

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Diploma Thesis

**Russia-EU trade relations in the light of economic
sanctions**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

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Economics and Management

Thesis title

Russia-EU trade relations in the light of economic sanctions

Objectives of thesis

Russia and Europe have gone through the substantial upheaval in mutual trade relations due to economic sanctions connected to Crimea. In this light it becomes interesting to investigate what effects have the imposed against Russia sanctions had on trade between Russia and the EU.

The main aim of the Master thesis is thus to reveal major changes that have happened after 2014 in trade relations between Russia and the EU.

To achieve this goal the following research questions will be raised and gradually answered:

- What was the commodity structure of foreign trade between Russia and the EU before 2014?
- What changes (commodity composition/traded volumes/main partners) has Russia-EU foreign trade undergone after 2014?
- What EU countries have suffered from sanctions most of all?
- What sectors were influenced by sanctions most of all?
- What steps are done to overcome consequent difficulties?

Methodology

Descriptive analysis, thematic synthesis and regression analysis along with comparative techniques will be applied in the present Master thesis

The proposed extent of the thesis

60-80

Keywords

Russia, EU, Sanctions, Foreign Trade, Economy

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AALTO, P. *The EU-Russian energy dialogue : Europe's future energy security*. Aldershot: Ashgate, 2008. ISBN 978-0-7546-4808-6.

GANDOLFO, G. *Economic dynamics*. Berlin: Springer, 2010. ISBN 978-3-642-13503-3.

GANDOLFO, G. *International trade theory and policy*. Berlin, Germany: Springer Verlag, 1998. ISBN 9783540643166.

KRUGMAN, P. R. – OBSTFELD, M. *International economics : theory and policy*. Boston: Pearson/Addison Wesley, 2006. ISBN 978-0-321-53035-6.

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Declaration

I declare that I have worked on my diploma thesis titled " Russia-EU trade relations in the light of economic sanctions" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 30.08.2021

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Russia-EU trade relations in the light of economic sanctions

Abstract

Political relations between Russia and the EU have gone through different stages, from hostility to peace and to revival and even active discussion of possible unification. Despite the political interests, economic relations between the two partners remained pragmatic and stable. Geographical location, as well as resource and technological complementarities, have made the EU and Russia key trading partners. However, the situation has been changed in 2014, when the EU imposed political and economic sanctions against Russia. The reason for this was the Ukrainian conflict and annexation of Crimea. In such conditions, it becomes interesting to explore the impact of sanctions on trade relations between the EU and Russia. During the period 1998-2018, the trade structure has not been changed, even after sanction imposition. The trade relations are still focused mainly on the exchange of mineral resources and technologies. Accordingly, these sectors were affected by sanctions most of all. After 2014, traded volumes of all main traded articles have been reduced significantly. However, it started growing already in 2017. As Russia's largest trade partner in the EU, Germany has suffered of sanctions most of all. Nonetheless, the regression analysis showed that the sanctions did not negatively affect either the Russian or the EU economy. They even contributed to economic growth.

Keywords: Russia, EU, Sanctions, Foreign Trade, Economy, Trade partners, Import, Export, Regression analysis

Obchodní vztahy mezi Ruskem a EU ve světle ekonomických sankcí

Abstrakt

Politické vztahy mezi Ruskem a EU prošly různými fázemi. Od nepřátelství k míru, k oživení ba dokonce i k aktivní diskusi o možném sjednocení. Navzdory politickým zájmům, ekonomické vztahy, mezi těmito dvěma partnery zůstaly pragmatické a poměrně stabilní. Geografická poloha, jakož to i progres zdrojů a technologií, učinily z EU a Ruska klíčové obchodní partnery. Situace se však změnila v roce 2014, kdy EU uvalila na Rusko politické a ekonomické sankce. Důvodem byl ukrajinský konflikt a anexe Krymu. V takových podmínkách je zajímavé prozkoumat dopad sankcí na obchodní vztahy mezi EU a Ruskem. V období 1998–2018 struktura obchodu nebyla změněna a to ani po uložení sankcí. Obchodní vztahy jsou stále zaměřeny především na výměnu nerostných surovin a technologií. Proto byla tato odvětví nejvíce postižena sankcemi. Po roce 2014 se obchodované objemy všech hlavních obchodovaných položek snížily. Růst začal již v roce 2017. Jako největší ruský obchodní partner v EU je Německo, které sankce nejvíce poznamenalo. Regresní analýza nicméně ukázala, že sankce neměly negativní vliv na ruské, ani evropské hospodářství. Dokonce přispěly i k hospodářskému růstu.

Klíčová slova: Rusko, EU, Sankce, Zahraniční obchod, Ekonomika, Obchodní partneři, Import, Export, Regresní analýza

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List of abbreviations

APEC	Asia-Pacific Economic Cooperation
EU	The European Union
EUR	Euro
GATT	General Agreement on Tariffs and Trade
IEA	The International Energy Agency
IMF	International Monetary Fund
OECD	The Organisation for Economic Co-operation and Development
RF	Russian Federation
RUB	Ruble
USD	United States Dolar
WTO	The World Trade Organization

1 Introduction

Russia and Europe have been always sustainable economic partners, primarily, due to their close geographical location. According to Permanent Mission of the Russian Federation to the European Union, they recognize each other as key trade partners. In 2013, the EU accounted for approximately 44% of total Russian foreign trade. In turn, for the EU, Russia was the fourth largest trading partner, which accounted for about 6% of the EU's foreign trade in 2013 (Permanent Mission of the RF to the EU, 2020). However, the direction of the relationship has been changed dramatically due to political disputes that arose in the aftermath of the Crimean crisis in 2014. "The break-up instead of marriage". This is how the current situation can be described.

This paper will be focused on the understanding of the bilateral trade relationship between Russia and the European Union during the period of sanctions imposition. Since the stages of this relationship could be divided into before and after, both periods will be discussed and compared gradually.

The chapter "Literature review" will be used as a theoretical basis needed for building the credible practical part. This section will explain topics such as Trade, Sanctions, and Econometric theory. The trade overview will describe its nature, structure, and main theories. In turn, a short explanation of some world organizations important for this paper will be given. Further, the sanction definition and classification will be also discussed. At the end of this part, the econometric theory will be explained in detail to support the regression analysis of this thesis.

The practical part of this thesis will be focused on the explanation of the legal framework for the bilateral relation along with the multilateral trade platform. Trade disputes and sanctions-imposed discussion will reveal the roots of the deterioration in the bilateral relations. Then, the foreign trade structure of Russia and the EU before and after 2014 will be given in order to meet the main aim of this paper. The structure section will include volumes of trade in goods and services, commodity structure of exports and imports, and main trade partners. Since Germany, Netherlands, Poland, Italy, and France are the biggest partners of Russia in the EU, their mutual trade will be briefly discussed.

The thesis will deepen into how sanctions affected the trade relations between Russia and the European Union, what major changes have occurred and what steps have been

done to overcome consequences. The actual impact of sanctions will be revealed via regression analysis.

2 Objectives and Methodology

2.1 Objectives

This thesis is focused on the foreign trade relations between the European Union and Russian Federation, and the impact of sanctions imposed against Russia in 2014. Thus, the main aim of this diploma thesis is to reveal substantive changes in the trade relations between Russia and the EU, that have occurred since the imposition of sanctions in 2014. This aim will be achieved via answering the following research questions:

1. What was the commodity structure of foreign trade between Russia and the EU before 2014?
2. What changes (commodity composition/traded volumes/main partners) has Russia-EU foreign trade undergone after 2014?
3. What EU countries have suffered from sanctions most of all?
4. What sectors were influenced by sanctions most of all?
5. What steps are done to overcome consequent difficulties?

2.2 Methodology

The main methodologies, which will be used in this diploma thesis to answer the main research questions are descriptive analysis, thematic synthesis, and regression analysis along with comparative techniques, which will be based on time period 2000-2018 in order to reveal development of the trade and major changes occurred after sanction imposition. This period will be divided into several sections – before/ after sanction imposition (2000, 2010/2013, 2018). Due to the lack of information of some sources, the pre-crises period will be considered in 2010 or 2013.

Descriptive data analysis is a statistical method for processing and organizing data, presenting it in tables and graphs, and quantitatively describing data using a system of statistical indicators. Such as indicators of the average level (mean, median), indicators of variation, and form of distribution. Methods of descriptive data analysis allow not only to explore the data but also to choose a method for further analysis, for example, methods for testing statistical hypotheses, modelling the relationship. This method will be applied in the practical part to analyse statistical data of the trade between RF and EU. The data of commodity composition traded volumes and main partners before and after sanction imposition will be thoroughly processed in order to make an assumption for regression analysis.

Thematic synthesis is an inductive approach, which includes systematizing data and generating descriptive and analytical themes. It helps more efficiently solve problems such as thematic search, classification, summarization, and annotation of documents and news streams. It will be used generally in the practical part to reveal the framework of bilateral and multilateral trade relationships. It also will be used as a tool in the theoretical part of the thesis.

Comparative techniques will be also used to detect the major changes that appeared after the sanction imposition. These techniques will help to make assumptions for further regression analysis and, therefore, to answer the main research questions.

Regression analysis refers to the econometric method that calculates the estimated relationship between a dependent variable and one or more independent variables. This method will be used in order to test the assumption of sanctions impact on the EU-RF trade, Russian, and the EU's economies. The analysis will be based on the data of 21 observations in the period 1998-2018 and processed via the Gretl application.

The data will be obtained through different internet and paper sources. The crucial sources for this diploma are websites of the EU's statistical database (Eurostat) and the Russian statistical database (Rosstat). Some data will be collected from various articles and interviews.

3 Literature Review

This chapter consists of a theoretical explanation, which is required to support statements in the practical part of this thesis. The literature review consists of three parts relating to foreign trade, sanctions, and econometric analysis. All information is gathered from online or printed materials.

3.1 Foreign trade overview

International trade in today's world is an essential engine of economies. It constitutes the integrity of the foreign trades of goods and services, and of objects of intellectual property. International trade is one of the main forms of economic relations, and the most productive form of international relations in the world economy since it significantly affects the development of the country's economy, domestic trade, and the consumer market, which, in turn, improves a nation's standard of living. Globalization and liberalization of markets for goods and services are factors, which contribute the growth of the international trade. Thus, countries around the world are striving to integrate and lower barriers in international trade.

In order for foreign trade to be mutually beneficial for its participants, the most effective export/import structure for each country must be formed. In practice, this efficiency is determined by an adequate system of world prices and international settlements (Sheleg, 2014).

Foreign trade includes two interrelated processes: export and import. Export is understood as the sale abroad of goods, technologies, services for their implementation in the external market. Import, in turn, means the purchase of goods, technologies, services for their implementation in the domestic market, as well as for transit to third countries. The sum of exports and imports forms the foreign trade turnover of a country (Sheleg, 2014).

Despite all the advantages of foreign trade, which include, for instance, the maximum use of natural resources, availability of goods, and specialization in the production of goods, they're also some disadvantages like higher competition. Companies can face the challenge of emerging new alternatives that take away market share. Especially if these are companies that cannot adapt to changes in the market. Therefore,

there's an unevenness in the trading arena. In many cases, rich countries become even more powerful at the expense of the poorest.

Some countries are more open to foreign trade, while others, on the contrary, are more restrained. On this basis, there are two types of world trade:

1. Free trade

In this first case, countries strive to facilitate the exchange of goods and services with foreign partners as much as possible. It is possible by reducing government interference in trade relations, for example by removing bans. An example of this type of market can be the European Union, where exports and imports are free.

2. Protectionism

In opposition to free trade, there is protectionism. In this case, governments have policies that favor local production and make imports more expensive through measures such as: tariffs, quotas, subsidies. These strategies are also trying to correct any inefficiency in the international market (Sheleg, 2014).

3.1.1 Trade theories

The development of world trade is based on the benefits it brings to the countries participating in it. International trade theory provides insight into what lies at the heart of these gains from foreign trade, or what determines the direction of foreign trade flows. International trade serves as a tool through which countries, developing their specialization, can increase the productivity of available resources and thus increase the volume of goods and services they produce and also improve the level of well-being of the population.

According to Gandolfo, the foundations of international trade theory are contained in three main models, which are The classical theory, The Heckscher-Ohlin theory, and The neoclassical theory. Some of the main theories, which reveal the development of foreign trade theory, are explained below.

- **Mercantilism theory**

Mercantilism is a framework of economists in the 15th-17th centuries, which is focused on the active intervention of the state in economic activity. Representatives of the

theory are Thomas Maine, Antoine de Montchretien, William Stafford. The term was coined by Adam Smith, who criticized the works of mercantilists. The mercantilism theory of international trade originated during the period of initial capital accumulation and the great geographical discoveries, based on the idea that the presence of gold reserves is the basis of the prosperity of a nation. Foreign trade, the mercantilists believed, should be focused on obtaining gold, since in the case of a simple commodity exchange, ordinary goods, being used, cease to exist, and gold accumulates in the country and can be used again for international exchange (Jones, 2018).

In this case, trading was considered as a zero-sum game, when the gain of one participant automatically means the loss of the other, and vice versa. To obtain maximum benefits, it was proposed to strengthen government intervention and control over the state of foreign trade. The trade policy of mercantilists, called protectionism, boiled down to creating barriers to international trade, protecting domestic producers from foreign competition, stimulating exports and restricting imports by imposing customs duties on foreign goods and receiving gold and silver in return for their goods (Jones, 2018).

The main statements of the Mercantilist theory of international trade consist of:

- the need to maintain an active trade balance of the state (excess of exports over imports);
- recognition of the benefits of attracting gold and other precious metals to the country in order to increase its welfare;
- money is an incentive for trade, since it is believed that an increase in the volume of money increases the volume of the commodities;
- protectionism aimed at importing raw materials and semi-finished products and exporting finished products is welcomed;
- restriction on the export of luxury goods, as it leads to the leakage of gold from the state (Jones, 2018).

- **Theory of Absolute Advantage**

Adam Smith of the *Nature and Causes of the Wealth of Nations*, in polemics with mercantilists formulated the idea that countries are, actually, interested in the free development of international trade, since they can benefit from it, regardless of whether they are exporters or importers. Each country should specialize in the production of the

goods or services of which it has an absolute advantage, a benefit based on different production costs in individual countries participating in foreign trade. The refusal to produce goods for which countries do not have absolute advantages, and the concentration of resources on the production of other goods lead to an increase in total production volumes, an increase in the exchange of goods services between countries (Krugman, 2012).

Adam Smith's theory of absolute advantages assumes that the real wealth of a country consists of the goods and services available to its citizens. If a country can produce certain product more and cheaper than other countries, then it has an absolute advantage. Some countries can produce goods more efficiently than others. The country's resources flow into profitable industries, since the country cannot compete in unprofitable industries. This leads to an increase in the productivity of the country as well as in the qualifications of the labor force; long periods of homogeneous production provide incentives to develop more efficient working methods (Gandolfo, 2014).

Natural advantages of a country could be climate, territory, resources. The acquired advantages are, for example, production technology, that is, the ability to manufacture a variety of products.

- **Comparative advantage theory**

This theory was developed by David Ricardo and expanded by John Stuart Mill. In the work "The Principles of Political Economy and Taxation" Ricardo showed that the principle of absolute advantage is only a special case of the general rule and substantiated the theory of comparative advantage. When analyzing the directions of development of foreign trade, two circumstances should be taken into account. Firstly, economic resources - natural, labor, etc, which are unevenly distributed between countries. Secondly, the efficient production of various goods requires different technologies or combinations of resources (Gandolfo, 2014).

The advantages that countries have are not eternal, D. Ricardo believed, so even countries with absolutely higher levels of production costs can benefit from trade exchange. It is in the interests of each country to specialize in production, in which it has the greatest advantage and the least weakness, and for which not absolute, but relative profit is the greatest, that is the law of comparative advantage of David Ricardo. According

to Ricardo's version, the total volume of output will be greatest when each product is produced by the country in which the opportunity costs are lower. Thus, a relative advantage is a benefit based on lower opportunity costs in the exporting country. Hence, as a result of specialization and trading, both countries participating in the exchange will benefit. An example in this case is the exchange of English cloth for Portuguese wine, which benefits both countries, even if the absolute production costs of both cloth and wine are lower in Portugal than in England (Gandolfo, 2014).

Subsequently, John Stuart Mill in his work "Principles of Political Economy" gave an explanation of the price at which the exchange is carried out. Mill states, the exchange price is set according to the laws of supply and demand at such a level that the aggregate of exports of each country makes it possible to pay for the aggregate of its imports, which is, in turn, the law of international value (Gandolfo, 2014).

- **Heckscher-Ohlin theory.**

This theory of scientists from Sweden, which appeared in the 30s of the twentieth century, refers to the neoclassical concepts of international trade since these economists did not adhere to the labour theory of value, considering capital and land as productive, along with labour. Therefore, the reason for their trade is the different provision of production factors in countries participating in international trade (Gandolfo, 2014).

The main provisions of the theory are, firstly, countries tend to export those goods for the manufacture of which the country's abundant factors of production are used, and, conversely, to import goods for the production of which relatively rare factors are needed; secondly, there is a tendency towards equalization of "factor prices" in international trade; thirdly, the export of goods can be replaced by the transfer of factors of production beyond national borders (Gandolfo, 2014).

The neoclassical concept of Heckscher-Ohlin turned out to be convenient for explaining the reasons for the development of trade between developed and developing countries when in exchange for raw materials entering developed countries, machinery and equipment were imported into developing countries. However, not all phenomena of international trade fit into the Heckscher-Ohlin theory, since today the centre of gravity of international trade is gradually shifting towards mutual trade of "similar" goods between "similar" countries (Gandolfo, 2014).

3.1.2 International organizations influencing world trade

There are a number of international organizations operating in the field of international trade, which are designed to improve economic and political relations between countries. Such organizations include, for instance, WTO, IMF, APEC.

- **WTO**

The World Trade Organization (WTO), created in 1995, replaced the General Agreement on Tariffs and Trade (GATT) as the only international body dealing with the global rules of trade between states. It is not a specialized agency, but it does have mechanisms to cooperate with the United Nations (Guzhva, 2009).

The mission of the WTO is to help streamline the trading process within a rules-based system; fair settlement of trade disputes between governments; organizing trade negotiations. These activities are based on 60 WTO agreements, which are the basic legal norms of international commerce and trade policy. The principles on which these agreements are based include non-discrimination (most-favored-nation treatment and national treatment clause), freer terms of trade, promotion of competition, and additional provisions for least developed countries. One of the goals of the WTO is to combat protectionism. Nowadays, the organization of 159 country members (Guzhva, 2009).

- **IMF**

The International Monetary Fund is an intergovernmental monetary and financial organization with the status of a specialized UN agency. The IMF was established by the decision of the Bretton Woods conference in 1944. The Fund began its practical activities on March 1, 1947. The headquarters is located in Washington, USA. IMF members are currently 188 countries. The total number of employees is approximately 2,500 from 156 countries. The Managing Director of the IMF is Christine Lagarde (French citizen) (Guzhva, 2009).

In its activities, the IMF combines regulatory, advisory, and financial functions. The main tasks of the fund are to maintain the stability of the global financial system and balanced growth of international trade, promote the stability of exchange rates and balance

of payments, create a multilateral system of settlements on current transactions between IMF members, as well as develop international cooperation in the monetary and financial sphere (Guzhva, 2009).

- **APEC**

The Asia-Pacific Economic Cooperation Forum (APEC) is an international organization dedicated to strengthening economic integration, expanding trade, enhancing economic growth, and increasing employment in the Asia-Pacific region (Sheleg, 2014).

APEC was founded in Canberra, Australia on the initiative of Australian Prime Minister B. Hawke in 1989. Initially, it included 12 countries: 6 developed countries of the Pacific Ocean (Australia, Canada, New Zealand, USA, South Korea, Japan) and 6 developing countries of the Association of Southeast Asian Nations (Brunei, Indonesia, Malaysia, Singapore, Thailand, and the Philippines). By 1997, APEC already included almost all the main countries of the Pacific region. In 1998, simultaneously with the admission of three new members to APEC - Russia, Vietnam, and Peru - a 10-year moratorium was introduced on further expansion of the membership of the Forum (Sheleg, 2014).

3.2 Sanctions overview

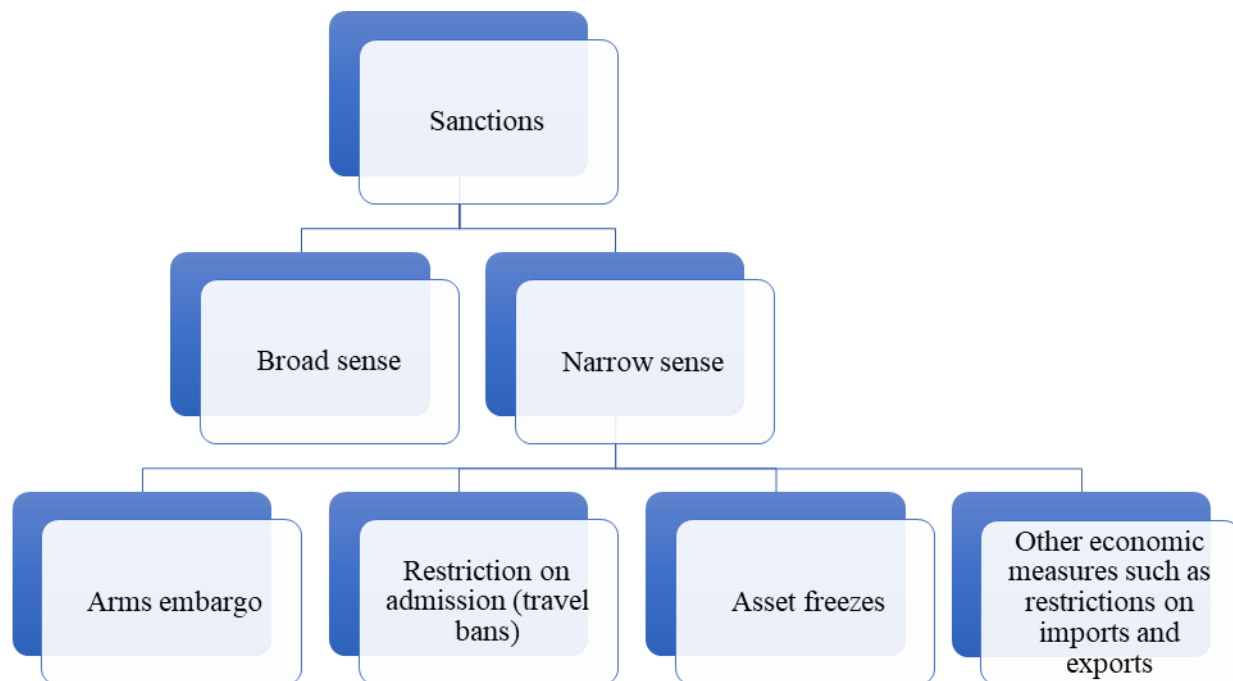
Sanctions, in general words, are restrictions for a group of individuals or for an entire state, designed to "punish" the government of any country for violations of international agreements and force them to abandon them in the future. They can be devised into diplomatic or economic sanctions (Krugman, 2006).

