producers to one of the greatest high margin markets; formation of value chains EU-Ukraine within the framework of the DCFTA; attracting investment in the creation and modernization of production facilities; horizontal, concentric and conglomerate diversification; energy efficiency and re-equipment; providing consumers with high-quality and affordable imports; entry of national business entities in the markets of third countries.

At the same time, there are also threats caused by differences in the economic levels of development of countries; market sizes; the degree of integration of countries into the global economy, increasing asymmetry of trade integration. The key threats are increased competitive pressure on domestic businesses; continued trade war with the Russian Federation, which led to the introduction of the most favored nation treatment, trade barriers and embargoes. The current structure of exports and imports shows a technological disproportion dangerous for Ukraine: raw materials imports from Ukraine and high-tech exports of the EU; maintaining a negative balance in foreign trade for most groups of goods; limited access of domestic business to the EU market due to the high level of non-tariff protection, especially for agricultural products.

The result of bilateral trade integration resulting from the establishment of the deep and comprehensive free trade area was the modernization of Ukraine's trade policy. The following dominant factors can be considered: an increase in commodity circulation between countries and an increase in the share of European countries in the structure of Ukraine's foreign trade; reduction of import duties; improving market access conditions; harmonization of legislation; establishment of tariff quotas; substantial reduction of non-tariff barriers to trade; improving market access conditions; harmonization of legislation; establishment of tariff quotas; substantial reduction of non-tariff barriers to trade; arrangements of countries to improve the operation of customs; harmonization of the technical regulation system; standardization, metrology, conformity assessment and market surveillance systems; sanitary and phytosanitary measures; strengthening of the protection of intellectual property rights.

Forecasting and simulating foreign trade turnover between Ukraine and the EU in general goods, and goods of the agroindustrial complex, in particular, on the basis of the use of the gravity model, demonstrates that the significant influence of economic growth of the EU GDP is clearly observed. So, with the growth of EU GDP by 1 US dollar, foreign trade turnover of all goods will increase by 0,887 US dollars, and bilateral turnover of goods of agroindustrial complex – by 1,693 US dollars. Influence of Ukraine's GDP has a much lower impact, which can be explained by the difference in the sizes of the economies of the EU and Ukraine. Given the increase in Ukraine's GDP by 1 US dollar, the foreign trade turnover of the countries is increased by 0.848 US dollars, and the bilateral turnover of the agro commodity products grows by 0.358 US dollars. As for the oil prices, the influence is direct in model 2, that is, the increase in oil prices contributes to the growth of trade between countries, although the gravity model suggests the opposite effect. This phenomenon can be explained by the fact that countries are located relatively close to each other and transportation is not the main part of the costs, which, accordingly, is not so important for trade between countries. The dummy indicator of the free trade area between Ukraine and the EU played an important role in predicting goods turnover between the countries for 2018–2022, because the FTA allowed Ukraine to increase exports and imports to the EU in 2016–2017. It is worth noting that the influence of the dummy variable in model 2 is significantly higher compared to model 1 (0.637 compared to 0.194). This is explained by the fact that the main part of trade preferences concerns the production of agroindustrial complexes and due to the considerable increase of turnover of agricultural products, the total trade turnover of Ukraine is increasing.

For Ukraine, as for most emerging market countries, the dependence of economic growth on exports has increased significantly in recent years and continues to grow. The forecast of exports from Ukraine to the EU countries will increase dynamically to 22503,8 million US dollars in 2022.

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