Since in the real world, economic sanctions are intertwined with other economic measures, and political goals with purely economic ones, Hufbauer et al. applied the following definition of economic sanctions. They are "deliberate government-induced measures to end (or threaten to end) traditional trade or financial relations" with political goals (Hufbauer, 2009).

According to the Council of the EU, sanctions are preventive measures that allow a quick response to problems and policy changes that are not in line with European values and goals. According to the EU classification, sanctions can be viewed in a broad

(diplomatic) and narrow sense, they can relate to a number of areas. The scheme of sanction classification is presented below (European Council, 2020).

Figure 1 Classification of sanctions



Source: European Commission, 2020

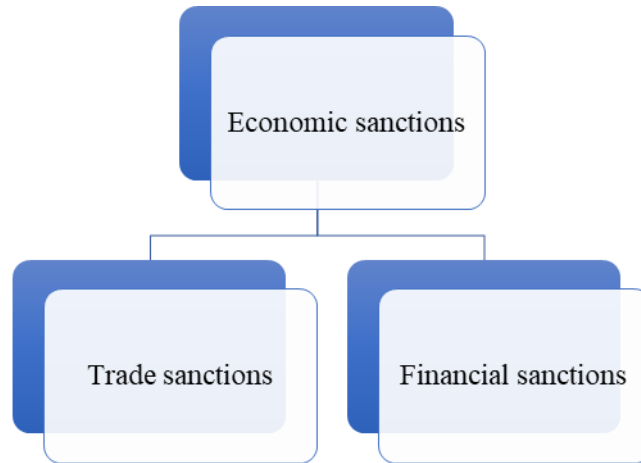
Sanctions, for example, can be aimed at countering the terrorism, nuclear activities posing a proliferation risk, violations of human rights, annexation of a foreign territory, deliberate destabilization of a sovereign country.

Diplomatic sanctions include measures such as the termination of diplomatic relations with the target country through the complete or partial withdrawal of diplomatic representatives from the target country or the cancellation of diplomatic (European Commission, 2020).

Sanctions in the narrow sense should be based on a specific legal basis in EU treaties and include arms embargo; restrictions on the admission of persons on the list (ban on entry). Target persons cannot enter the EU or cannot leave the territory of the state; freezing of assets belonging to listed persons or organizations: all their assets in the EU will be frozen, persons and organizations established in the EU cannot provide any funds to those on the list; economic sanctions, which are measures of a prohibitive nature that are used by one participant in international trade (country or group of countries) in relation to another participant ("the object of sanctions") in order to force the latter to change its

political course. Types of economic sanctions are represented below (European Commission, 2020).

Figure 2 Classification of economic sanctions



Source: European Commission, 2020

Trade sanctions are imposed on both imports from a sanctioned country and exports to that country. Financial sanctions, in turn, are the refusal of providing loans and grants to the sanctioned country. The targets of sanctions can be governments, individuals, legal entities, groups, or organizations. Sanctions serve as an instrument and manifestation of a common foreign and security policy (European Commission, 2020).

Considering the concept of sanctions in a broad sense, "Sanctio" (lat.) - instruction, order. Using this interpretation, it can be said that "economic sanctions" are measures of both compulsory and permissive nature. The consequences of economic sanctions can also be positive or negative. The generalized international experience of manipulation with the help of sanctions makes it possible to determine the following conditions for achieving the maximum effect:

- 1) the predominance of the share of imports in the most important sectors of the country's economy
- 2) lack of substitute goods produced domestically
- 3) control over export and import operations by the sanctioning countries due to their geographical location (European Commission, 2020).

Economic sanctions are imposed when a country or a group of countries wants to influence the foreign or domestic policy of another country, i.e., force it to abandon certain actions or decisions by inflicting material damage or restrictions in foreign economic and foreign policy activities. Nevertheless, the sanctioned country suffers losses. After the

termination of economic relations, it is forced to look for new trading partners, which is associated with transaction costs and the need to establish new contacts.

Effectiveness of sanctions was discussed by many authors. Hufbauer and others believed that sanctions can fail for several reasons like disproportionate goals and means (too ambitious goals, insufficient efforts, lack of support from other states), mobilization of a sanctioned country (sanctions often have the effect of rallying the population of the sanctioned country around the government and seeking alternatives in foreign trade), the emergence of external sponsors for the sanctioned country, ready to compensate for the problems arising in connection with the sanctions, opposition from allies and businesses within the sanctioning country because allies can not only refuse to follow the proposed tough measures, but also introduce their own laws prohibiting companies from participating in sanctions (examples are the antiboycott laws of the US and the UK Commercial Interests Law) (Hufbauer, 2009).

Hufbauer et al. note that sanctions are significantly more effective when they are directed against friendly or neutral countries. Almost 50% success in the case of friendly countries, 33% in the case of neutral ones, and only 19% in the case of hostile ones. At the same time, the goal of ending hostilities in the case of hostile countries with the help of sanctions has never been achieved (Hufbauer, 2009).

Hufbauer et al. also believe that the negative effect of the sanctions on the economy of the imposing them country is difficult to quantify, but it is usually negligible. This is due to the fact that the effect of sanctions rarely exceeds 2% of the GDP of the country on which the sanctions are directed, and the economy of the country / countries applying the sanctions is usually much larger, and therefore the sanctions are even less noticeable. However, the imposition of sanctions can lead to negative domestic political consequences, as the damage to individual companies and industries. It can be very long-term measure as companies will henceforth be considered “unreliable suppliers”. In fact, economic sanctions for the imposing country are a special type of tax to finance foreign policy activities, but at the same time they are very unevenly distributed in society (Hufbauer, 2009).

3.2.1 Sanctions in the world history

The first mentions of sanctions appeared in the 1930s. One of the earliest definitions of the term "economic sanctions" was formulated by E. Clarke, who interpreted them as "punishment entailing economic losses or damage to the nation that violated the treaty." (Williams , 1933).

Throughout the history of the study of international economic sanctions, the development of which was the most intensive in the 1960s, researchers are trying to provide answers to questions such as goals and motives underlying the imposition of sanctions, the effectiveness of sanctions, and factors of their effectiveness, economic consequences, etc. There are still no clear answers to many of these questions. At the same time, without the formation of a clear understanding of the sanctions concept, including the correct interpretation of the goals they pursue, it is impossible to objectively assess their effectiveness (Rowe, 2007). Meanwhile, the declared goals of the imposition of sanctions by the states may often not coincide with the real ones (Wallenstein, 1968), and it is rather difficult to separate one from the other. In addition, according to the paradox formulated by (Hoffmann, 1967), the imposition of sanctions may indicate that the motivation of a country that could be aimed at achieving the goal is extremely low, and, therefore, it is likely that the goal is will not be achieved anyway.

In addition to the correct interpretation of the goals, other difficulties arise, such as the question of how much the effectiveness of the sanctions was caused by original goals and not external factors. In this regard, there are different views on the assessment of the effectiveness of sanctions. For instance, Hafbauer et al. in their work (Hufbauer , 1990), concluded that out of 115 episodes of economic sanctions imposed over the period 1914–1990, 40 can be considered successful. At the same time, according to Pepe (Pepe, 1997), in the eighteen cases described by the authors, the goal was achieved using force, rather than economic sanctions. Thus, many studies suggest that in most cases the sanctions were not successful. The fact is that the success and level of sanctions determine the number of their initiators since the more countries join the sanctions, the fewer opportunities the sanctioned country must diversify its external economic relations, and, consequently, reduce the level of influence of sanctions, and secondly, the higher the costs for initiators, the lower their motivation for imposing tough sanctions. In this case, the initiators of the sanctions will incur not only direct but also indirect losses, since countries that continue to

maintain economic relations with the sanctioned country will benefit from reduced competition.

Thus, the question arises why states continue to actively resort to the policy of economic sanctions, despite the lack of convincing arguments in favor of its effectiveness. Reisman and Stevick (Reisman, 1998) answered this question most comprehensively: "The political costs of sanctions are low." This does not mean initiators of sanctions will not have any consequences, but economic sanctions themselves are often the most accessible political mechanism for minimizing public outrage, which allows at the same time to express disagreement with the policy of another country.

In the history of international sanctions practice, there are various examples illustrating different models and strategies. The most striking and relatively comparable with the sanctions imposed against Russia are the experiences of the USSR, China, and Iran.

- **The experience of the PRC (1989–2001)**

In 1989, the G7 countries adopted a massive program of economic sanctions against China. The sanctions provided for the freezing and abandonment of all investment projects, the termination of trade and economic interaction, a ban on the allocation of any kind of loans to China, the termination of any political contacts at a high level, a ban on arms exports, as well as closing access to high technologies (Kristof, 1989).

The reason for these sanctions was the military crackdown on protesters in Tiananmen Square in Beijing, which killed about 3,000 civilian protesters and 100 police officers (Kristof, 1989).

As a result of countering international sanctions, China not only did not isolate itself, but, on the contrary, began to pursue a policy of diversifying economic relations with partners such as ASEAN, APEC, India, South Korea, and the USSR. Also, China carried out a reform to introduce market institutions into the economy and opened the domestic market for foreign investors. This strategy led to the fact that China successfully integrated into the world economy and joined the WTO in 2001, which proves the correctness of this approach and the ineffectiveness of sanctions.

- **Iranian experience (1979–2016)**

International sanctions against Iran were introduced in 1979. They were caused by the seizure of the American embassy in Tehran by a group of radical students who demanded the extradition from the United States of the Iranian Shah who fled after the Islamic Revolution. The embassy, along with 52 staff members, was held for 444 days (Zaitsev, 2018).

The sanctions included a complete ban on US citizens and companies from doing business in Iran or participating in joint ventures with Iranian companies, disconnection from the SWIFT system, a ban on the sale of oil on the world market, and the supply of technologies, equipment, freezing of all Iranian assets and gold reserves stored in American banks (Zaitsev, 2018).

Iran's retaliatory measures were countersanctions and a statement on the cessation of oil supplies to countries supporting US economic sanctions. Iran completely abandoned the dollar and began to form close economic relations with countries such as Syria, Pakistan, Afghanistan, Iraq (Hufbauer, 2009).

Thus, over 40 years of confrontation, Iran has tried only to overcome the sanctions, instead of trying to find a compromise. As a result, Iran has become an outcast state in international relations with poor socio-economic development.

- **Experience of the USSR (1980-1992)**

After Soviet troops entered Afghanistan in December 1979, the United States and its allies began to impose full-scale sanctions against the USSR, including an organized boycott of the Moscow Olympics. Coordinated actions were taken against the USSR in the field of trade and finance: an embargo was imposed on the supply of technology and other critical products for the country, restrictions on the import of key (Pakhomov , 2014).

Soviet export goods, a ban on the provision of new foreign loans, the termination of the issuance of licenses to foreign companies for the sale of high technologies of the USSR, the freezing of all joint cultural and economic events, etc. (Pakhomov , 2014).

Just as in the case of Iran, the Soviet Union's policy of countering sanctions was by no means a liberalization and search for alternative ways to mitigate them, but an attempt to overcome them and introduce countersanctions against the United States. This strategy

of the USSR's actions brought rather limited successes. The leadership of the USSR realized the importance of reforms and integration into the world economy, as evidenced by the attempt to converge with the GATT / WTO in 1979. However, the shortcomings of the bureaucratic system of the USSR and the unwillingness to revise the existing national and international concepts led to its disintegration and restructuring. In this case, the sanctions played an auxiliary function.

3.3 Bilateral relations of Russia and EU

Russia and Europe are traditionally the closest political and economic partners that have gone through many historical stages since the times of imperial Russia when Russia was the leader in Europe in the supply of grain, timber, and other raw materials, and European countries, especially Germany, exported industrial goods to the Russian Empire. These trade relations were continuing during the existence of the Soviet Union, and they have been remaining essential in our days both in terms of saturating markets and as a source of investment. Despite the fact that the political relations between the partners went through various stages - from hostility and even to an active discussion of unification, economic relations remained rather pragmatic and stable. Geographical location, as well as resource and technological complementarities, have made the EU and Russia major trading partners that cannot be replaced, at least in the short term. Nonetheless, political conflicts have complicated and continue to hinder the development of mutually beneficial long-term trade relations, which determines the need to find a new methodological approach to the analysis of these relations.

The interactions between Russia and the EU are reflected in some theoretical concepts, such as Adam Smith's theory of absolute advantages, which consists in determining the specialization of countries based on absolute advantages in the production of a certain product. Thus, by exporting abundant raw materials, Russia acquired goods and technologies that are not produced in the national economy (Krugman, 2006). The close location and need of Europe for the supply of raw materials led to this cooperation. From the point of view of neoclassical theory, it can be argued that the export of raw materials is of great importance for a country if it is accompanied by stable investments. This explains the dependence of Russia on foreign investors, in particular

Europe, which in turn is also interested in investing in Russia to improve infrastructure and stability of extraction.

The complementarity of economies should play a positive role in building effective bilateral relations. Thus, energy supplies from Russia to the EU remain extremely important for both partners, despite the EU's natural desire to avoid a high level of dependence on one supplier (Aalto, 2008). However, despite the positive preconditions, in practice the situation is different. The reason is political and ideological factors, as well as the desire to immediately satisfy geopolitical interests.

3.3.1 Stages of legal framework for bilateral relations

Since the 1990s, bilateral relations between Russia and the EU did not develop only in the economic direction. The bilateral strategic partnership between the countries was ensured within the framework of key international platforms, such as the UN, Council of Europe, OSCE, WTO.

The legal basis for trade interaction was laid by the Agreement on partnership and cooperation concluded on June 24, 1994, on about. Corfu (Greece). This document covered all areas of economic and financial cooperation, extending to them the principles and norms of the GATT / WTO (Electronic fund of documents, 2021).

However, the advantages of the agreement did not shield trading partners from the upcoming difficulties that arose in the late 1990s. In some cases, the parties did not fulfill their obligations. Russia was unable to fully adopt national legislation to the requirements of the Agreement. For example, some regulations governing the circulation of alcoholic and alcohol-containing products, etc. There were also violations by the EU side. In 2000, the EU imposed restrictions on the import of Russian steel without completing consultations with the Russian Federation according to the agreement. As a result, the parties lost contracts worth more than 50 million euros, which caused damage to both (MINFIN RF, 2021).

In 2007, the European Union recognized Russia as a country with a "market economy", but this did not solve the problem of discrimination against Russian enterprises during antidumping investigations. Currently, the EU applies 9 antidumping measures against Russian goods. In 2015, the EU extended to 2020 anti-dumping duties on welded pipes from the Russian Federation, following the results of the investigation, decided to

apply an anti-dumping measure against Russian transformer steel, and introduced a preliminary duty as part of the anti-dumping investigation against aluminum foil from Russia. However, in July 2020, the WTO supported Russia in a dispute with the EU over specific export cases, in particular with respect to welded pipes (Isachenco, 2015).

In 2017, the EU has changed the methodology for calculating the dumping margin and accompanied the publication of a country report on China, which is currently the main “violator” in the EU price market. There is a strong possibility that the next report will be about Russia who is challenging this methodology in the WTO (European Commission, 2020).

The problem of energy independence of the European economy and compliance with competition rules in this area is significant for the EU. For this reason, the EU is modifying its legal norms, which has given rise to Russia to go to the WTO court.

The current circumstances have led to the need of creating a new basic agreement. Russia was interested in the creation of a Free Trade Agreement, or a document that would lead to the creation of an FTA. All 12 rounds of negotiations were unsuccessful and ended completely in 2014 due to political confrontation in Ukraine. The formation of the Eurasian Economic Union (EAEU) further complicated the process of finding a compromise (Isachenco, 2015).

The disagreements between the parties are due to obvious facts: both parties defend their legitimate interests; everyone is confident that they better represent the interests of the countries affected by their integration initiatives; and also the parties accuse each other of excessive pressure on neighbors in order to solve their foreign policy tasks. In general, the current situation resembles "pulling the blanket over yourself."

Despite all these factors, there are prospects for effective cooperation, which is due to the trade and economic interdependence recognized by both parties. This can be achieved primarily by de-politicizing trade and economic issues and agreeing on a number of topics such as trade facilitation, harmonization of rules of origin, promotion of common initiatives to simplify investment procedures, as well as non-tariff regulation issues. (Vinokurov E.2016).

3.3.2 Phases of bilateral relations

The whole history of the relation between modern Russia and the EU has a quarter-century. It can be divided into several phases according to time periods.

The first period is 90x. After the collapse of the USSR, Russia and the EU in June 1994 concluded a legally binding Partnership and Cooperation Agreement. This agreement can be considered as a starting point of cooperation, even if it was not easy. This is evidenced by the fact that the agreement came into force only after three years. All further cooperation depended on internal and external factors (Emeljanova, 2009).

After 1991 Russia was going through a difficult period of formation, acquisition of a new identity, internal and foreign policy priorities. The European Union was also in the process of transformation. As a result of three rounds of expansion in 1995, 2004 and 2007. The EU increased to 27 members and in 2011 to 28. Among them were not only states that were former allies of the USSR, but also three former Soviet republics - Estonia, Latvia and Lithuania (Emeljanova, 2009).

One of the substantive factors that have strongly impacted the promotion of a policy of convergence was the fact that the majority of EU states are members of NATO. The expansion of the Atlantic alliance to the east and the use of military force without the approval of the UN Security Council only complicated the dialogue and increased disagreements between Russia and the EU.

The beginning of 2000x can be viewed as a period of rapprochement between the parties. In the first years of the XXI century, cooperation between Russia and the European Union received a new breath. In 2001, the crisis in their relations associated with the "second Chechen war" was overcome (the previous two crises occurred in 1995 because of the "first war" in Chechnya and in 1998 because of Russia's default). This was primarily due to the fact that both partners managed to ensure economic growth, quite successfully solving their internal problems. In their forecasts, the EU and Russia adhered to unambiguously optimistic assessments (Emeljanova, 2009).

In the early 2000s, the EU quickly became one of the key political centers. Russia, on the other hand, due to the rapid growth of GDP based on the raw materials sector of the economy, also stepped up its foreign policy efforts, taking a course to establish itself as an independent player in the international arena. During this period, the greatest disagreements between Russia and the European Union were caused by the issue of its

enlargement. Moscow's list of concerns, transmitted to Brussels in 1999, included the rights of the Russian-speaking population in Estonia and Latvia and the Kaliningrad transit problem, which the European Commission agreed to discuss only in early 2002 (Emeljanova, 2009).

Also, contradictions arose as a result of the presidential elections in Ukraine in the fall of 2004, as a result of the "color revolutions" in the post-Soviet space. The EU's "New Neighborhood" policy increasingly clashed with Russian national interests. Another example of the aggravation of contradictions is the recognition of Kosovo. Thus, the EU enlargement in 2004 and 2007. the "visa barrier" has been moved even closer to Russia (Isachenco, 2015).

Over time, the relationship between the parties became more pragmatic. In 2002, Russia was recognized as a country with a market economy, and in foreign policy, Russia and the EU became closer. However, from the side of various institutions of the European Union, especially the European Parliament, criticism of Russia in the field of human rights, the rule of law, and the independence of the judiciary remained unchanged. From time to time this criticism had been faded amid such facts a war crimes committed by American, British, and military personnel of a number of other European countries during the USA-Iraq war (Isachenco, 2015).

The balance of EU-RF relations was hampered by a number of events in 2006-2008. For example, back in 2006, Poland blocked the granting of a mandate to the European Commission to negotiate with Russia due to disagreements with it on bilateral issues. Lithuania also made claims to Russia. Negotiations on updating the PCA, signed back in May 2004, were interrupted due to the August events in the Transcaucasia. After the attack of Georgian troops on Tskhinvali and on Russian peacekeepers, Russia was forced to send its troops to South Ossetia and Abkhazia. However, the EU regarded Russia's actions as a disproportionate use of force. Also, the EU considered it unacceptable for Russia to recognize the independence of the two former parts of Georgia (Emeljanova, 2009).

At the beginning of the century racial and ethnic conflicts, which were clearly manifested during the riots in the suburbs of Paris, as well as the painful process of merger together old and new member states forced the EU to focus on domestic policy issues, which, in turn, didn't contribute to progress in relations between Russia and the EU.

A characteristic feature of the period preceding the global economic crisis was the increase in the volume of economic cooperation between Russia and the EU countries. In

2008, the share of the European Union in Russia's foreign trade turnover exceeded more than 52%, the EU served as a source of 75% of foreign direct investment (92 billion euros in 2008). By 2009, Russia had become the EU's third-largest foreign trade partner after the United States and China, accounting for 6% of exports of goods to the EU and 9.6% of imports of its products. In 2009, Russia supplied more than 115 billion euros of goods to the European Union. Its direct investment in the EU reached 28 billion euros, four times the volume of investments in the EU from India and twice from China (Gurevich, 2016).

Russia was the leader in oil supplies to the EU, which from 2000 to 2009 grew by 56% - up to 208 million tons annually, as well as the leader in coal supplies. Russia ranked third in gas exports to the EU (134 billion cubic meters in 2008), accounting for 40% of all EU gas imports. In many European countries, the share of Russia in imported gas was even higher: in the Baltic countries - 100%, in Slovakia and Bulgaria - 90%, in the Czech Republic and Greece - 75%. Russia, in turn, was 85% dependent on the EU as a gas importer. Among other energy resources, uranium also stood out, for which Russia was the leader in supplies to the EU. However, the world crisis has changed the relations between the EU and RF. In 2008-2009, indicators of their economic interaction have significantly decreased, starting in 2010 gradually returning to pre-crisis levels (Gurevich, 2016).

The beginning of 2010x can be considered as a short period of pragmatic balance in EU-Russia relations. Further progress in the field of economic interaction depended largely on Russia and the World Trade Organization (WTO). The final solution to this issue was constantly postponed for various reasons but ended in success at the end of 2011. After Russia joined this organization, it seemed real the transition to the implementation of the concept of a common European economic space, which provided for the creation of a free trade zone between Russia and the EU (Gurevich, 2016).

The next event that radically changed the vector of bilateral relations is the Ukrainian crisis of 2013, which in February 2014 escalated into a coup d'etat, as well as into the phase of civil war with the actual participation of several states and blocs in it. As a result, Crimea was occupied by Russia, East Ukraine ended up in the war and the EU, together with the US, introduced the toughest sanctions in the entire history of relations.

3.3.3 Sanctions against Russia

At present, the problems of bilateral relations between Russia and the EU as its main economic partner are largely complicated by the adopted trade and political measures, called sanctions.

Sanctions against Russia, according to the EU classification, can be divided into diplomatic and economic. Diplomatic sanctions include measures such as converting Summit G8 in Sochi into Summit G7 in Brussel. At the same time, certain negotiations were suspended as: negotiations on Russia's accession to the OECD and the International Energy Agency (IEA); negotiations on facilitating the visa regime, as well as concluding a new Partnership and Cooperation Agreement (PCA); and regular bilateral RF-EU summits. The Russian delegation was deprived of the right to vote in the Parliamentary Assembly of the Council of Europe (PACE) (European Commission, 2020).

Economic sanctions are including:

1. Restrictions for Crimea and Sevastopol
2. Restrictions in finance, industry, and trade
3. Economic cooperation (including bilateral and regional) (European Commission, 2020)

The first one is prohibiting import from Crimea and Sevastopol without a certificate of origin from Ukraine; investments, provision of tourist services; export of a number of goods and technologies (transport, telecommunications, energy); rendering technical assistance and other services related to the infrastructure of the sanctions sectors.

Restrictions in finance, industry, and trade are banning carrying out transactions with financial instruments issued by 5 Russian largest state-owned banks, 3 energy and 3 defense companies; providing loans for the 5 largest Russian state banks; export-import of weapons and related materials to/from the Russian Federation (except for the space sector); export of goods and technologies of military use. Restrictions on the export of a number of goods for the Russian oil and gas sector, as well as a ban on their export: for deep-sea oil exploration and production; for exploration and production of oil in the Arctic; for exploration and production of shale oil (European Council, 2021).

In the economic cooperation field, at the request of the European Council, financial projects of the European Investment Bank (EIB) have been suspended. Financing of new

investment projects of the European Bank for Reconstruction and Development (EBRD) is also suspended.

Another restriction measure deals with property and visa restrictions. European Union froze assets and banned visas for 152 Russian individuals and froze assets in the EU for 37 legal entities (European Council, 2021).

A sharp change in the political situation in Europe and the world, the imposition of restrictive measures in the trade and investment sphere had a serious negative impact on bilateral contacts and trade policy priorities. The political confrontation led to the termination of many economic and political contacts, as well as to the limitation of scientific and humanitarian contacts and joint research. The key result of the sanctions is the identification of the problem of Russia's strong dependence on one partner and the absence of other significant projects outside the EU (Averre, 2016).

Since 2014, the EU and the US have introduced the most stringent economic sanctions against Russia since the end of the Cold War, and the measures themselves have become the most sensitive for Russia and the EU in the entire history of the development of bilateral relations. Many economists have tried to assess the impact of these sanctions, but their opinions differ (from 0.5% to 9% of GDP decline). For example, the IMF established a decrease in Russia's real GDP by 1–1.5% amid the influence of Western sanctions and Russian countersanctions (IMF, 2019). However, in the medium term, the IMF has estimated the total losses of the Russian economy at 9%. On the other hand, Citibank analysts (Citybank, 2020), using vector autoregression analysis, believe that about 90% of the observed decline in GDP is due to the fall in oil prices. Experts who analyzed the impact of sanctions on Russian financial markets also concluded that the oil price had the most impact on Russian financial markets (Gurevich, 2016).

In response to Western sanctions, a little later, in August 2014, Russia introduced its own restrictive measures. According to the 2017 report of the European Commission on trade and investment barriers, 36 Russian restrictive measures are currently in force against European businesses. Since January 2017, Russia has introduced additional restrictions on foreign companies' access to purchases by Russian state-owned trading enterprises. The new measure recorded a 15 percent price preference for domestic companies bidding. At the end of 2017, the Russian government adopted a law on the requirements for the content of local components when purchasing aircraft and ships; in 2017, access was closed to radio electronics and furniture (MINFIN RF, 2021).

Certain difficulties for European producers have arisen as a result of the application of bans on the export of hides, hides, and round timber, aimed at protecting the domestic market, as well as changes in tax regulations. In 2017, imported products were removed from the preferential rates of excise taxes on wines with a protected geographical indication, as well as with a protected designation of origin. In fact, the Ministry of Finance and the Federal Customs Service of Russia have recognized that only wines produced in Russia can be considered wine products. A serious barrier is the requirement to use vessels under Russian flags to transport hydrocarbons and coal along the Northern Sea Route (European Council, 2021). The foreign flag of the vessel makes it easier to attract foreign funding, but in modern geopolitical conditions, this is practically impossible for vessels registered in the Russian Federation.

The Russian food embargo and the implementation of the import substitution policy for the period 2013-2020 caused damage to European manufacturers. According to the European Commission, banned agri-food products amounted to more than 5 billion euros of EU exports to Russia in 2013 (5.5% of total EU exports to Russia at the time) (European Commission, 2020). Despite the identification of irregularities, illegal shipments, and re-exports of banned EU food through third countries such as Belarus and Serbia, the Russian import ban has been relatively effective.

It is important to note that any restrictive measures require justification in terms of WTO rules. However, the chance of challenging modern sanctions in the WTO is extremely small. Moreover, the Leaders of the EU countries made a political decision to extend the sanctions against Russia, introduced back in 2014 until mid-2021. Russia, in turn, on November 21, 2020, extended countersanctions until the end of 2021. Thus, the positive dynamics of the relationship are not observing so far.

3.3.4 Bilateral trade disputes under the WTO

As was mentioned earlier, Russia became a member of the WTO in 2012. Since then, the country has initiated eight disputes on various economic issues and, in turn, was responder nine more times.

Figure 3 Dispute cases involving the Russian Federation under WTO

	as complainant	as respondent	as third party
Russian Federation See this on a map	8 case(s): DS474 , DS476 , DS493 , DS494 , DS521 , DS525 , DS554 , DS586	9 case(s): DS462 , DS463 , DS475 , DS479 , DS485 , DS499 , DS512 , DS532 , DS566	86 case(s): DS400 , DS401 , DS414 , DS431 , DS432 , DS433 , DS437 , DS441 , DS449 , DS454 , DS456 , DS458 , DS467 , DS468 , DS469 , DS471 , DS472 , DS473 , DS480 , DS484 , DS487 , DS488 , DS489 , DS490 , DS492 , DS495 , DS496 , DS497 , DS502 , DS508 , DS509 , DS510 , DS511 , DS513 , DS516 , DS517 , DS518 , DS522 , DS523 , DS524 , DS526 , DS529 , DS531 , DS533 , DS534 , DS536 , DS537 , DS538 , DS539 , DS541 , DS542 , DS543 , DS544 , DS545 , DS546 , DS547 , DS548 , DS550 , DS551 , DS552 , DS553 , DS556 , DS557 , DS558 , DS559 , DS560 , DS561 , DS562 , DS564 , DS567 , DS573 , DS576 , DS577 , DS578 , DS579 , DS580 , DS581 , DS582 , DS583 , DS584 , DS585 , DS588 , DS590 , DS591 , DS593 , DS595

Source: WTO

At the end of lengthy negotiations that lasted 18 years, Russia became the 156th member of the WTO. This decision was widely criticized and there were repeated calls to leave the organization. But for eight years, Russia has actively used its capabilities.

The first dispute was initiated by the EU in the first year of Russia's membership in the WTO. Now on the WTO platform there is parity between Russia and the European Union: 4 cases from each side (DS474, DS476, DS494, DS521, DS462, DS475, DS485, DS479) (WTO, 2021). The reason for this according to Isachenko, Medvedkova consists of complex causes:

- the presence of many unresolved bilateral problems with a political basis;
- the principle of reciprocity, which provides for a mandatory retaliatory move;
- stagnation of the organization itself (the out-of-control dispute resolution system) (Isachenko, 2019).

The first EU lawsuit was filed on July 9, 2013. The reason was violations by Russia regarding the introduction of a recycling fee for imported vehicles. This claim was settled at the consultation stage through the restoration of national treatment. Russia's response and the first claim almost a year and a half after joining the WTO was a claim against the EU on the issue of cost adjustments during anti-dumping investigations. Russia criticized

the EU's "cost adjustments methodology" because it involved calculating the cost of goods based on European cost prices, not Russian ones. Initially, it was not easy for Russia to challenge the 2009 EU Regulation. However, in 2015, the claim was accepted by the Dispute Settlement Body (DSB). It is noteworthy that in 2018 the Panel sided with Russia in a dispute with Ukraine, which borrowed a similar cost adjustment methodology from the EU. In August 2020, the WTO recognized as justified Russia's claims to the European Union regarding the methodology for determining the price of goods and anti-dumping duties on them, which means Russia's victory in this dispute.

The subject of the next dispute (April 2014) was the contested Russian measures related to the directives of the Third Energy Package, aimed, according to the EU's intention, to establish rules for the creation and operation of a single gas market. According to its provisions, companies engaged in gas production cannot own trunk pipelines in the EU. They must either sell these assets or transfer the management to independent European companies. And if these operators are controlled by foreign entities, then they must undergo special certification. Moscow criticized the energy package for contradicting the EU's WTO commitments on basic principles of non-discrimination and market access.

As a result, in 2018, the WTO Panel supported Russia and agreed with its correctness on several points. In particular, following aspects were recognized as unlawful:

- restrictions on Russian gas supplies via the OPAL pipeline (onshore continuation of Nord Stream) and the requirement to sell a certain amount of raw materials on the EU open market;
- discriminatory rules for the certification of operators of gas transmission networks controlled by foreign entities in Lithuania, Hungary and Croatia;
- discriminatory advantages of infrastructure projects and giving them the status of "projects of common interest" if they are aimed at supplying gas from outside the Russian Federation (WTO, 2021).

The decisions made could improve the conditions for the supply of Russian gas to the EU market, and, therefore, are of commercial interest for Russian gas suppliers. A positive precedent could change the legislation of the EU and its individual member states. However, in September 2018, the EU filed an appeal, which has been postponed indefinitely.

2015 was a productive year for lawsuits. This year Russia filed a lawsuit against the EU over the abolition by the European Commission of duties on the import of Ukrainian

welded pipes and the introduction of duties for manufacturers from Russia, China, and Belarus, as well as the introduction of anti-dumping measures against ammonium nitrate. Russia decided to combine its claims into one lawsuit since in essence the claims are the same and correlate with the previously filed lawsuit regarding cost adjustments. In December 2016, the Panel was created but has not yet been finally formed. Thus, the dispute remains unresolved (Isachenco, 2015).

Another lawsuit by Russia is the EU's anti-dumping measures against Russian cold-rolled steel. Cold-rolled products are steel sheets processed using special technology. Therefore, the largest Russian metallurgical companies were hit by European restrictions. At the time the dispute was launched, duties for the Magnitogorsk Iron and Steel Works were 18.7%, for Severstal - 34%, for NLMK and other enterprises - 36.1% (Rosstat). This dispute also remains unresolved.

No less resonant in Russian-EU bilateral relations was the dispute over the Russian ban on the import of live pigs and pork from all EU countries after the reported cases of African swine fever (ASF) in Estonia, Latvia, Lithuania and Poland. The arbitrators found the measure to be more restrictive than necessary to prevent the spread of ASF. The Appellate Body largely supported the Panel. The EU has been ordered to step up the fight against the disease. The Russian Federation has fully complied with the recommendations of the DSB in good faith.

The peculiarity of this dispute lies in the fact that it has moved to the political plane. The import of live pigs and pork products originating from states that have decided to impose economic sanctions on individuals and / or legal entities of the Russian Federation, in particular the EU and its member states, is still prohibited (WTO, 2021).

Anti-dumping duties on light commercial vehicles from Germany (29%) and Italy (23%) became the first Russian WTO contested protective measure that extended its effect to all EAEU member states. In 2017, the WTO panel of arbitrators made a decision, which both parties interpreted in their favor. Later, Russia challenged the conclusions about the inconsistency with WTO norms of certain aspects of the anti-dumping investigation. But the EU won this appeal too. The decision to abolish the duties was automatically executed on June 15, 2018, when the anti-dumping duty, which was introduced in 2013 for five years, ended. In 2018, Russia notified the WTO of the full implementation of nominal recommendations, since during the investigation, the 5-year period of the EU contested measure expired (WTO, 2021).

Another interesting precedent, initiated in 2014, concerned the tariff regime of the Russian Federation established for a number of agricultural and manufacturing goods. The EU intended to show cases of obvious violations. The European Commission has appealed to the fact that Russia has set duties, for example, on paper products in the range of 10 to 15%. Although when joining the WTO, RF agreed to 5%. In this dispute, the Panel easily revealed Russia's violations of tariff obligations, and the Russian Federation did not dispute specific examples of the EU, but successfully refuted the claim that such actions were systematic. At that time, the EU estimated the annual export of these goods at € 440 million (WTO, 2021).

3.3.5 Multilateral trade platform

The history of relations within the WTO shows that disputes and mutual claims on certain issues are not obstacles to bilateral and multilateral dialogue. The only possible way to stabilize relations between Russia and the EU today is a multilateral platform. Russia and the EU are showing commitment to the multilateral format, calling it a priority in their policies. Today, in the context of sanctions, bilateral trade, and political issues are easier to implement at multilateral platforms, and the mutual desire of sides should be a trigger in this matter.

At the moment, at the WTO platform, there is a possibility of rapprochement of the positions of Russia and the European Union on some negotiating issues. For example, in matters of electronic commerce, which means the production, distribution, marketing, sale, or delivery of goods or services electronically (WTO document WT / L / 274 of September 30, 1998). There were proposals on the procedures and content of this negotiating track. It is noteworthy that the positions of Russia and the EU complement each other to a large extent, which can create a foundation for cooperation at this level. Another positive point is that the list of most issues falls into the zones of interests of both parties: transparency, protection of the interests of online consumers, simplification of trade procedures, liberalization of market access (Isachenko, 2019).

The idea of investment cooperation, which was developed at the WTO platform, is also actively supported by both delegations. The EU and Russia are mutually facilitating discussions on the development of new rules to facilitate investment procedures.

Another positive aspect has been seen during the negotiations on the involvement of micro, small, and medium-sized enterprises in international trade, which united the EU and the Russian Federation in one group. Also, the unity of views was shown by negotiations on services, where the delegations managed to agree on a single negotiating text on the disciplines of internal regulation in services.

Despite the positive aspects, the complex geopolitical situation raises the question of the fate of the WTO itself. At the end of 2018, the EU presented at the WTO a “concept paper”, containing proposals for reforming, in particular, the dispute resolution rules (suggestions to the Appellate Body), ensuring transparency (WTO, 2021). It is also about creating stricter rules for state-owned trading enterprises, removing barriers to investment in trade in services, developing rules that prevent forced transfer of technology.

Russia is also an active supporter of the idea of reforming the organization. Within the framework of the Council for Economic, Financial, Industrial and Trade Issues, the intention was announced to create a special group for reforming the WTO, the founders of which will be Russia and France. This could be a positive signal and one of the possible small steps towards stabilizing bilateral relations.

Another platform for the establishment of trade and political relations can be cooperation between the EU and the EAEU. For Russia, the creation of a common economic space between the EU and the EAEU with the aim of "preventing the emergence of dividing lines on the European continent", according to the foreign policy concept adopted in 2016, is one of the strategic priorities in relations with the EU (MID RF, 2021). The European Union takes a more cautious position. The European Parliament resolution of September 2014 states, albeit rather vaguely, that “the European Commission should explore the possibilities of EU cooperation with the Eurasian Economic Union” (European Commission, 2020).

Economic cooperation between the EU and the EAEU is possible and desirable for several reasons.

1. A neutral platform will emerge where it will be possible to stimulate rapprochement between the EU and Russia.
2. Cooperation between the EU and the EAEU will help bridge the split between the EU and Russia and bring neighboring countries closer to the EU.
3. Economic cooperation and trade enhance the well-being of all participants and help avoid competition for neighboring countries (Gandolfo, 2010).

Nevertheless, there are many political barriers between the EU and the EAEU. The main obstacle is still the unresolved conflict in Ukraine. However, there have been small steps towards rapprochement on the part of the EU. For example, in the fall of 2015, European Commission President Jean-Claude Juncker welcomed the interaction between the two economic blocs, responding to an unpublished letter from the Eurasian Economic Commission in favor of cooperation. However, he noted that the condition for cooperation is the implementation of the Second Minsk Agreement. Since there has been no progress in the Minsk Process, closer economic cooperation between the EU and the EAEU appears to be no longer on the agenda.

3.4 Econometric analysis

Econometric analysis means the study of real phenomena and processes in the economy. This is a study (verification, justification, estimation) of quantitative model patterns and qualitative statements (hypotheses) based on the analysis of the statistical data characterizing them (Johnston, 1997). The methods applied in this case are an integral part of econometrics, which is a science that studies economic phenomena from a quantitative point of view (Dougherty, 2007). Econometrics establishes and investigates quantitative patterns in socio-economic phenomena and processes using formalized methods of the theory of probability and mathematical statistics. Therefore, depending on the nature of the subject area, methods must be adapted to the processing of economic data that reflect their informal, subject content.

Regularities in the economy are expressed in the form of connections and dependencies of economic indicators, which cannot be fully reflected by mathematical models. Such dependencies and models should be verified using real statistical data, taking into account real internal communication mechanisms and random factors. The model, which is obtained and tested based on the analysis of statistical data, may not correspond to the ideas of economic theory. It means this model behaviour needs clarification and development (Dougherty, 2007).

Econometric analysis is especially important in macro and microeconomics, where the relationships between quantities are often not obvious and changeable. Often occurs when the model stops "working" due to the appearance or activation of some factor, which contributes to the development of macroeconomic theory. The econometric analysis makes

it possible to justify and clarify the form of dependencies in the considered macroeconomic models (Dougherty, 2007).

The main task of economic research is to analyse and build relationships between economic variables. The study of such relationships is complicated by the fact that they are not strict, functional dependent. Firstly, it is always very difficult to identify all the main factors affecting this variable. Secondly, many of these impacts are random, which means they contain a random component. Thirdly, economists, generally, have a limited set of statistical observations, which, moreover, contain various kinds of errors (Dougherty, 2007).

Mathematical statistics (the theory of data processing and analysis) and its application in economics - econometrics - allow to build economic models and evaluate their parameters, test hypotheses about the properties of economic indicators and the forms of their relationship. Ultimately, it serves as the basis for economic analysis and forecasting, creating an opportunity for informed economic decisions (Johnston, 1997).

Any economic research always involves the combination of formal theory (economic model) and real practice (statistical data). Theoretical models are used to describe and explain the observed socio-economic phenomena and processes. Statistical data are collected to substantiate and refine existing models and empirically build new models that expand and deepen economic theory.

The classical linear regression model

The classical linear regression model is regression model of dependence of one (explained, dependent) variable y on another or several other variables (explanatory, regressors, independent variables) x with a linear dependence function (Dougherty, 2007).

The model can be characterized in economic and econometric forms. The main difference between them is the existence of an error term in the econometric model. Both models tend to explain the real-world cases, while econometric form just extends them by taking into account factors, which are not included in the model and reflected by error term. The economic model includes a descriptive aspect of economic and does not provide explanation of variables development or its parameters (Dougherty, 2007).

The theoretical form of the model can be presented in the following form:

$$y = f(x_1, x_2, \dots, x_i) \quad (1)$$

Where:

y= explained variable,

x= explanatory variable,

An economic form of the model can be expressed:

$$y_t = \gamma_0 + \gamma_1 x_{1t} + \dots + \gamma_i x_{it} \quad (2)$$

Where γ is estimated parameter.

An econometric form is presented in the following form:

$$y_t = \gamma_0 + \gamma_1 x_{1t} + \dots + \gamma_i x_{it} + u_t \quad (3)$$

Where u_t is the error term.

Data

In the econometric analysis, different types of data are used, for example:

1. Time series. A time series is an ordered collection of measurements taken at regular intervals like daily stock prices or weekly sales data. The intervals can be set in any time unit, but they must be the same in the entire series of measurements.
2. Cross-section data. It's a type of data, which is focused on observing many objects (such as individuals, firms, countries or regions) at one point or time period. The analysis may also ignore timing differences. Cross-sectional data analysis usually consists of comparing differences between selected subjects.
3. Panel data. Data type, that refers to a repeated survey of a cross-section sample in different periods. This is kind of combination of time series and cross-sectional data.
4. Dummy variable data. This is a data of qualitative variable that takes values of 0 and 1, which is included in the econometric model to take into account the influence of qualitative features and events on the variable being explained. At the same time,

dummy variables make it possible to consider the influence of not only qualitative features that take two values, but also several possible ones. In this case, several dummy variables are added. A dummy variable can also be an indicator that an observation belongs to some subsample. The latter can be used to detect structural changes (Dougherty, 2007).

3.4.1 Multiple regression

Multiple regression analysis is an extension of pairwise regression analysis. It is used in cases where the behaviour of the explained, dependent variable needs to be associated with the influence of more than one factorial, independent variable (Johnston, 1997).

The first step of building the model is the assumption that the model is correctly specified. The opposite statement, if the initial assumptions turned out to be incorrect, can be established only based on the quality of the resulting model. Consequently, this stage is the starting point for carrying out multiple regression analysis even in the most difficult case, since only it, or rather its results, can give grounds for further refinement of the model representations. In this case, the necessary changes and additions to the model specification are made, and the analysis is repeated after model refinement until satisfactory results are obtained (Johnston, 1997).

Multiple regression can be presented in the following form:

$$Y=f(B, X) + \varepsilon , \tag{4}$$

Where:

Y = the dependent (explained) variable

X = a vector of independent (explanatory) variables;

B = the vector of parameters of the equation (to be determined);

ε = random error (deviation).

It is assumed that the function f that connects the studied variable Y with the vector of independent variables X.

The theoretical linear regression equation is presented in the form below:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_pX_p + \varepsilon, \quad (5)$$

or for individual observations with i :

$$y_i = b_0 + b_1 X_{i1} + b_2 X_{i2} + \dots + b_p X_{ip} + \varepsilon, \quad (6)$$

where $i=1, 2, 3 \dots, n$.

Here, $B = (b_0, b_1, \dots, b_p)$ is a vector of dimension $(p + 1)$ of unknown parameters b_j , $j = 0, 1, 2, \dots, p$, is called the j -th theoretical regression coefficient (partial regression coefficient). It characterizes the sensitivity of the Y value to a change in X_j . In other words, it reflects the impact of the dependent variable Y of the explanatory variable X_j , with regard that all other explanatory variables of the model remain constant (*ceteris paribus*). b_0 is an intercept that determines the value of Y in the case when all explanatory variables X_j are equal to zero (Johnston, 1997).

OLS method

Ordinary least square, OLS, is a method for estimating coefficients of parameters, which will justify the characteristic features of regression analysis in the framework of the classical linear multivariate model (Dougherty, 2007).

Before proceeding OLS method, it's important to note the desirability of the feasibility of a number of theoretical assumptions for linear regression model. Such as (Dougherty, 2007):

1. The regression model should be linear in the parameters
2. The regressors are assumed fixed, or nonstochastic, in the sense that their values are fixed in repeated sampling
3. Given the values of exogenous variables, the expected, or mean value of the error term u_i is 0:

$$E(u_i | X) = 0 \quad (7)$$

4. The variance of each u_i , given the values of X , is constant or homoscedastic
5. There's no correlation between error terms belonging to two different observations

6. There's no perfect linear relationship among exogenous variables – no multicollinearity
7. The error term u_i follows the normal distribution with 0 mean and constant variance.

In case, all assumptions are satisfied, then the estimates of the model parameters can be referred to as BLUE estimation = Best Linear Unbiased Estimation (Dougherty, 2007).

The essence of estimating the parameters of a linear paired equation by the OLS method is to obtain such estimates of the parameters for which the residual sum of the squares is minimal (Dougherty, 2007). Formally, the OLS criterion can be written as follows:

$$\sum_{i=1}^n (y_i - \bar{y}_i)^2 \rightarrow \min \quad (8)$$

The formula of the constant intercept:

$$\gamma_1 = \hat{y} - \gamma_2 \cdot \bar{x} \quad (9)$$

Slope of the regression line is calculating by following formula:

$$\gamma_2 = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y}_i)}{\sum_{i=1}^n (x_i - \bar{x})^2} = (\text{cov } x_i, y_i) / \sigma^2 \quad (10)$$

The estimation OLS function has following form:

$$\gamma = (X^T X)^{-1} \cdot X^T y \quad (11)$$

Where:

γ = vector of estimated parameters

X = a matrix, which contains the observed values of explanatory variables

y = a vector, which contains the observed values of the explained variable (response).

Results interpretation

Interpretation of the results of the analysis of regression analysis is one of the most important parts. Considering the obtained estimation parameters of the regression equation, it can be said that the change in X_i by one unit leads to a change in the explained variable Y by b_i units of this variable. The direction of its change is determined by the sign of the coefficient in front of the variable X_i (Dougherty, 2007)

Meanwhile, units in which the sample values of the variables Y and X_i are measured affect the value of the estimates of the regression parameters b_i (Dougherty, 2007).

It is also imperative to fix in what units the values of all variables are measured before replacing the word "unit" with specific names: tons, euros, etc. Hence it follows that the regression coefficients in front of various factors cannot be compared with each other.

All other more general indicators of the nature of the influence of factors on the explained variable, independent of the scale of their measurements, such as standardized coefficients and elasticity coefficients, are obtained based on these estimates of the parameters b_i (Dougherty, 2007).

3.4.2 Model verification

The identification of the best variant of an econometric model is usually carried out by comparing the corresponding qualitative characteristics, which can be calculated based on the initial statistical information contained in the vector Y , matrix X , and new calculated information that appears after building each of the model variants. The main condition for a "good" model is the validity of the mathematical form of the empirical regression equation. An important role in this is played by both the composition of the independent variables included in it, and the nature of their relationship with the dependent variable y , which together determine the reasons for its variability (Dougherty, 2007).

Comparison of the new calculated information obtained after estimating the parameters of the model regression with the initial statistical information makes it possible to establish how this condition was successfully implemented in practice. The main methods of model test are economical, statistical, and econometrical verification.

Economic verification

Economic verification refers to the comparing received results of the regression analysis with theoretical provisions. It's crucial the achieved results do not contradict with theoretical statements, otherwise the analysis is considered as incorrect and irrelevant. Only within the framework of an adequate model can one draw certain conclusions and make informed decisions. An inadequate model has almost no practical utility. The adequacy of the model is understood as the degree of conformity of the model to the real-world process for the description of which it is introduced (Demidova, 2018).

Statistical verification

Testing the statistical significance of a multiple regression equation means determining whether the regression model adopted to explain the relationship between variables is consistent with the original statistics. Or, in other words, are there enough factors included in the regression equation to describe the behavior of the explained variable based on the available sample data (Demidova, 2018).

F-test statistics

Checking the significance of the regression equation is performed using the method of statistical analysis - analysis of variance. Evaluation of the quality of the model regression equation using the F-test of Fisher consists in testing the hypothesis H_0 about the statistical significance of the regression equation. This is the rationale for the reality of the statistical relationship indicator. In the case when the null hypothesis is rejected, the influence of factors included in the regression on the explained variable prevails over its changes due to other reasons not taken into account (Demidova, 2018).

The hypothesis of F-test:

Null hypothesis (H_0): the model is not statistically significant

Alternative hypothesis (H_1): H_0 is not true

The null hypothesis is rejected when actual F value is greater than critical table value $F^*(n-p, \alpha)$.

The R^2 coefficient of determination

This indicator is a statistical measure of goodness with which it's possible to determine how well the regression equation matches the real data.

The coefficient of determination ranges from 0 to 1. If it is 0, it means that there is no relationship between the variables of the regression model, and instead of it, a simple average of its observed values can be used to estimate the value of the output variable. On the contrary, if the coefficient of determination is equal to 1, this corresponds to an ideal model when all observation points lie exactly on the regression line, i.e., the sum of the squares of their deviations is 0 (Dougherty, 2007).

In practice, if the coefficient of determination is close to 1, this indicates that the model works very well (has a high significance), and if to 0, then it means a low significance of the model when the input variable does not "explain" the behavior of the output, which means the absence of a linear relationship between them. It is obvious that such a model will have low efficiency. In some cases, the coefficient of determination can take small negative values if the model is "useless" and its predictions are worse than the estimates based on the mean (Dougherty, 2007).

The formula of coefficient of determination is:

$$R^2 = SSR/SST \quad (12)$$

$$SSR = \sum_i (\hat{y}_i - \bar{y}_i)^2 \quad (13)$$

$$SST = \sum_i (y_i - \bar{y}_i)^2 \quad (14)$$

Where:

SSR= Sum of Squared Regression, the variation explained by the model

SST= Total variation in the data, the sum of squared total

y_i = the value of observation i

\hat{y}_i = predicted value of y for observation i

\bar{y} = the mean of y value

t-test: statistical significance of the parameters

The student's t-test is used to assess the statistical significance of the regression parameters and the correlation coefficient. As the main hypothesis, H_0 means the insignificant difference from zero of the regression parameters or the correlation coefficient. An alternative hypothesis, in this case, is the reverse hypothesis, i.e., about the inequality of the parameter or the correlation coefficient to zero (Demidova, 2018).

The actual value of the t-test found from the observation data is compared with the table (critical) value determined from the Student's distribution tables. The tabular value is determined depending on the significance level (α) and the number of degrees of freedom.

If the actual value of the t-criterion is greater than table one, then it is considered that with the probability $(1-\alpha)$ the regression parameter (correlation coefficient) is significantly different from zero. If the actual value of the t-criterion is less than critical, then there is no reason to reject the main hypothesis, i.e., the regression parameter differs insignificantly from zero at the significance level α .

The actual value of the t-criterion is determined by the formula:

$$t_{\text{value}} = \text{absolute value of parameter} / \text{its standard error} \quad (15)$$

The main hypotheses are:

Null hypothesis (H_0): there's no correlation between variables

Alternative hypothesis (H_1): H_0 is not true

Condition of rejecting the null hypothesis is:

$$t_{\text{value}} > t_{\alpha} \quad (16)$$

Econometric verification

The economic verification is the next way of model diagnostics that is important for any estimations. The main goal is to trace out the absence of autocorrelation, normality, and stability of the model. These can be easily tested by most of statistical software.

Autocorrelation test

Autocorrelation is defined as the correlation between the values of an observed variable ordered in time or space. Autocorrelation, if ignored, degrades the predictive qualities of the regression model. The presence of autocorrelation can be established using rank correlation methods. The most famous method for detecting autocorrelation is the Durbin-Watson method (Dougherty, 2007). The main hypotheses in this case are:

Null hypothesis (H_0): no autocorrelation

Alternative hypothesis (H_1): H_0 is not true

Test for homoscedasticity

The homoscedasticity of the residuals means that the variance of each deviation is the same for all values of x . If this condition is not met, then heteroscedasticity takes place. The presence of heteroscedasticity of random errors leads to the inefficiency of estimates obtained using the least-squares method. In addition, in this case, the classical estimate of the covariance matrix of the OLS estimates of the parameters turns out to be biased and inconsistent. Consequently, statistical conclusions about the quality of the estimates obtained may be inadequate. In this regard, testing models for heteroscedasticity is one of the necessary procedures for constructing regression models, which is usually tested through the White test (Dougherty, 2007). The main hypotheses here are:

Null hypothesis (H_0): homoscedasticity

Alternative hypothesis (H_1): heteroscedasticity

Test for normality

The normal distribution is one of the LRM's assumptions. Thus, it's crucial to test the model for the normal distribution of parameters. The simplest way to do it is to check the nature of data distribution by building a histogram. It can be simply done via many different statistical software such as Gretl. If the histogram has a bell-shaped symmetrical appearance, it can be concluded that the analyzed variable has an approximately normal distribution. When interpreting histograms, however, as their appearance can be highly dependent on both the number of observations and the way chosen for classifying the data (Dougherty, 2007). The main hypotheses for the normality test are:

Null hypothesis (H_0): normal distribution

Alternative hypothesis (H_1): H_0 is not true

4 Practical Part

The practical part of this paper deals with a descriptive analysis of the trade structure of the Russian Federation and the European Union. Foreign trade of each parties will be analyzed as well as the EU-RF trade for answering the main research questions. This part provides information regarding traded volumes, commodity structure, and main partners of each side of bilateral relation in 1999-2018. This period was selected to reflect the development before and after sanctions imposition in order to detect major changes. Regression analysis is also presented to show sanctions impact on the trade turnover and economies of EU and RF.

4.1 Structure of the RF's foreign trade

Russia, as known, is the biggest country in the world. It's very rich in natural resources. There are large deposits of fuel and energy raw materials on the territory of the country: oil, natural gas, coal, uranium ores etc.

Russia ranks second in the world in terms of natural gas and oil production according to OPEC data, as well as second in coal reserves. Also, Russia occupies a leading position in the world in terms of forest supply. In terms of gold reserves, Russia is in fifth place in the world. Gold accounts for 19% of all international reserves of the Russian Federation. In addition, metal and non-metal ores are mined in the country. Building materials are also widespread: sand, clay, limestone, marble, granite, cement raw materials, and others. This resource wealth makes Russia one of the world's largest exporters. However, it applies only to natural resources. The lack of manufacturing enterprises and technologies, in turn, forces to purchase foreign goods and services.

4.1.1 Foreign trade in goods

Table 1 shows main traded volumes in goods from 2000 to 2018 with “Far and Near abroad countries”. This period is selected to reveal the growing trend of trade turnover between Russia and EU till the crises years and changes occurred after sanction imposition. According to the data, it can be said that Russia's trade turnover had been increasing annually. However, the growth stopped in 2009 in the wake of the world crises. Then the growth resumed until 2014, when the Crimean crisis has appeared, and many

economic sanctions spilled came down in Russia. As result, the Russian trade has suffered greatly, and the trade growth resumed only two years after the crisis. In a comparison of 2013 and 2018, the Russian trade decreased by 170 334 mil. USD. The reduction was observed in both blocks concurrently.

Another crucial fact, which is seen from the table, is that the trade with the Western partners is much bigger than with post-soviet countries. For instance, the export of goods to "Far abroad countries" in 2000 is six times bigger than with "Near abroad countries". The same situation is observed in the import trade. The import of goods from "far abroad countries" is three times bigger than from "near abroad countries" in 2000. Moreover, this tendency is kept during the whole period even during crises. For example, in the worst year in terms of traded volumes (2016), the export and import of goods with "far abroad countries" were six/seven times greater than with "near abroad". This can be partly explained by the number of countries inside the blocks. Near abroad countries include just Latvia, Estonia, Lithuania, and nine CI States without Georgia and Ukraine, who abandoned the union in 2008 and 2014.

The main articles of Russian exports: food products and agricultural raw materials (excluding textile); mineral product; chemical products, rubber; leather raw materials, fur; wood, pulp-and-paper products; textiles, textile articles and footwear; metals, precious stones; machinery, equipment and transport means; other goods.

As it is shown in Table 2, in the commodity structure, exports of fuel and energy products prevail throughout the entire period. The share of exports of mineral products from 2010 to 2013 increased significantly from 53.8% by 11 percentage points. This is 201 421 million dollars within 3 years. Then the share fell to 59.2% (169 145 mil. USD) in 2016. The following year, their share increased by 1.3 percentage points, and in 2018 it increased by 4.4 percentage points in relation to 2017.

The next biggest export article is metals and precious stones. It consists of rough and cut diamonds, gold, platinum, silver, and others. The largest share was in 2010 - 21.7%. In 2013, it fell by 10.3 percentage points, but the growth resumed in 2016 to 13,1%. The growth was noted in the following 2017, then there was a decline to 11,9% in 2018.

Table 1 Foreign trade of the Russian Federation in goods during 2000-2018 (real mil. USD)

Year	"Far abroad" ¹ countries		"Near abroad" ² countries		Total			
	Export	Import	Export	Import	Export	Import	Saldo	Turnover
2000	85354	30220	13866	11911	99220	42131	57089	141351
2001	81716	39712	14836	11605	96552	51317	45235	147869
2002	86096	48021	15972	10397	102068	58418	43650	160486
2003	108580	60333	20480	12881	129060	73214	55846	202274
2004	148396	76498	29465	17746	177861	94244	83617	272105
2005	207304	104319	32720	19520	240024	123839	116185	363863
2006	255793	141333	41689	21854	297482	163187	134295	460669
2007	294822	194143	51708	28940	346530	223083	123447	569613
2008	397662	253834	68636	34838	466298	288672	177626	754970
2009	252005	162666	45149	21258	297154	183924	113230	481078
2010	333635	213237	59039	32442	392674	245679	146995	638353
2011	436727	273841	78682	44714	515409	318555	196854	833964
2012	443778	288406	83656	47365	527434	335771	191663	863205
2013	443843	294952	77993	46318	521836	341270	180566	863106
2014	428121	271867	68686	36009	496807	307876	188931	804683
2015	292130	170584	49289	22437	341419	193021	148398	534440
2016	241675	170827	40034	20667	281709	191494	90215	473203
2017	302796	213009	50145	25375	352941	238384	114557	591325
2018	387217	222309	56698	26548	443915	248857	195058	692772
Difference 2013-2018	-56626	-72643	-21295	-19770	-77921	-92413	14492	-170334

Source: Rosstat

¹ "Far abroad" countries are foreign countries except former Soviet republics

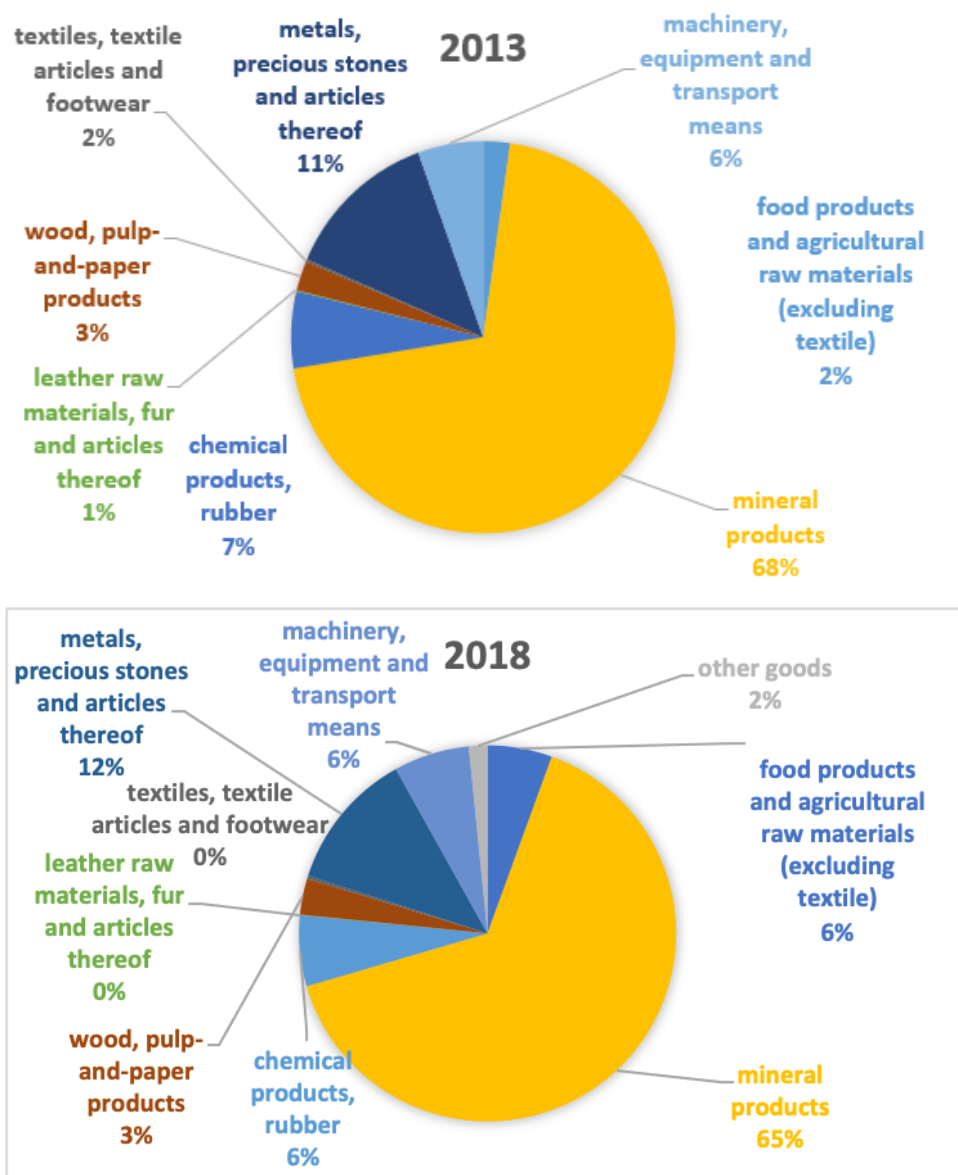
² "Near abroad" countries are Latvia, Estonia, Lithuania, and the CIS

Table 2 Commodity structure of RF's exports in 2000-2018 (mil.USD and %)

	2010		2013		2016		2017		2018	
	mil. USD	Percent of total	mil. USD	Percent of total	mil. USD	Percent of total	mil. USD	Percent of total	mil. USD	Percent of total
Exports – total	99220	100	392674	100	281709	100	352941	100	443915	100
including:										
food products and agricultural raw materials (excluding textile)	5567	1.6	8755	2.4	17075	6	20728	5.8	24921	5.5
mineral products	70467	53.8	271888	68.4	169145	59.2	216089	60.5	291804	64.9
chemical products, rubber	16580	7.2	24528	6.9	20819	7.3	23948	6.7	27416	6.1
leather raw materials, fur	250	0.3	305	0.2	264	0.1	287	0.1	255	0.1
wood, pulp-and-paper products	8050	4.3	9574	2.2	9807	3.4	11780	3.3	13911	3.1
textiles, textile articles and footwear	617	0.8	764	1.9	918	0.3	1110	0.3	1214	0.3
metals, precious stones	35567	21.7	50343	11.4	37558	13.1	47537	13.3	53746	11.9
machinery, equipment and transport means	17071	8.8	21257	5.9	24548	8.6	28442	8	29146	6.5
other goods	1603	1.5	5517	2	7340	2.1	7151	1.6

Source: Rosstat

Graph 1 Commodity structure of RF's exports in 2013 and 2018



Source: Rosstat

Based on the data from Graph 1, it can be set once again that the main export articles of Russia are natural resources: mineral products including oil, gas, coal, etc., and metals, precious stones. Other significant articles are machinery, equipment and transport means, and chemical products. However, their shares are much lower. Remarkably, the Russian export structure did not change after 6 years. There're some shifts in shares of certain articles. For instance, the share of mineral products decreased by 3 p.p. from 2013 to 2018, which is significant since it's the main export article. The shares of metals, precious stones, textile, leather raw materials and chemical products have been shortened,

while shares of food products has been increased. At the same time, the shares of machinery, equipment and transport means, wood and paper products remained the same.

Table 3 Commodity structure of RF's imports in 2010 - 2018 (mil.USD and %)

	2010		2013		2016		2017		2018	
	mil. USD	Percent of total	mil. USD	Percent of total	mil. USD	Percent of total	mil. USD	Percent of total	mil. USD	Percent of total
Imports – total	33879	100	228912	100	182448	100	227870	100	238494	100
including:										
food products and agricultural raw materials (excluding textile)	6543	21	34741	16.4	25072	13.7	28952	12.7	29736	12.5
mineral products	2137	6.3	4934	3.4	3237	1.8	4483	2	5012	2.1
chemical products, rubber	5980	18	36969	16.1	33814	18.5	40317	17.7	43593	18.3
leather raw materials, fur and articles thereof	111	0.4	1244	1.5	819	0.4	1132	0.5	1270	0.5
wood, pulp-and-paper products	1098	3.8	5893	3	3385	1.9	3603	1.6	3919	1.6
textiles, textile articles and footwear	1856	5.9	14148	4.2	10988	6	13585	6	14845	6.2
metals, precious stones and articles thereof	2980	8.3	16795	6.3	11898	6.5	16316	7.2	17852	7.5
machinery, equipment and transport means	11005	31.4	101739	44.4	86158	47.2	110780	48.6	112719	47.3
other goods	1092	4.1	10770	4.7	7078	4	8704	3.8	9548	4

Source: Rosstat

According to Table 3, the main articles of Russian imports with the biggest shares are machinery, equipment and transport means, food products and agricultural raw materials (excluding textile), chemical products, rubber. Machinery took almost the third part of the total import in 2010. Over the years this percentage has only increased. In 2013, the share raised by 13 p.p. compared to 2010. In 2017, machinery, equipment and transport means represented almost half of the whole RF's import. This primarily indicates the lack of developed production within the country and, consequently, the need to purchase technologies abroad.

Food products and agricultural materials made a significant part of the imports into Russia in 2010. However, its share fell by 8.7 p.p. in 2016 and continued to fall in further years. This can relate to the food embargo provided by Vladimir Putin in august 2014 as the reaction to sanctions.

The chemical industry in Russia is one of the most important sectors of the economy and is highly dependent on the import of chemical products. The share of chemical products and rubber has not almost changed during the 2010-2018 period. The

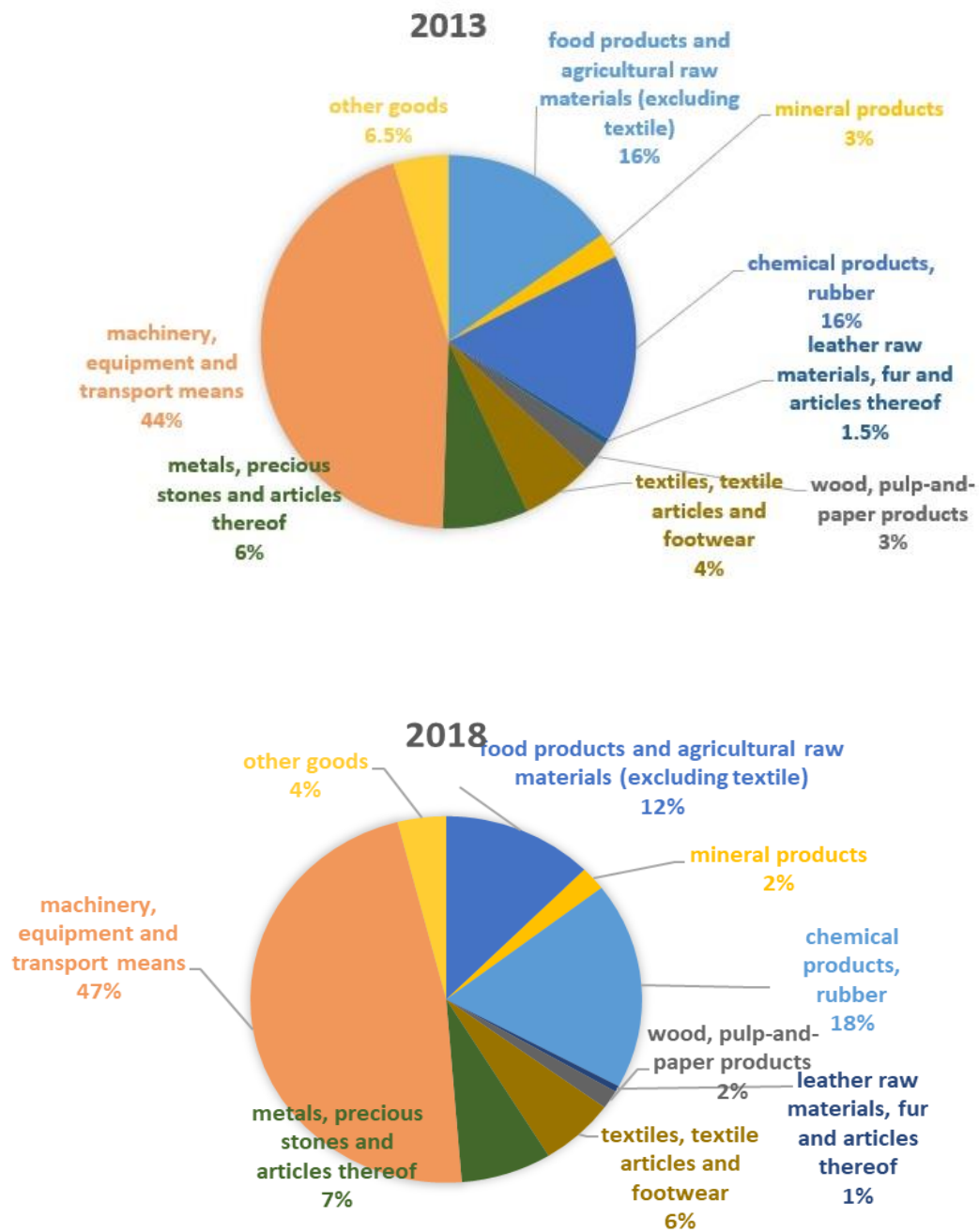
volume of imports of chemical products to Russia is about \$ 40 billion per year - about 20% of total imports.

Another important article of the Russian import is metals, precious stones and articles thereof. Its share was slightly dropping during the period. In 2018, it made 7.5% of the total import share.

Significantly enough, the import of mineral products decreased by 4.2 p.p. from 2010 to 2018. Export of mineral products on the contrary increased, at the same time. This is reflecting the growth of mineral extraction in Russia during this period.

Such articles as textiles, textile articles and footwear, wood, pulp-and-paper products, leather raw materials, fur and articles thereof did not show substantial changes in the import structure over the years.

Graph 2 Commodity structure of RF's import in 2013 and 2018



Source: Rosstat

Graph 2 clearly shows how the shares of Russian import articles have changed after 6 years. Crucial articles of the Russian import remained the same during this period. They're machinery, equipment and transport means, food products and agricultural raw materials (excluding textile), chemical products, rubber. The most notable thing is the share growth of machinery, equipment and transport means, which made almost a half of

total import in 2018. Other import shares did not change at all or changed marginally. The structure of the import commodities itself did not evolve at all.

4.1.2 Foreign trade in services

According to table 4, it can be argued that service trade in Russia has been growing rapidly till the crisis years. Another distinctive feature of the Russian trade of services is the stable negative balance, which means superior import to export. This feature is common for both blocks. However, the volumes of imports with "far abroad countries" are much greater, than with "near abroad" – the difference is approximately two times bigger over the years. Even during the crises years this situation has not been changed with the exception of a decrease in total volumes. From 2014 export and import indicators were dropped significantly, this especially affected imports from both blocks. Imports from "far abroad" and "near abroad" countries fell by 26.9% and 22.9% from 2014 to 2015. The decline in exports, in turn, was not so significant. The most tangible decline was observed in imports from "Far Abroad" block. The total loss was 28,984 mil. USD in 2018 compared to 2013.

The structure of RF's trade in services consists of processing services for goods owned by other parties, services for the maintenance and repair of goods, transport services, traveling, construction, insurance and services of non-state pension funds, financial services, payment for the use of the intellectual property, telecommunication, computer and information services, other business services, services for individuals and services in the field of culture and recreation. This structure has not changed since 2010.

Table 4 Foreign trade of the Russian Federation in services during 2010-2018 (real mil. USD)

Year	"Far abroad" ³ countries		"Near abroad" ⁴ countries		Total			
	Export	Import	Export	Import	Export	Import	Saldo	Turnover
2010	40,793	67,211	8,366	8,067	49159	75278	-	124437
2011	47,605	82,848	10,434	8,647	58039	91495	-	149534
2012	52,287	98,503	10,053	10,423	62340	108926	-	171266
2013	59,404	117,504	10,718	10,878	70122	128382	-	198504
2014	55,604	112,965	10,141	8,057	65745	121022	-	186767
2015	43,271	82,558	8,345	6,210	51616	88768	-	140384
2016	43,813	69,140	6,831	5,462	50644	74602	-	125246
2017	49,599	83,113	7,942	5,751	57541	88864	-	146405
2018	55,920	88,520	8,726	6,208	64646	94728	-	159374
Difference 2013-2018	-3,484	-28,984	-1,992	-4,670	-5,476	-33,654	28,178	-39,130

Source: Rosstat

4.1.3 Main trade partners

Trade partners of Russia are splitted into four main categories: APEC, CIS, EU and Others. APEC consists of 21 world economies, among them - most of the countries with a coastline near the Pacific Ocean. The most significant countries of this union for Russian trade are China, USA, Republic of Korea and Japan. For example, the trade with China reached 108 bln. USD in 2018, which makes China one of crucial partners of RF - 15.7% of total trade. The main export items of the China to Russia were products of the electromechanical industry, imports are oil, coal and lumber. The trade with other important partner from this union, which is USA, was 25 bln. USD (3.7%) in the same year. Exported articles were mineral products, metals and chemical products, imported, in turn, were machinery, equipment, transport means and chemical products. Next not less

³ "Far abroad" countries are foreign countries except former Soviet republics

⁴ "Near abroad" countries are Latvia, Estonia, Lithuania, and the CIS

important trades with Republic of Korea and Japan, attained 24 and 21 bln. USD in 2018, which is 3.6% and 3% of total turnover. The core articles of export with Korea and Japan are mineral products, food and agricultural materials, metals and articles thereof, as for the import, it's machinery, equipment, transport means and chemical products.

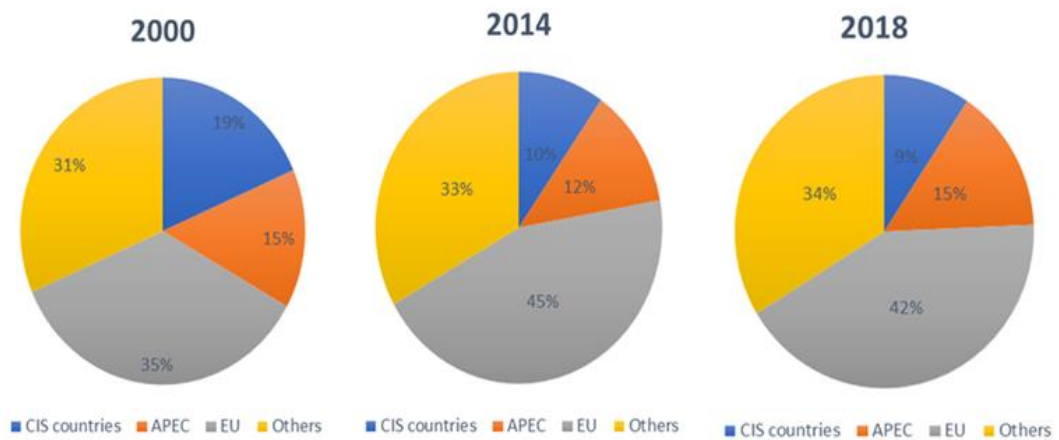
Nowadays, CIS consists of nine member countries, where major partners of RF are Belarus (24 bln. USD) and Kazakhstan (18 bln. USD). Previously, the main partner from the CIS was Ukraine - the trade with Ukraine made 39 bln. USD (4.7%) before Euromaidan in 2013 and following consequences.

The European Union was always one of the most important trade partners of Russia. Among the participating countries, the most significant are Germany, Netherlands, France, Italy and Poland. In 2018, trade between Russia and Germany amounted to USD 59 bln. USD (8.6% of total turnover). Exported items to Germany are mineral products, metals and articles thereof, chemical products. In imports from Germany, such articles as machinery, equipment, transport means and chemical products are in the lead. Trade with Netherlands achieved 47 bln. USD in 2018 (9.6% of total trade), where main exported articles are mineral products, metals and articles thereof, as for import those are machinery, equipment, transport means, chemical products, food and agricultural materials. Traded volumes with Italy, Poland and France made 27, 22, and 17 bln. USD in 2018, which meets 3.9%, 3.1% and 1.7% of the whole Russian foreign trade. Main exported and imported articles with those partners remained the same.

Among "Other countries" section, Turkey and India can be highlighted. The trade with Turkey first reached 25 bln. USD in 2018 (3.7% of total Russian trade). The most important export articles to Turkey are mineral products, metals, food and agricultural materials. Import consists of machinery, equipment, transport means, food and agricultural materials, textile and shoes. Indian trade achieved 11 bln. USD in the same year. Machinery, equipment, transport means, mineral products, metals, precious stones represent major exported articles to India. At the same time, chemical products, machinery, equipment, transport means, food and agricultural materials form main imported articles from India.

Graph 3 shows that the most important trade partner of Russia over the 18 years is the EU. However, the share of EU-RF trade decreased after 2014 by 3 p.p. for the 2018 year. In the meantime, the trade with APEC block raised by 3 p.p. in 2018 versus 2014. This happened primarily due to the growth in trade between Russia and China (Export to China increased from 36.53 billion USD in 2013 to 56.02 billion USD in 2018) (Rosstat, 2020).

Graph 3 Foreign trade turnover of RF by main partners in 2000,2014,2018



Source: Rosstat

4.2 Structure of the EU's foreign trade

The European Union, which unites 27 states, and its total population is close to 450 million people, is the third-largest economy in the world. In 2017, the GDP of the European Union represented 16.0% of world GDP, expressed in Purchasing Power Standards (PPS). While China and the United States made 16.4% and 16.3% respectively. (World Bank- 2020). The EU is one of the largest exporters in the world and the second-largest importer (World Bank). Internal trade between member states is facilitated by the elimination of barriers such as tariffs and border controls. In the euro area, trade is also helped by having a single currency among most members.

4.2.1 Foreign trade in goods

According to the following Table 5, it can be said that the EU's foreign trade has been growing annually since 2000 exempting some crisis periods in history. This is, surely, 2009, when total turnover fell by 20.2% comparing to 2008. Nonetheless, trading began to gain momentum quite quickly, and the total turnover has been increased by 27% in 2010 in comparison with the previous year. Speaking about the crisis period, the total EU's foreign trade has increased by 556.5 bil. Euro from 2013 to 2018.

Another valuable point is that the EU's import has been falling since 2013 till 2017, while export has been growing at the same time. The decline in imports in these years can be associated with the sanctions imposed against Russia and the Russian embargo 2014.

During the selected period, the European Union has gone through some transformations, that have affected its trade obviously. In 2004, ten European countries have become members of the EU. Those are Cyprus, Czechia, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia. Bulgaria and Romania joined in 2007. The last member, Croatia, joined the union in 2013.

Table 5 Foreign trade of the EU during 2000-2018 (real bil. EUR)

Years	Export	Import	Balance	Turnover
2000	942	1,033.40	-91.4	1975.4
2001	985.8	1,028.40	-42.6	2014.2
2002	997.3	989.1	8.2	1986.4
2003	979.6	992.7	-13.1	1972.3
2004	969.3	1,032.40	-63.1	2001.7
2005	1,071.40	1,183.50	-112.1	2254.9
2006	1,183.90	1,356.10	-172.2	2540
2007	1,240.50	1,433.40	-192.9	2673.9
2008	1,309.80	1,564.90	-255.1	2874.7
2009	1,094.40	1,199.20	-104.8	2293.6
2010	1,435.60	1,471.00	-35.5	2906.61
2011	1,624.50	1,666.10	-41.7	3290.588
2012	1,770.90	1,702.50	68.4	3473.377
2013	1,780.10	1,630.80	149.3	3410.95
2014	1,796.80	1,625.40	171.4	3422.229
2015	1,876.30	1,648.10	228.3	3524.397
2016	1,866.80	1,602.50	264.3	3469.288
2017	1,994.70	1,771.60	223.1	3766.243
2018	2,059.90	1,907.60	152.3	3967.447

Source: Eurostat (2020)

According to the SITC product classification, the commodity structure of the EU's exports is divided into seven main categories, which are food, drinks and tobacco; raw

materials; mineral fuels, lubricants and related materials; chemicals and related products, n.e.s.; machinery and transport equipment; other manufactured goods; commodities and transactions not classified elsewhere in the SITC.

Table 6 shows that the most valuable export article of the EU is machinery and transport equipment, which makes more the 40% of total exports during the whole period. The second important article is other manufactured goods. Its share represents about 23% from 2010 to 2018. The next largest share belongs to chemicals and related products. Its share has achieved 18% in 2018. Share of mineral fuels, lubricants and related materials makes 4-7% of the total exports during 2010-2018. Food, drinks, tobacco and raw materials compile the lowest shares to the EU's exports (about 6% and 3%).

Most notable, exports of main categories weren't changed significantly after 2014 events, as seen from table 6. Most of the articles did not have any losses. Only raw materials, mineral fuels, lubricants, related materials, commodities and transactions not classified elsewhere in the SITC articles had small declines in shares in 2014 comparing 2013 year.

Table 6 Commodity structure of EU's exports in 2010-2018 (mil.EUR and %)

Year	Units	Total - all products	Food, drinks and tobacco	Raw materials	Mineral fuels, lubricants and related materials	Chemicals and related products, n.e.s.	Machinery and transport equipment	Other manufactured goods	Commodities and transactions not classified
2010	mil. ECU	1353954.3	75751.1	37657.0	79033.1	232706.0	570876.0	309130.4	48800.8
	Percent of total	100%	5.59%	2.78%	5.84%	17.19%	42.16%	22.83%	3.60%
2011	mil. ECU	1554418.5	88496.0	45030.2	100320.0	254899.6	648646.2	351542.2	65484.4
	Percent of total	100%	5.69%	2.90%	6.45%	16.40%	41.73%	22.62%	4.21%
2012	mil. ECU	1685060.9	99019.8	47553.7	125884.8	275510.3	706635.6	379445.0	51011.7
	Percent of total	100%	5.88%	2.82%	7.47%	16.35%	41.94%	22.52%	3.03%
2013	mil. ECU	1736509.1	104419.0	45474.7	121989.8	273305.3	709086.5	382742.8	99491.0
	Percent of total	100%	6.01%	2.62%	7.03%	15.74%	40.83%	22.04%	5.73%
2014	mil. ECU	1704016.5	107617.3	43359.2	109449.9	278133.3	710035.9	386725.7	68695.2
	Percent of total	100%	6.32%	2.54%	6.42%	16.32%	41.67%	22.69%	4.03%
2015	mil. ECU	1790396.2	113240.3	43195.4	85594.3	314718.2	753451.4	402931.2	77265.6
	Percent of total	100%	6.32%	2.41%	4.78%	17.58%	42.08%	22.51%	4.32%
2016	mil. ECU	1745289.1	115854.5	42477.5	74865.4	312043.5	745130.0	395798.0	59120.3
	Percent of total	100%	6.64%	2.43%	4.29%	17.88%	42.69%	22.68%	3.39%
2017	mil. ECU	1878570.1	121513.9	49453.9	99446.1	332411.9	793703.1	424064.9	57976.4
	Percent of total	100%	6.47%	2.63%	5.29%	17.69%	42.25%	22.57%	3.09%
2018	mil. ECU	1958197.1	121888.1	50986.7	114932.0	355258.6	810908.0	439082.4	65141.3
	Percent of total	100%	6.22%	2.60%	5.87%	18.14%	41.41%	22.42%	3.33%

Source: Eurostat

Table 7 Commodity structure of EU's imports in 2010-2018 (mil.EUR and %)

Years	Unit	Total - all products	Food, drinks and tobacco	Raw materials	Mineral fuels, lubricants and related materials	Chemicals and related products, n.e.s.	Machinery and transport equipment	Other manufactured goods	Commodities and transactions not classified elsewhere in
2010	mil. ECU	1529088.9	80752.4	70751.4	385046	137322.6	441606.2	364144.2	49466
	Percent of	100%	5.28%	4.63%	25.18%	8.98%	28.88%	23.81%	3.23%
2011	mil. ECU	1729368.6	91470.2	85398.8	495288.3	155269.5	442452.3	403226.3	56263.1
	Percent of	100%	5.29%	4.94%	28.64%	8.98%	25.58%	23.32%	3.25%
2012	mil. ECU	1797798.8	93062.2	80723.2	547684.8	163382.5	450140.1	389940.4	72865.6
	Percent of	100%	5.18%	4.49%	30.46%	9.09%	25.04%	21.69%	4.05%
2013	mil. ECU	1687030.8	93613.6	76232.2	500151.6	157904.1	436812.8	381960.9	40355.6
	Percent of	100%	5.55%	4.52%	29.65%	9.36%	25.89%	22.64%	2.39%
2014	mil. ECU	1687684.8	98433	72849.6	444223.7	165387	455277.1	408218.6	43295.6
	Percent of	100%	5.83%	4.32%	26.32%	9.80%	26.98%	24.19%	2.57%
2015	mil. ECU	1725313.3	108441.9	71829.6	328797.5	185572	532193.5	452054.9	46423.8
	Percent of	100%	6.29%	4.16%	19.06%	10.76%	30.85%	26.20%	2.69%
2016	mil. ECU	1706614.5	109111.7	68110	264600.8	184099.6	548631.2	450163.4	81897.8
	Percent of	100%	6.39%	3.99%	15.50%	10.79%	32.15%	26.38%	4.80%
2017	mil. ECU	1854761.2	112020.9	78201.4	334125.6	196402	592733.5	477232.5	64045.2
	Percent of	100%	6.04%	4.22%	18.01%	10.59%	31.96%	25.73%	3.45%
2018	mil. ECU	1984544.4	112777.5	81704.3	411638.1	204343.1	622801.6	496512.7	54767.1
	Percent of	100%	5.68%	4.12%	20.74%	10.30%	31.38%	25.02%	2.76%

Source: Eurostat

The main EU import articles remained the same as for exports according to ITS classification. However, priority articles are different. The biggest shares of EU's imports are shared among machinery and transport equipment, mineral fuels, lubricants and related materials, other manufactured goods. Since 2014, shares of mineral fuels, lubricants and related materials, raw materials articles started to fall down till 2016, when the slow growth regained. Shares of machinery, transport equipment and other manufactured goods just increased since 2014. Other articles also demonstrated growth during this period.

4.2.2 Foreign trade in services

The European Union is considered as one of the biggest players in the trade in services. The predominance of imports of services over exports in services is a characteristic feature of the EU's foreign trade in services that proves its resolute position in this field. Trade volumes of the EU's trade in services are growing constantly. For instance, the turnover has been growing in 2010-2018 annually with a little slowdown in

2015-2016 years, as is seen in Table 8. The notable fact is that the trade balance of the EU's trade in services has gone down in 2014 by 10% and started to grow only from 2016. This can be connected to the deterioration of relations with Russia. Comparing the EU's trade in services in 2013-2018, total turnover in has increased by 375.66 bil. Euro during this period.

The commodity structure of the EU's trade in services represented by R&D, professional management and consulting, technical, trade-related services, transport, charges for the use of intellectual property, travel, telecommunications, computer and information services, financial services, manufacturing services on physical inputs owned by others, insurance and pension services, maintenance and repair services, personal, cultural and recreational services, construction. The biggest shares both exports and imports belong to R&D, professional management and consulting, technical, trade-related services (30% / 27%), transport (17% / 17%), charges for the use of intellectual property (16% / 8%) according to Eurostat data in 2018.

Table 8 The EU's trade in services in 2010-2018 (bill. Euro)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	Diference 2013-2018
Exports	566.71	616.13	688.10	728.39	768.40	871.78	870.46	912.44	918.51	190.12
Imports	462.05	480.50	520.08	542.84	600.68	733.15	732.30	720.68	728.37	185.53
Trade balance	104.67	135.62	168.02	185.55	167.72	138.62	138.16	191.76	190.14	4.59
Turnover	1028.76	1096.63	1208.18	1271.23	1369.08	1604.93	1602.76	1633.12	1646.89	375.66

Source: Eurostat (2020)

4.2.3 Main trade partners

According to the European Commission Directorate-General for Trade, the main partners of the EU for extra-EU trade in the last decade are United States, China, United Kingdom, Switzerland, Russia, Turkey, Japan, Norway, South Korea, India.

The largest partner for a long time of the EU is United States. In 2018, the total turnover has reached 675 billion Euro, which makes 28.3% of total foreign trade. The top export categories are aircraft, mineral fuels, machinery, optical and medical instruments, and pharmaceuticals. The top import categories, in turn, are pharmaceuticals, machinery, vehicles, optical and medical instruments, and special other, according to the Office of the United States Trade Representative data.

The second largest partner is China, with who total trade achieved 520.6 billion Euro (27% of total foreign trade) in 2018. China is the EU's biggest import partner. EU's main imports from China are industrial and consumer goods, machinery and equipment, and footwear and clothing. Main exports to China are machinery and equipment, motor vehicles, aircraft, and chemicals.

Total trade with the UK made 493.8 billion euros (25% of total) in 2018 that puts the United Kingdom in third place among the biggest foreign partners of the EU. The main export articles are road vehicles, medicinal & pharmaceutical products, electrical machinery & appliances, as for imports: petroleum, petroleum products, road vehicles, other transport equipment.

Russia takes fourth place among the biggest trade partners of the EU. In 2018, the trade turnover was 243.2 billion Euro, which is 12.4 % of total trade. The EU's export to Russia is lower than import traditionally. Main EU exports to Russia are in the categories of machinery, transport equipment, medicines, chemicals and other manufactured products. Main EU, in turn, imports from Russia are raw materials, especially - oil and gas, as well as metals (notably iron/steel, aluminium, nickel).

The fifth important trade partner of the EU is Switzerland, with which total trade reached 236 billion Euro in 2018 (11.8%). Where the most traded categories are chemicals, machinery & vehicles, other manufactured goods, food & drink, raw materials, and energy.

As it is shown in Table 9, the trade with Russia fell down significantly since 2014. Exports to Russia decreased by 2.5 p.p. of total partner shares, while imports from Russia fell by 3.8 p.p. in 2018 comparing the period before Ukrainian crises. For 2013-2018 years, traded volumes with Russia went even worse. The lowest shares were observed in 2016, where exported and imported shares fell by 42%, comparing to 2013. At the same time, shares of the United States and China have increased during this period by 19.6 / 8 % for exports and 21 / 27 % for imports respectively.

Table 9 Shares of EU's exports and imports of goods for main partners, 2010-2018 (%)

Shares of EU exports of goods for main partners, 2010-2018										
Years	2010	2011	2012	2013	2014	2015	2016	2017	2018	Diference 2013-
United States	14.1	13.7	14.0	13.8	14.8	16.6	16.5	16.3	17.1	3.2
China	7.3	7.8	7.5	7.6	8.1	7.8	8.2	9.0	9.1	1.6
United Kingdon	16.0	15.5	15.2	15.4	16.2	16.9	16.9	16.1	15.5	0.2
Russia	5.8	6.4	6.7	6.4	5.5	3.8	3.7	4.1	4.0	-2.5
Switzerland	6.9	7.1	6.9	6.6	6.4	6.5	6.7	6.6	6.5	0.0
Shares of EU imports of goods for main partners, 2010-2018										
Years	2010	2011	2012	2013	2014	2015	2016	2017	2018	Diference 2013-
United States	9.7	9.3	9.8	10.1	10.4	12.0	12.2	11.5	11.2	1.1
China	16.7	15.4	14.7	14.7	15.8	18.0	18.7	18.2	17.9	3.3
United Kingdon	11.5	11.4	11.1	11.3	11.2	11.2	11.3	10.8	10.3	-1.0
Russia	10.6	11.6	12.0	12.2	10.7	7.9	7.1	7.8	8.4	-3.8
Switzerland	5.3	5.2	5.1	5.3	5.4	5.7	6.0	5.6	5.3	0.1

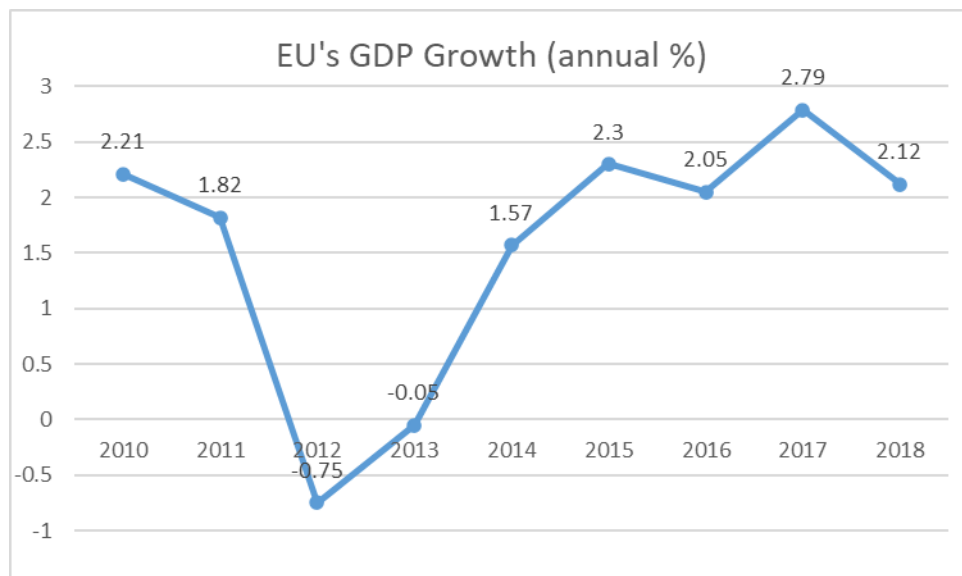
Source: Eurostat

4.3 Sanctions impact on the EU-RF trade

The sanctions have been in effect since 2014. They were extended several times over the last 6 years. In 2020, economic sanctions were prolonged till July 2021 in conditions of implementation of the Minsk agreements. The initial purpose of their implementation is to isolate and weaken the Russian economy. However, what was the real impact on the Russian and EU's economies?

Apparently, the EU did not end up in the serious economic crisis. Graph 4 represents the EU's GDP annual growth during 2010 - 2018. The graph shows the GDP was gradually rising since the beginning of sanction imposition till 2017, when the notable decline has been occurred. According to European Commission, the reasons are the slowdown in emerging market economies and global trade and persisting geopolitical tensions (European Commission, 2015).

Graph 4 EU's GDP growth during 2010-2018 (annual %)



Source: Worldbank (2020)

Table 10 Trade turnover between EU and RF in 2013-2018 by SITC (real bil. EUR)

SITC/years	2013	2014	2015	2016	2017	2018
0	803.30	389.77	400.35	375.10	364.77	410.12
1	157.69	128.48	109.18	138.50	131.49	135.47
2	338.89	330.87	345.92	467.42	396.12	528.10
3	12775.57	7514.17	6246.99	7974.63	8468.09	8678.36
4	62.15	28.29	21.26	23.06	22.58	28.36
5	1815.57	1824.78	1518.19	1658.67	1574.19	1582.56
6	1593.22	1684.80	1491.11	1535.49	1705.57	1835.74
7	3408.79	3509.58	3009.30	3194.16	3279.76	3418.30
8	1046.10	925.67	796.14	827.21	840.83	860.77
9	319.28	306.31	182.25	192.86	239.64	122.80

Source: own creation based on Eurostat data (2020)

According to the SITC classification the commodity structure of foreign trade between RF and EU consists of:

- 0 - Food and live animals
- 1 - Beverages and tobacco
- 2 - Crude materials, inedible, except fuels
- 3 - Mineral fuels, lubricants and related materials
- 4 - Animal and vegetable oils, fats and waxes

- 5 - Chemicals and related products
- 6 - Manufactured goods
- 7 - Machinery and transport equipment
- 8 - Miscellaneous manufactured articles
- 9 - Commodities and transactions

The most important are 3,5,6,7 sections, where the biggest part takes Russian export of mineral resources. The EU, in turn, exports more technologies and equipment. Table 10 illustrates the structure has not changed since sanction imposition but decrease of volumes in main sectors was observed.

Economic restrictions consist of the limitation to access to EU primary and secondary capital markets for certain Russian banks and companies; a ban on export and import of arms; a ban for dual-use goods for military use or military end-users in Russia; limitation Russian access to certain sensitive technologies and services that can be used for oil production and exploration.

As result, the EU was limiting not only the Russian economy but also its own. According to Eurostat data, European exports to Russia, on the SITC classification, of 3. "Mineral fuels, lubricants, and related materials", 5. "Chemicals and related products", 7. "Machinery and transport equipment", 8. "Miscellaneous manufactured articles" sections were shortened significantly during the crisis period. Thus, the most affected sectors are arms and energy. The biggest Russian trade partners in those arias are Germany, Netherlands, and France.

Most of the independent studies on this issue claim significant losses caused by the sanctions. For instance, in the research named "Friendly Fire: The Trade Impact of the Russia Sanctions and Counter-Sanctions", the authors calculated the losses of sanctions. The comparison was based on assessments of how international trade could develop without mutual restrictions and in a stable market environment. The difference between the potential trade flows of different countries for all categories of goods with what it actually was and showed a loss. It turned out that the total monthly damage from the sanctions was \$ 4 billion. Germany suffers the most - 38%, \$ 667 million. Also, French companies are suffering. As noted in the study by Crozet and Khintz, exports to other countries still did not help offset the losses (Crozet, et al., 2018).

The countersanctions of the Russian Federation were introduced on August 7, 2014. The embargo applies to the supply of meat and meat products, milk and dairy products,

fish and fish products, vegetables, and fruits. Currently, the food embargo against countries that have imposed sanctions on Russia has been extended until the end of 2021.

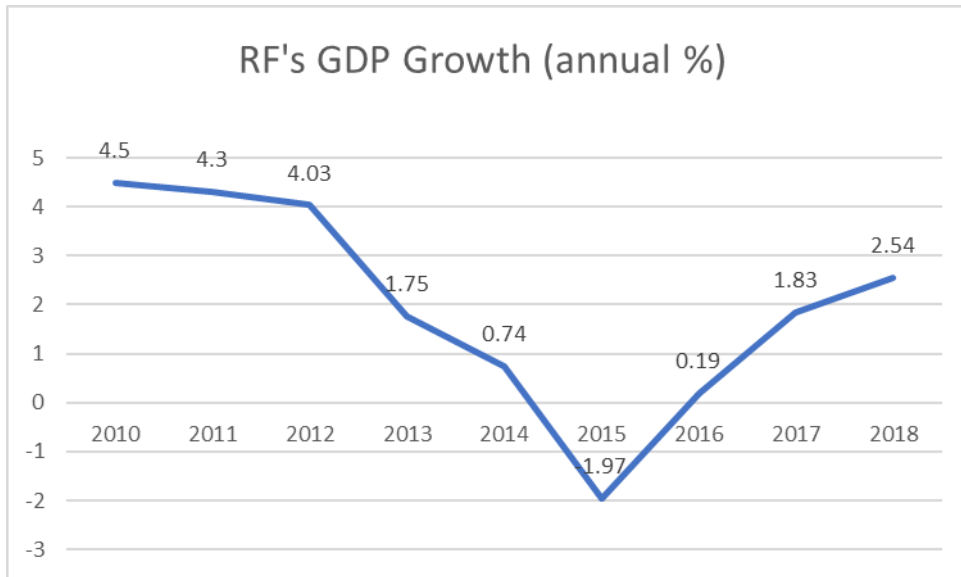
The bans on the import of vegetables and fruits from European countries announced as retaliatory Russian countersanctions hit hard not so much the state structures of the EU countries themselves, but rather the small-scale sector and farmers of these countries. The losses of the Polish food sector in connection with the Russian embargo were estimated by the country's agriculture ministry assessed at 400-500 million euros (Wyciszkievicz, 2017).

According to the European Parliament report, Russia is the second most important destination for EU agricultural products (after the USA), representing in total a value of about EUR 11.8 billion in 2013, i.e., 10 % of all EU agricultural food exports. The food ban affects a value of EUR 5.2 billion. The picture varies with regard to sectors and countries. The consequences of the retaliatory Russian sanctions' measures were most reflected in the enterprises producing dairy products, pork, fruits, and vegetables. The most affected EU countries are the Baltic States (above all Lithuania, Finland, and Poland), Germany and the Netherlands, since the shares of trade with Russia are high (WITS, 2020). However, the share of agriculture in EU GDP is 1.7 %, and makes 6.6 % in EU exports, which is relatively low (Kraatz, 2014).

The European Union has a greater negative effect from sanctions not on the agricultural sector, but on the technological sector, which suffers losses in billions of euros - because of the sanctions, machinery, and equipment worth several billion euros remain unsold, according to the Deputy Secretary General of the European Commission Henrik Hololey (Oja, 2014).

As concerns the Russian side, its economy was affected much greater presumably. According to Graph 5, the economic growth of Russia has been started to moderate since 2013, reached the smallest value in 2015, when consequences of sanctions have become the most obvious. However, the fact of falling oil prices and weakening of the ruble currency during this period should be considered. The evolution of oil price and the ruble currency are gathered in the Appendix part. The GDP growth was resumed in 2016 regarding to the graph 5, which may be related to the oil price growth in 2015 (the oil price fell to 45\$ per barrel compared to 93\$ per barrel in 2014, but it started to grow since 2016).

Graph 5 RF's GDP growth during 2010-2018 (annual %)



Source: Worldbank (2020)

In 2014-2018, Russia's GDP growth averaged 0.5% per year, according to the next report of the International Monetary Fund on the state of the Russian economy. For comparison: in 2003-2008, the economy grew by an average of 7.1% annually, in 2009-2013 - by 1.2%. The damage to Russia from Western sanctions amounted to 0.2 percentage points of economic growth annually since 2014, the IMF calculated (IMF, 2019).

The slowdown in growth by 0.2 percentage points was due to the sanctions war with the West, and the slowdown by another 0.6 percentage points annually occurred due to the fall in oil prices, experts of the fund say. Growth also slowed due to fiscal and monetary constraints that the Russian authorities had to go through to get the Russian economy to adjust to external shocks, so the sanctions, along with the collapse in oil prices and the ensuing fiscal and monetary constraints, collectively slowed growth by 1.2 pp. n. annually, according to the IMF report (IMF, 2019).

Since sanctions were aimed to strategically sensitive areas of the country - technologies, military, energetics, and finances, they deter modernization and restructuring investment. According to Eurostat data, EU's export to Russia by Machinery, transport equipment and Other manufactured goods, as main exported sections, was shortened significantly. For example, in 2015 exports of Machinery, transport equipment and Other manufactured goods decreased by 46% and 36% comparing to precrisis period (the relating table is in the Appendix).

Even if sanctions weren't aimed on the space sector, it was affected secondary after all. According to the statement of the State Secretary of Roscosmos Denis Lyskov, by the middle of May 2015 due to sanctions and the rise in the exchange rate of the Russian space program has risen in price by about 30%. These economic difficulties have led to budget optimization and a complete revision of the entire space program (ria.ru, 2015).

According to the deputy of JSC KBTEM-OMO, Vladimir Zuev, despite the ongoing import substitution program, Western transistors, microcircuits, and integrated circuits in the production of Russian weapons still account for up to 90%; the main suppliers are European countries and the USA (Gazeta.ru, 2014). This significantly complicates the state of the Russian economy after imposed sanctions.

After the imposition of sanctions in 2014-2015, a number of long-term projects for the development of new oil fields were canceled. This also affected nine large joint projects of PJSC Rosneft and ExxonMobil, which meant the loss of its investments for ExxonMobil, and the need for PJSC Rosneft to start looking for new partners and investors. For the future growth of overall oil production, new technological and investment incentives will be needed for both mature and new fields. This process will require significant costs but will be held back by sanctions probably (ACRA, 2018).

Besides the negative aspects, sanctions contributed to the growth of agricultural production in Russia and increased access to the domestic market for Russian enterprises. The Russian embargo and following shortages in food demand have boosted business activities within the country. According to Forbes magazine, "in just a few years, government support, countersanctions and the devaluation of the ruble have turned agriculture into one of the most profitable businesses in Russia" (Zlobin, 2017).

Thus, countersanctions imposed in 2014 had several consequences for Russia. On the positive side, it has resulted in the reduction of food imports and in the rise of domestic agricultural production and the food industry. The negative consequences lied in a significant increase in food prices, the expansion of the practice of replacing a natural product with surrogates (milk powder, milk fat with palm oil). Re-exports from third countries (for example, apples from Belarus) also increased (IMF, 2019).

4.3.1 EU-RF trade changing during 2013-2018

The consequences of sanctions on the EU-RF trade were not long in coming. As it is shown in Table 11, the total EU-RF trade has decreased by 12.6% in 2014 compared to 2013. Later on, the decline continued. In 2015, the total turnover fell by 35.6% comparing pre-crisis time. 2016 can be considered as the toughest year in bilateral relations. Traded volumes dropped by 41.1% in contrast to 2013. Whilst the growth has been recovered further years. In 2017, trade increased by 20.6% compared to 2016. Next year, it raised by 10% versus 2017. Percentage calculation is in the Appendix part.

The biggest decline has observed in trade with Malta, Portugal, Greece, Slovakia, Spain in 2014. Traded volumes dropped by 57%, 27.6%, 25%, 23.7%, 21.8% respectively. In the Malta case, the decline was caused by a significant decrease in the export of chemical products to Russia. Portugal, Greece, Slovakia, and Spain cut their imports of mineral products from Russia. The complete data is attached in the Appendix section.

The downward trend has been continued in 2015. The EU-RF trade declined on average by 26% in 2015 comparing 2014. The most suffered trades in this year are trades with Ireland, Croatia, Spain, France, Hungary. Total turnover with those countries decreased by 44.8%, 44.2%, 41.3%, 36.5%, 35.9% accordingly. The decline is observed in imports from RF, mainly in mineral products. Remarkably, values of trade with Malta and Cyprus gained significantly this year, by three and two times due to resumption of mineral products delivery.

Next year, the decline was even greater. The biggest declines are observed in trade with Malta, Bulgaria, Croatia, Hungary, Cyprus, Italy. Trade with Malta and Cyprus fell again by 63% and 20.5% in 2016 compared to 2015. Total turnover with Bulgaria, Croatia, Hungary, and Italy decreased by 23.6%, 22%, 20.8%, and 19.4% in the same period. The declines in trade with those countries were caused mostly by the reduction in imports from Russia. Import to those countries is provided in the range of 70-90% by the import of mineral products.

Table 11 Total trade between EU28 and Russia by members in 2013-2018 (real mil.Euro)

REPORTER/PERIOD	2013	2014	2015	2016	2017	2018
EU28	326,483	285,446	210,228	191,325	230,676	254,028
Germany	74,917	65,436	49,071	45,632	54,409	58,833
Netherlands	36,930	31,664	23,178	23,063	27,976	30,358
Poland	26,767	24,067	17,737	15,483	19,093	22,707
Italy	30,969	26,779	21,501	17,334	20,304	22,537
France	17,982	16,695	10,597	10,275	12,933	14,910
Belgium	15,106	14,781	11,402	11,053	13,388	13,659
Finland	15,844	13,215	9,110	9,096	11,634	12,534
United Kingdom	12,632	11,634	9,453	8,100	9,645	10,816
Lithuania	12,237	10,429	7,277	6,478	7,509	8,357
Sweden	8,278	8,640	5,771	5,050	5,853	6,499
Hungary	8,922	7,474	4,787	3,788	5,155	6,409
Czechia	9,857	8,253	6,022	4,899	5,812	6,376
Slovakia	8,683	6,621	4,940	4,114	4,602	5,491
Spain	10,916	8,528	5,003	4,681	5,082	4,989
Austria	7,377	6,141	4,781	3,969	4,463	4,803
Greece	7,026	5,247	3,612	3,037	3,655	4,372
Romania	3,743	3,729	2,971	2,951	3,584	4,184
Bulgaria	5,365	4,490	3,572	2,728	3,843	3,532
Latvia	2,847	2,709	2,401	2,255	2,793	3,222
Denmark	2,512	2,095	2,043	2,104	2,424	2,538
Estonia	2,252	2,060	1,603	1,542	1,919	2,317
Portugal	1,263	915	795	1,334	1,757	1,494
Slovenia	1,654	1,557	1,117	1,043	1,185	1,201
Ireland	773	933	515	549	803	1,069
Croatia	1,351	1,132	631	492	482	532
Luxembourg	159	142	119	134	169	149
Cyprus	77	66	142	113	196	136
Malta	43	19	76	28	11	5

Source: Eurostat (2020)

Since the turn of 2017, there has been some recovery and subsequent intensification of bilateral foreign trade relations between the European Union and the Russian Federation. Such a revitalization is caused by the mutual interest of the parties in the progressive development of exchange based on the established previously defined complementarity of the economics of these still in the recent past (by mutual recognition) "irreplaceable" partners. On average, the growth reached about 21% over the whole EU. The most significant growth is observed in trade with Cyprus, Ireland, Bulgaria, Hungary, which increased by 73%, 46%, 41%, 36% respectively. This growth was encouraged by the growth of imports from Russia.

The following year was characterized by further growth. The biggest volumes have been seen in trade with Ireland, Hungary, Estonia, Greece, Slovakia, and Poland. This growth was also caused by the growth in imported values especially in the import of

mineral products from Russia. Nevertheless, traded volumes with Malta, Cyprus, Luxembourg, Portugal, and Spain were cut in 2018 comparing 2017.

Nevertheless, the shares of Russia in the foreign trade of countries such as Croatia, Malta, Hungary, Spain and Slovakia are not relatively significant according to WITS data (WITS, 2020), and also in spite of the size of losses, the most important point is traded volumes of Russia with certain EU's countries. Since, the effect of sanctions will be most dramatic for key partners. From the table 11, it can be noticed that the biggest Russian partners among European Union are Germany, Netherlands, Poland, Italy, France, Belgium, Finland. The shares were 22.95%, 11.31, 8.20%, 9.49%, 5.51%, 4.63% in 2013 respectively. Most notable, the shares almost have not changed during the whole crisis period, they even raised for some countries. For instance, in the toughest 2016, their shares were 23.85%, 12.05%, 8.09%, 9.06%, 5.37%, 5.78%. The table of calculated shares is in the Appendix section. Since the sum of the shares of the five biggest RF trade partners within Europe makes around 50%, it makes sense to examine those trades in more detail.

4.3.2 Germany

According to the WITS data, Russian Federation made 3.4% of total German trade before Ukrainian crisis. In 2014, the share of Russia among others German trade partners has dropped to 2.6% for exports and 3% for imports. Next year, the share has become even lower (1.8% and 2.2%). The decline has been continued in 2016, and fell to 1.8% in exports, and to 2% in imports respectively. Next years the growth slightly rebounded and achieved 2.1% and 2.4% for export and import in 2018. The table illustrating a declining share of trade between Germany and Russia during the crisis period is in the Appendix section.

Nuclear reactors, boilers, equipment, mechanical devices, means of land transport, other than railway or tram rolling stock and their parts play a major role in German export to Russia. Other important exported articles are pharmaceutical products; electrical machinery and equipment parts thereof; plastics and articles thereof; optical, photographic, cinematographic, measuring, control, precision, medical or surgical instruments and apparatus; articles made of ferrous metals (Eurostat).

The imported articles from Russia are mineral fuel, oil and products of their distillation; bituminous substances; mineral waxes, that make about 80% of total import from Russia. The second major article is "Hidden partition". This is classified section,

which can include any product from weapons and highly hazardous chemical products to payment by foreign partners for services such as transportation by sea, air, interest on investments, as well as the costs of tourists visiting this country. Other significant articles of import are copper and copper products; ferrous metals; nuclear reactors, boilers, equipment and mechanical devices; natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metals; bijouterie; coins, wood and wood products; charcoal (Eurostat). Germany is the biggest transport supplier of Russia. It takes 17% of total Russian imports for this section in 2014 (Rosstat, 2020).

According to the table 12, commodity composition of foreign trade with Russia remained after 2014 the same as before crisis except common decline in traded volumes.

Since the share of trade with RF in Germany's total exports is small, this fact allows the German business community to perceive the consequences of the cooling of relations with Russia with calmness. However, according to the German statistical data, it can be said the sanctions have negatively affected several traditionally German export industries. For example, exports of products from the engineering sector, which accounted for 22.5% of all exports to Russia, fell by almost half over the period 2014-2015. Exports of automotive products and other vehicles, which accounted for 24.3% of total exports to the Russian Federation, fell by 63.1%. During the given period, other sectors of the economy also suffered significant losses because of the imposition of sanctions: exports were recorded in the chemical industry - 30.1%, the pharmaceutical industry - 37.9%, the rubber and plastic industry - 43.2%, the garment industry - 48.2%, the metalworking manufacturing - 49.9%, electronics industry - 57.1%, food industry - 58.4%, fishing industry - 68.9%. The most significant decline in exports was noted in the mining industry - 73.6% (Genesis-destatis, 2020).

However, despite the general deterioration of relations, Germany only in 2015 launched a number of investment projects in the Russian Federation. According to the Bank of Russia statistics the most illustrative German investment projects in Russia in 2015 were: the opening of a high-tech plant Siemens and the Russian company Power Machines for the production of gas turbines in St. Petersburg, the opening of the Schattdecor plant for the production of decorative coatings for the furniture industry in Tyumen, the launch of a new Volkswagen plant for the production of motors in Kaluga, the opening of a new plant of Claas KGaA mbH for the production of combines and tractors in Krasnodar, the launch of a machine-tool plant of the German company DMG-

MoriSeiki (formerly Gildemeister) in the Zavolzhye industrial park in Ulyanovsk. Thus, one can note the interest of Germany in doing business in the Russian Federation. This interest can become a starting point in the resumption of trade relations between partners.

Table 12 Germany-RF trade in 2013-2018 (real bil.USD)

	2013	2014	2015	2016	2017	2018
Imports						
Mineral products	17.4	18.3	11	8.87	11.8	16.5
"Hidden partition" ⁵	14.4	12.2	9.45	8.96	10.6	12.9
Metals and metal products	2.51	2.11	1.53	1.11	1.07	1.9
Machinery and equipment	0.697	2.7	1.83	0.418	0.436	0.507
Exports						
Machinery and equipment	12.7	11.3	7.13	6.36	8.09	8.66
Transport	7.81	5.68	3.08	2.87	3.71	3.89
Chemical industry products	6.09	5.58	3.87	3.83	4.58	4.72
Plasmatic, natural rubber	2.5	2.39	1.68	1.65	1.99	2.06
Metals and metal products	2.18	2.11	1.28	1.23	1.77	1.68
Instruments and apparatus, watches	1.78	1.77	1.02	0.992	1.22	1.22
Food, drinks, tobacco	1.06	1.05	0.719	0.729	0.888	1.02

Source: Rosstat (2020)

4.3.3 Netherlands

The second biggest RFs trade partner in the EU are Netherlands. However, Russian Federation, as a trade partner, makes not very significant share for the Netherlands. According to the WITS data, export share to Russia was mere 1.6% and imports achieved 5.4% among other trade partners in 2013. Next year, the shares fell to 1.4% and 4.7% for export and import. The lowest shares are observed in 2015 when exports dropped to 1%, and imports to 3%. In 2016-2017, import share slightly decreased to 3.7% but fell again to 3.4% in 2018. Import shares in those years remained at the level of 1%.

As it can be seen from graph 11, the trade turnover between Russia and Netherlands has been shortened after the imposition of sanctions against Russia and countersanctions in response. This was largely reflected in imports from Russian. However, trade started to recover from 2017.

The distinguishing feature of those trade relations is the prevalence of imports from Russia over exports (Table 13). The main articles of the import are mineral products (85%

⁵ Classified sector, which may include different goods or services

of total import in 2013) and metals (11% of total import in 2013). Aside from the oil and oil products, aluminum, nickel, copper, iron, and steel, Netherland also imports from RF organic chemicals and fish.

The most important export articles are nuclear reactors, boilers, equipment, mechanical devices and their parts; pharmaceutical products; ground transportation vehicles, except for railway or tram rolling stock, and their parts; food products and agricultural raw materials. The decrease in Dutch export is primarily due to the RF's retaliatory measures to the EU sanctions. Dairy, fruit and vegetable products were banned. As a result, the import of Dutch products of plant and animal origin, food products decreased by 5-6 times (Rosstat, 2020).

Table 13 Netherlands-RF trade in 2013-2018 (real bil.USD)

	2013	2014	2015	2016	2017	2018
Imports						
Mineral products	60.1	57.4	31.6	23.7	29.4	35.7
Metals and metal products	7.94	7.76	7.04	3.21	3.42	3.95
"Hidden partition" ⁶	0.971	1.33	0.686	0.843	1.02	1.7
Animal products	0.28	0.472	0.37	0.428	0.686	0.693
Chemical industry products	0.505	0.727	0.531	0.484	0.55	0.79
Exports						
Machinery and equipment	1.2	1.2	0.790	0.646	0.978	0.906
Chemical industry products	1.07	1.04	0.704	0.661	0.739	0.710
Transport	0.56	0.477	0.12	0.35	0.697	0.495
Food, drinks, tobacco	0.525	0.532	0.3	0.28	0.293	0.329
Plant products	0.770	0.625	0.252	0.103	0.118	0.128
Animal products	0.572	0.289	0.12	0.11	0.12	0.115

Source: Rosstat (2020)

Commodity structure change was not observed after sanctions imposition. The only difference lies in the displacements of main exported articles. Therefore, the crucial exported articles were machinery, equipment, vehicles, and chemical industry products in 2018, which shifted food and agricultural products to the lower position.

Netherland actively supports sanction politics against Russia, but according to Ambassador of the Russian Federation to the Kingdom of the Netherlands Alexander Shulgin, the interest of local businesses in cooperation with Russia remains. A noteworthy

⁶ Classified sector, which may include different goods or services

fact: none of the large Dutch companies operating on the Russian market is going to leave it, there is an interest in finding new approaches to using the advantages of cooperation (Russian Embassy in the Netherlands, 2015).

4.3.4 Poland

Poland takes the third position among the biggest partners in European Union. In contrast to Germany and Netherlands, Russia makes a much bigger share in Poland's trade. For instance, the share of imports from RF was 12.3%, and the exports made 5.3% in 2013 according to WITS database. In 2014, it fell to 10.8% for imports and 4.4% for exports. The decline has been continued in the following years. The lowest share is observed in 2016 when the share of imports and exports have decreased to 6.1% and 2.9% respectively. In 2018, Russia achieved 7.3% and 3.1% of shares for imports and exports in Polish foreign trade.

According to Eurostat data, the most imported articles from Russia are mineral products including mineral fuel, oil, and products of their distillation; bituminous substances; mineral waxes. Other imported articles are chemical industry products, metals, and metal products, wood, pulp and paper products, machinery, equipment and vehicles. Poland exports to Russia mostly machinery, equipment and vehicles; chemical industry products; food products and agricultural raw materials; metals and metal products; wood, pulp and paper products; textiles and footwear.

Table 14 shows that the structure of traded commodities did not change during the selected period. The changes are observed only in traded volumes. All traded articles were shortened after 2013 with exception of mineral products import, which still makes major part of imports. That allows asserting that the energy sector is still playing a crucial role in the bilateral relationship. However, Poland supports sanctions and try to hinder the emergence of the "Nord stream - 2" intensively (TASS, 2021). At the same time, Poland began to develop the idea of building a gas pipeline from Norway and Denmark (Baltic Pipe) and the idea of purchasing American LNG. Under these conditions, the improvement in trade relations is unlikely anytime soon.

Table 14 Poland-RF trade in 2013-2018 (real bil.USD)

	2013	2014	2015	2016	2017	2018
Imports						
Mineral products	17.5	13.9	7.61	6.29	8.49	12
Chemical industry products	0.742	0.685	0.582	0.518	0.681	0.787
Metals and metal products	0.519	0.48	0.579	0.571	0.617	0.951
Plasmatic, natural rubber	0.291	0.308	0.274	0.254	0.345	0.324
"Hidden partition" ⁷	0.189	0.181	0.141	0.986	1.01	1.88
Exports						
Machinery and equipment	2.12	1.97	1.2	1.16	1.44	1.57
Transport	0.806	0.525	0.212	0.267	0.474	0.547
Plant products	0.785	0.48	0.609	0.605	0.349	0.505
Plasmatic, natural rubber	0.62	0.571	0.387	0.399	0.474	0.495
Metals and metal products	0.567	0.53	0.35	0.303	0.441	0.413
Miscellaneous manufactured goods	0.514	0.494	0.319	0.229	0.264	0.258
Books, paper, cardboard	0.322	0.333	0.235	0.201	0.213	0.238
Animal products	0.389	0.174	0.153	0.113	0.01	0.01

Source: Rosstat (2020)

4.3.5 Italy

Another major trade partner of the Russian Federation in Europe is Italy. According to the WITS, the trade with the RF made 5.6% and 2.8% for import and export of total share by partners in 2013. Next year, the share decreased to 4.8% and 2.4% respectively. The share has been continued to fall following two years. The lowest share observed in 2016 when it dropped to 2.9% and 1.6% of import and export. In 2017, it slightly decreased to 3.1% and 1.7%. The following year import share increased to 3.5%, while export was reduced by 1 p. p. comparing 2017.

Like most European countries, the biggest part of import from Russia makes mineral products, especially crude oil and gas. Another crucial article of import named "Hidden partition", which might consist of any products including weapons or dangerous chemical products. Metals and chemistry articles make are the other most imported articles from Russia.

⁷ Classified sector, which may include different goods or services

Table 15 Italy-RF trade in 2013-2018 (real bil.USD)

	2013	2014	2015	2016	2017	2018
Imports						
Mineral products	24.6	25.9	13.7	6.57	7.84	8.69
"Hidden partition" ⁸	9.72	6.44	6.25	3.45	4.11	5.22
Metals and metal products	2.63	1.07	1.05	0.823	0.658	1.39
Chemical industry products	0.942	1.1	0.517	0.085	0.107	0.108
Exports						
Machinery and equipment	5.74	5.42	3.64	2.8	3.95	3.9
Chemical industry products	1.8	1.54	1.14	1.23	1.48	1.56
Food, drinks, tobacco	0.941	0.949	0.541	0.537	0.699	0.825
Metals and metal products	0.986	0.82	0.497	0.505	0.647	0.697
Plasmatic, natural rubber	0.654	0.612	0.458	0.497	0.172	0.197
Textile	0.594	0.609	0.36	0.446	0.579	0.683

Source: Rosstat (2020)

The structure of exported products consists of machinery and equipment; chemical industry products; food, drinks, tobacco; metals and metal products; plasmatic, natural rubber; textile. According to table 15, it can be said that the structure did not evolve during this period. A sharp decline in the trade turnover is observed after 2014. The trade of mineral products has been reduced especially.

According to statistical data, the quantity of mineral products import did not change a lot, while export to Russia was decreased significantly. There are some industries that were affected the most. The greatest damage was done to agricultural sector. Almost 50% of the Russian market for grapes used for making wine came from the Puglia region (Rosstat, 2020). Now, due to the sanctions between this region of Italy and Russia, there is virtually zero trade turnover. The supply of cheese has completely stopped, causing key brands to suffer. It is important to emphasize that exports from Italy to Russia and Italian imports from Russia are extremely heterogeneous in structure. The trade turnover between Italy and Russia has always been in favor of Russia. In addition to agriculture, the textile industry was also damaged. Italy imported raw materials from Russia processed them and exported the final product to Russia. However, leather products and furs were included in the list of prohibited products.

According to Rosario Alessandrello, President of the Italian-Russian Chamber of Commerce, despite many difficulties in trade relations, there are positive prerequisites for

⁸ Classified sector, which may include different goods or services

their recovery. This's the resumption of economic growth in Russia since 2017 and a traditionally friendly vector of relations between parties (Rosario Alessandrello, 2018).

4.3.6 France

France is the fifth biggest RFs partner within European Union. The share of RF in France's foreign trade before the 2014 crisis was 2% for import and 1.8% for export, according to WITS data. However, imports share even increased by 1 p. p. in 2014, but exports share decreased by 2 p.p. in the same year. In 2015, the shares were at a 1.2% and 1% level for import and export respectively. The lowest shares are observed in 2016 - 1.1% for imports and exports. Since 2017, the share of the Russian Federation in France trade has been raised to 1.4% and 1.2%. The biggest shares after the crisis have appeared in 2018 - 1.8% and 1.1%.

France's commodity structure of imports with Russia does not much distinguish comparing to other European countries. Imports also include mineral products, which makes the majority, and "hidden partition", where France takes 24% of total Russian imports for this article. France, in fact, is the second-biggest consumer of this article after the United States (Rosstat, 2020). Another most imported articles are metals and metal products; machinery and equipment; chemical industry products.

Export commodity structure consists of chemical industry products; machinery and equipment; "hidden partition"*; food, drinks, tobacco; transport; plasmatic, natural rubber; instruments and facilities, watches.

This structure did not change after 2014. Changes in values are only observed. The most notable fact is that main imported articles, weren't reduced greatly with exception of mineral products according to table 16, but on the other side, France's export was shortened significantly. Hidden partition and Food, drinks, tobacco articles were the most affected. The agricultural sector of the French economy suffered probably due to the food embargo imposed by Russia. At the same time, it is necessary to consider the fact that the export of agricultural products is about a tenth of all French exports to Russia.

As a result of sanctions, many French companies slowed down collaborative projects. For instance, the French company Total has stopped the implementation of a joint project with LUKoil to develop hard-to-recover hydrocarbons in Western Siberia; froze the purchase of shares in NOVATEK, the second largest natural gas producer in Russia. The

French manufacturer of civil and military trucks Renault Trucks Defense, a subsidiary of the Swedish concern Volvo, has suspended a joint project with the Russian company Burevestnik (part of the Uralvagonzavod corporation) to develop the Atom infantry fighting vehicle (BMP) (CCIFR, 2020). Nevertheless, the statistical trade dynamic between France and the RF in recent years shows increasing turnover, which could be considered as a positive sign of recovering bilateral relations.

Table 16 France-RF trade in 2013-2018 (real bil.USD)

	2013	2014	2015	2016	2017	2018
Imports						
Mineral products	4.37	4.14	2.27	1.92	2.53	3.26
"Hidden partition" ⁹	3.74	2.74	2.74	1.92	2.6	3.57
Metals and metal products	0.29	0.2	0.192	0.157	0.18	0.236
Machinery and equipment	0.18	0.142	0.165	0.196	0.164	0.186
Chemical industry products	0.109	0.123	0.15	0.15	0.124	0.132
Exports						
Chemical industry products	3.51	3.2	2.15	2.26	2.8	2.72
Machinery and equipment	3.01	2.49	1.51	1.76	1.85	1.8
"Hidden partition"*	2.3	1.44	0.255	2.4	2.41	2.25
Food, drinks, tobacco	1.03	0.948	0.529	0.496	0.617	0.652
Transport	0.691	0.58	0.25	0.275	0.45	0.483
Plasmatic, natural rubber	0.571	0.497	0.359	0.346	0.415	0.449
Instruments and facilities, watches	0.387	0.314	0.172	0.201	0.222	0.232

Source: Rosstat (2020)

4.4 Steps to overcome consequences

At present, the EU-RF relations can be considered as unfavorable, and preconditions of their settlement are not observing. Since the sanctions imposed by the US and the EU are of a political nature, the establishment of trade relations is possible only if the situation will be resolved, primarily on a political platform. The Minsk Agreements, a document signed on September 5, 2014, and February 11-12, 2015, in Minsk, aimed at resolving the

⁹ Classified sector, which may include different goods or services

armed conflict in eastern Ukraine, could serve as catalysts for resolving the political situation. Between the main points of these agreements are:

- To ensure an immediate bilateral ceasefire.
- To ensure the monitoring and verification of the ceasefire by the OSCE.
- Decentralization of power, including through the adoption of the Ukrainian law "On temporary Order of Local Self-Governance in Particular Districts of Donetsk and Luhansk Oblasts".
- To ensure the permanent monitoring of the Ukrainian-Russian border and verification by the OSCE with the creation of security zones in the border regions of Ukraine and the Russian Federation.
- Immediate release of all hostages and illegally detained persons (The Minsk agreements, 2014).

However, over the years since the signing of the Minsk agreements, none of their clauses has been fulfilled. Russia accuses Ukraine of sabotaging the political part of the Minsk agreements (providing for the adoption of a special status of certain areas of the Donetsk and Luhansk regions, fixing it in the Constitution of Ukraine), insisting that only after the fulfillment of these and other points of the agreement can the control of the Ukrainian government over the entire Russian - Ukrainian border. Ukraine insists on restoring its control over the border between the unrecognized republics and Russia, ensuring free access for Ukrainian media and political parties to hold local elections and returning these territories to the Ukrainian state.

Thus, there are no preconditions for the restoration of pre-crisis trade relations. Both sides are focused only on overcoming the economic consequences of the sanctions and strengthening their own economies. The EU is redistributing products designed for Russia to other markets, while Russia is orientating to their East partners such a China.

At the cost of a surplus of more than EUR 100 billion in 2018 (7% of GDP), foreign exchange reserves of EUR 450 billion, simultaneous foreign debt deleveraging, and fiscal surplus, Russia had endured Western sanctions (Rosstat, 2020).

To overcome the consequences of sanctions, Russia provided the import substitution policy, in order to create powerful domestic industries. At the same time, the European Union has created a special group to reduce losses from foreign trade restrictions imposed

by Russia to overcome the consequences of Russian countersanctions. In particular, 125 million euros was allocated by the European Union to compensate farmers affected by the Russian embargo for the period from August to November 2014. As of November 2014, of this amount, only about 37 million were claimed. In total, by the summer of 2016 (that is, for two years of the embargo), the EU allocated 280 million euros to farmers to eliminate its consequences. (Eurostat, 2020)

In June 2019, Federica Mogherini announced that the economies of the EU countries have fully adapted to Russian countersanctions. The European Commission came to the conclusion that the EU sanctions against Russia and countersanctions in the agri-food sector by Russia had a modest effect on the European economy. According to Mogherini, “Despite the difficulties caused by the Russian embargo, the EU agri-food sector has shown outstanding resilience and most of the affected sectors have been able to find alternative markets. Since 2013, that is, before the introduction of the embargo by Russia, the total export of EU agri-food products to third countries has grown by 14.6%” (Gazeta.ru, 2014).

4.5 Regression model

The previous analyses based on statistical data create the assumption that there's causality between the deterioration of EU-RF trade relations and sanctions imposed. To approve this assumption, as well as to reveal the degree of the correlation between variables, four regression models will be applied. This four models are selected to show the impact of sanction on Russian and EU economies and on the trade turnover between partners.

4.5.1 Economic models

The economic way of each model is presented algebraically as follows:

$$Y_{1t}=f(X_{1t}, X_{2t}) \quad (17)$$

The 1st model consists of variables where:

Y_{1t}... trade turnover between the European Union and Russian Federation in Billion euros

X_{1t}... GDP of Russian Federation in billion dollars

X_{2t}... dummy variable of Sanctions imposed in 2014 against Russia

The 2nd model is represented by variables where:

Y_{1t}... trade turnover between the European Union and Russian Federation in Billion euros

X_{1t}... GDP of the European Union in billion euros

X_{2t}... dummy variable of Sanctions imposed in 2014 against Russia

The 3rd model includes variables such as:

Y_{1t}... GDP of Russian Federation in billion dollars

X_{1t}... trade turnover between the European Union and Russian Federation in Billion euros

X_{2t}... dummy variable of Sanctions imposed in 2014 against Russia

The last one consists of:

Y_{1t} ... GDP of the European Union in billion euros

X_{1t} ... trade turnover between the European Union and Russian Federation in Billion euros

X_{2t} ... dummy variable of Sanctions imposed in 2014 against Russia

The difference between the models described above lies in the rotation of the dependent variable to trace out the impact of the remaining explanatory variables on it.

4.5.2 Econometric model

The econometric model is derived from economic model by determining the functional form of a model and adding an error term. Since, all variables are expressed in different measurements, it is important to transfer variables into a power form. However, dummy variable, which represents a categorical data is in the models. Thus, semi-log model will be used. Each equation can be explained in the econometric model as follows:

$$\ln y_{1t} = \gamma_0 + \gamma_1 x_{1t} + \gamma_2 x_{2t} + e_t \quad (18)$$

4.5.3 Data set

The following table demonstrates set of data for regression analysis of period 1999-2000 (20 observations), which includes five variables. Those are Trade between EU and RF, GDP of EU, GDP of Russia, dummy variable of sanctions imposed in 2014 and constant variable needed for OLS procedure. The data of EU-RF trade and EU's GDP was taken from European statistical database and measured in billion EUR. The data of RF's GDP was obtained from Russian Federal database and measured in billion USD.

Table 17 Data set for regression analysis

Year	EU-RF trade turnover in current billion Euro (current)	UV	RF's GDP per capita in billion USD(current)	EU's GDP per capita in billion EUR(current)	Sanctions
1999	53.46499	1	1330.76	18477.23	0
2000	87.31260	1	1771.59	16909.87	0
2001	98.30099	1	2100.35	17184.94	0
2002	99.61103	1	2377.53	18682.13	0
2003	108.54591	1	2975.13	22922.75	0
2004	131.04353	1	4102.36	26263.75	0
2005	170.72012	1	5323.46	27333.08	0
2006	216.00019	1	6920.19	29070.24	0
2007	236.92992	1	9101.26	33551.64	0
2008	285.41420	1	11635.27	36914.33	0
2009	185.26678	1	8562.81	33362.82	0
2010	248.44865	1	10675	32940	0
2011	309.99333	1	14311.08	35721.53	0
2012	338.62425	1	15420.87	33159.11	0
2013	326.48318	1	15974.64	34563.74	0
2014	285.44572	1	14095.65	35242.19	1
2015	210.22799	1	9313.01	30469.62	1
2016	191.32456	1	8704.9	31172.23	1
2017	230.67593	1	10720.33	33080.92	1
2018	254.02822	1	11370.81	35733.72	1

Source: Own elaboration based on Rosstat and Eurostat data

Since equations include a dummy variable, the test for multicollinearity is done via regressions, where each x variables are regressed on this dummy ($X=f(d)$). If coefficient of determination is greater than 0.75, then there is multicollinearity. In result, the multicollinearity was not observed among variables since their R^2 are 0.046 for trade turnover, 0.32 for GDP of RF, and 0.31 for GDP of EU.

4.5.4 OLS estimation of parameters

The OLS estimation of promoted models was conducted via Gretl application. List of generated results is shown in the table below. The full data of estimation can be viewed in the appendix section.

Table 18 OLS analysis results

Parameters	Values
1st model	
γ_0	25.0923
γ_1 GDP of RF in billion USD	0.00101158
γ_2 Sanctions	-0.0187671
2nd model	
γ_0	23.8504
γ_1 GDP of EU in billion USD	0.002719759
γ_2 Sanctions	-0.0654160
3rd model	
γ_0	6.99885
γ_1 Trade of EU-RF in billion EUR	0.00847791
γ_2 Sanctions	0.291062
4th model	
γ_0	14487.3
γ_1 Trade of EU-RF in billion EUR	6.89698e-05
γ_2 Sanctions	2490.01

Source: Gretl

Relying on the obtained data, final econometric equations are identified as follows:

$$(1) \ln \hat{y}_{1t} = 25.0923 + 0.1012 x_{1t} - 0.0188 x_{2t} \quad (19)$$

$$(2) \ln \hat{y}_{1t} = 23.8504 + 0.0027 x_{1t} - 0.0654 x_{2t} \quad (20)$$

$$(3) \ln \hat{y}_{1t} = 6.9989 + 0.0085 x_{1t} + 0.2911 x_{2t} \quad (21)$$

$$(4) \ln \hat{y}_{1t} = 14487.3 + 6.89698e-05 x_{1t} + 2490.01 x_{2t} \quad (22)$$

4.5.5 Economic verification

To interpret estimated models, economic verification is used. At this stage, the accordance of economic theory and econometric results is critical. On the other hand,

regression analysis shows the intensity of estimated relations between variables. All results are taken in terms of *ceteris paribus*.

The interpretation of semi-log model parameters is made with help of following formulas: $(\gamma_1 \cdot 100)$ for continuous variable, and $(100 \cdot (e^\gamma - 1))$ for dummy parameter.

For the first equation, where the dependence of the Trade between EU and RF on Russian GDP and sanctions was estimated, the conclusion states that: if the GDP of Russia increases by 1%, the Trade turnover between EU and RF increases by 0.101158%; the presence of sanctions decreases the Trade turnover between EU and RF by 0.98141%, *ceteris paribus*. That output clearly corresponds to the economic theory.

As for the second equation, where the independent variable of the Russian GDP was switched to the GDP of the EU compared to the first model, it can be concluded that: if the EU's GDP increases by 1%, the Trade turnover between EU and RF increases by 0.2719759 %; and the presence of sanctions decreases the Trade turnover between EU and RF by 0.9367%, *ceteris paribus*, which corresponds the economic theory. Compared to the first model, the difference in parameter intensity can be explained by a difference in GDPs volume.

The third equation, which explains relationships between the Russian GDP, as the dependent variable, and independent variables such as the Trade of EU-RF and sanctions, states that: if the Trade turnover between EU and RF increases by 1%, the GDP of Russia increases by 0.847791 %; the presence of sanctions increases the GDP of Russia by 1.3378%, *ceteris paribus*. That is an interesting finding, which interferes with the popular conviction that sanctions cripple economies mandatory.

Speaking of the last equation, where the dependent variable is the EU's GDP and the independent variables are sanctions and the Trade of EU-RF, the conclusion is: if the Trade turnover between EU and RF increases by 1%, the GDP of the EU increases by 0.01 %; the presence of sanctions increases the GDP of the EU by 1.1 %, *ceteris paribus*. Those results comply with the previous model besides the difference in parameters intensity.

Based on the above results, it can be concluded that the highest intensity of parameters was observed among the sanctions in the third and last models (1.3 % and 1.1%)

4.5.6 Statistical verification

In the beginning of statistical verification, the R^2 and adjusted R^2 should be considered. Those statistical metrics represent the degree of how much the endogenous variables are explained by endogenous. The R^2 for the models are 88.6814%, 87.2161%, 94.4431%, and 84.5932% accordingly. The adjusted R^2 says changes of endogenous variables are explained by endogenous by 87.3498%, 85.7121%, 93.7893% and 82.7807% for each model.

To verify a statistical significance of parameters a t-test was performed. Using obtained data via Gretl application, the following results was occurred.

Table 19 T-test

Parameter	p-value	Significance at 0.1
1st model		
γ_1	<0.0001	<0.1, significant
γ_2	0.0515	<0.1, significant
2nd model		
γ_1	<0.0001	<0.1, significant
γ_2	0.0473	<0.1, significant
3rd model		
γ_1	<0.0001	<0.1, significant
γ_2	0.0119	<0.1, significant
4th model		
γ_1	<0.0001	<0.1, significant
γ_2	0.1116	<0.1, not significant

Source: own elaboration based on Gretl results

As result only one not significant parameter was identified in the last equations. To examine the statistical significance of models themselves, F-test was conducted at a statistical level of 0.10 through the Gretl application.

With the regard that:

Null hypothesis (H_0): all explanatory variables are not relevant

Alternative hypothesis (H_1): H_0 is not true

Table 20 F-test

Parameter	F-value (2,17)	CV F (2,17;0,1)
1st model	66.59749	2.64
2nd model	57.98965	2.64
3rd model	144.4617	2.64
4th model	46.67055	2.64

Source: own elaboration based on Gretl results

Relying on the data in the table 19, the H_0 is rejected, which means the significance of each model can be detected, since $F\text{-value (2,17)} > \text{Critical value of F (2,17;0,1)}$.

4.5.7 Econometric verification

To consider results of the regression analysis as reliable, some diagnostics are applied such as test for heteroskedasticity and normality, as well as autocorrelation test.

The autocorrelation test deals with following hypothesis:

Null hypothesis (H_0): no autocorrelation

Alternative hypothesis (H_1): autocorrelation

Testing though the Gretl application revealed following p-values for each model: 0.0572699, 0.486483, 0.0846958, 0.115158. Consequently, there's no autocorrelation, since all p-values are greater than 0.05, and H_0 hypothesis cannot be rejected.

The Durbin Watson test was also considered to trace out the presence of autocorrelation. As result, the correlation of three models is normal because the values of the test for each model are equal to 1.62, 1.58, 1.98, while for the last model it's only 1.47 (values between 1.5 and 2.5 can be considered as normal correlation).

The test for presence of heteroskedasticity using White test was also conducted via the Gretl app. Hypothesis for White test state:

Null hypothesis (H₀): homoskedasticity

Alternative hypothesis (H₁): heteroskedasticity

The resulting p-values at 0.10 significance level are 0.529198, 0.521297, 0.773284, 0.63842. All of them are greater than 0.05, therefore there's no heteroskedasticity and non-constant variance of the distribution.

Test for normality includes following hypothesis:

Null hypothesis (H₀): normal distribution of residuals

Alternative hypothesis (H₁): not normal distribution of residuals

The result of the test shows that residuals of each model follow normal distribution, since their p-values are 0.0952512, 0.170455, 0.253961, 0.61366, so the null hypothesis wasn't rejected.

Thus, the regression analysis confirmed the negative impact of sanctions on the trade turnover between Russia and EU, which was detected earlier. The more intriguing finding here is that sanctions did not affect the economies of both Russia and Europe. However, the parameter of sanctions in the last model wasn't significant therefore one cannot say for sure about its influence on the economy of EU. This finding supports sanctions theory on the controversial effectiveness of economic sanctions (Reisman, 1998). In case of RF, the positive impact of sanctions on the Russian GDP could be explained by change of course in foreign trade, diversification of trading partners and development of the domestic market. The European Union, at the same time, focused on the trade with other major partners. This, probably, helped to eliminate the negative consequences of the sanctions.

5 Results and Discussion

Trade relations between Russia and the European Union have historically been difficult, as they have always been of a political nature. Both sides have their own political interests and follow them in economic matters, which cannot but negatively affect bilateral trade relations.

Russia and the EU have gone through several phases of bilateral trade relations. The beginning can be considered the Partnership and Cooperation Agreement concluded on June 24, 1994, in Corfu, which as a result were violated by both parties. The 90s were not easy for Russia. The country was at the stage of transformation. The EU was also undergoing a formative period. However, in the early 2000s, a period of convergence began due to overall economic growth. Russia and the EU became mutually key partners during this period. At the same time, relations were complicated by various political events. Russia was worried about the expansion of the EU at the expense of the former union republics of the USSR; the EU did not agree with some of Russia's political decisions. Political contradictions also arose in issues of third parties, for example, during the Orange Revolution in Ukraine, during the aggravation of Georgian-Ossetian relations, the conflict in Kosovo, etc. In 2007, Russia was recognized as a country with a market economy, and since 2012 Russia has been a member of the WTO, which implied a transition to the implementation of the concept of a single European economic space, providing for the creation of a free trade zone between Russia and the EU. In total, 17 claims were put forward between Russia and the EU, the reason for this could be the presence of many unresolved bilateral problems with a political basis. Nevertheless, thanks to the WTO instruments, certain economic disputes between the parties to bilateral relations were settled.

After the Ukrainian events of 2014, trade and economic relations between Russia and the EU can be characterized as "Break-up instead of marriage". These events and the following sanctions have led to unprecedented difficulties in bilateral relations, and the need for a multilateral trading platform. In addition to the WTO, such a platform can be the creation of common economic space between the EU and the EAEU. However, due to the EU's general wariness on this issue and the non-implementation of the second Minsk agreement, closer economic cooperation between the EU and the EAEU is not on the agenda. Thus, it is now difficult to imagine the focus of partners on the formation of a free

trade zone. At present, trade issues can be resolved effectively either at the level of the EAEU or through negotiations with individual EU members. The point of contact can be the regulation of cooperation in certain issues. For example, customs cooperation, combating counterfeit products, transport cooperation, technical regulation, sanitary control, etc.

In terms of the trade structure of the RF before imposed sanctions, the growing tendency of trade was observed till 2014 indeed. Since then, a decrease in trade turnover has been traced out. It is noteworthy that a decrease was noted both in "Far abroad " countries and in "Near abroad " countries, which may indicate the broad impact of sanctions on the RF's trade in the first year of their implementation. In the Russian export structure of goods and services before 2014, the main categories were mineral products (70%), metal, precious stones (13%), machinery and equipment (6%). After sanction implementation, the structure of the RF's export has not been changed, only shares were slightly modified. All categories remained the same, which may demonstrate the absence of a change in the export trade direction even after the imposition of sanctions. The structure of Russian imports also remained unchanged. After the imposed sanctions, the main imports are still machinery, equipment, and transport means (47%), food products and agricultural raw materials (13%), chemical products (18%). The shares of articles were merely changed. The most significant change was observed in the decrease in the import of food and agricultural raw materials. This was related to the food embargo imposed by Russia. At the same time, the structure of trade in services for the selected period also remained the same. The trade of services with the EU dropped significantly during the crisis but recovered quite quickly by 2018.

Thus, one cannot speak of any radical change in export/import policies in the post-sanctions period. The Russian foreign trade is still characterized by an orientation towards the sale of natural resources and by the import mainly of machinery, equipment, and transport means. As for main trade partners, Russia has obviously turned to China's direction as evidenced by the share decline of the most important RF's partner, which is Europe historically, and the growth of Chinese share among other partners.

The situation in the EU looks quite different. There weren't detected any declines of the trade turnover over the years. It has been growing since 2000 except for the world crisis in 2009 surely. The export structure of the EU, in turn, has not been changed after the 2014 events. Volumes of the export trade remained impervious as well. The same picture

has been seen for the import structure of the EU. However, the decline in import volumes of mineral fuels, lubricants and related materials, raw materials articles has been observed, which can be a consequence of the deterioration of trade relations with Russia due to the imposed sanctions. At the same time, the European trade of services has not been affected much by sanction imposition. An important change in the trade policy of the European Union after 2014 was the decrease in the share of Russia among the main partners. Over the past 10 year, Russia was one of the five main EU's partners, nevertheless, the situation began to change towards an increase in the shares of the USA and China after imposed sanctions.

Speaking about the GDP of the EU, one can be concluded that a rapid decline during the crisis was not detected, and therefore it is assumed that the sanctions together with Russia embargo did not have a crushing effect on the EU's economy in general. However, considering the effect on the country level, some impacts were occurred.

The most affected by sanctions sectors were arms and energy. All the main EU trade partners with Russia, especially Germany, have reduced import of machinery and equipment greatly already in the first year of crisis. The import of mineral resources has been also shortened significantly, in turn. This tendency had been continuing till the relative trade recovery in 2018. As for the effect of Russian food embargo, which was aimed to damage the EU's agricultural sector in general, it had not hit much the state structures of the EU countries themselves, but rather the small-scale sector and farmers of these countries. The most affected farmers were from Lithuania, Finland, Poland, Germany, and Netherlands. According to the European Parliament report, the total damage made EUR 5.2 billion. However, the share of the agricultural sector in the EU's economy is only 1.7%, therefore the embargo itself was not so devastating.

Relying on the statistical analysis, the most sudden decline had appeared in trade with Malta, Portugal, Greece, Slovakia, and Spain. It happens mainly due to decrease in the import of mineral resources from Russia. Nonetheless, the trade with these countries is not huge with regard to trade volumes. It is more appropriate to consider loses of more substantial partners of Russia among the EU, which are Germany, Netherlands, Poland, Italy, France. All these countries have common features in case of sanctions impact such as significant decline in the trade of mineral resources, machinery and equipment, transport means, chemical production, food, drinks, tobacco, and the article named "hidden parties". Obviously, the most affected trade was the biggest trade with Germany, which amounts to

about EUR 60 billion. After sanctions imposition, the trade with Germany has been reduced by around EUR 25 billion, where the most damaged sector was car industry (reduction by 63%).

As for the Russian side, the economic growth of the country slowed down significantly since sanction imposition. The worst situation occurred in 2015 when the growth made -1.97%. However, this may be caused by falling oil prices and the weakening of the ruble currency in the given period. The trade turnover with the EU was shortened greatly after sanction imposition. At the same time, the trade with "Near abroad countries"¹⁰ has been increased, which means a change in the political course of Russia. However, the most significant suppliers of technologies are still "Far abroad countries"¹¹ including European countries. Thus, Russia cannot fully displace trade with the EU, which deals with crucial for Russian economy sectors such as technologies and equipment, energetics, military, finance, and space sector. These sectors have suffered most of all since 2014. On the other side, sanctions have led to a product embargo, which, in turn, contributed to an enhancement in domestic business.

Based on statistical analysis, there are good reasons to believe that the sanctions led, firstly, to a decrease in trade between partners, and secondly, to a decrease in the level of the economy, primarily in Russia. To prove or disprove these claims, regression analysis was used in this work.

Using Gretl application, the estimation of four regression models in 1998-2018 has been completed. The estimated variables were trade between the European Union and Russian Federation in Billion euros, GDP of Russian Federation in billion dollars, GDP of the European Union in billion euros, and dummy variable of Sanctions imposed in 2014 against Russia. The difference between models consisted in the shift among variables in order to estimate the impact of sanctions on the GDP of Russia, GDP of the EU, and the EU-RF trade itself. As result of regression analysis, sanctions, as expected, had an influence on the trade between the European Union and Russian Federation. However, the intensity of influence was not huge. In turn, unexpected findings were detected. The regression analysis states that sanctions did not have a negative impact on the Russian GDP. Sanctions even increases the GDP of Russia by 1.338% with regards to results of estimation. It can be explained by increase in entrepreneurial activity within the country, as

¹⁰ Near abroad” countries are Latvia, Estonia, Lithuania, and the CIS

¹¹ “Far abroad” countries are foreign countries except former Soviet republics

well as the replacement of trade partners. In the case of the sanctions impacts on the EU's GDP, observed parameters were not significant from the perspective of statistical verification.

In turn, it seems the economic relationship between partners is not going to improve, since it is heavily tied to the political aspect. Minsk agreements could be the only possible step to the settlement of relation. However, the terms of the agreement have not yet been met. The EU and Russia are not going to restore trade relations apparently, each side follows its own direction to overcome the consequences of sanctions and strengthen their own economy. Such measures were the embargo and the policy of import substitution in Russia, and creation a special group to reduce losses of trade restrictions imposed by Russia in the EU.

6 Conclusion

The original purpose of the US and EU sanctions was to force Russia to change its political course by weakening its economy. However, sanctions cannot but affect both sides of economic relations. Russian-European trade relations have come a long way since the imposition of sanctions. What changes have occurred in bilateral trade relations? It can be said unambiguously that trade turnover has significantly decreased. The total trade turnover fell by 15% in the first year of the sanctions. And by 40% in 2016 in comparison with the pre-crisis period. At the same time, the share of trade with other partners became to grow. For instance, in the Russian foreign trade structure, the main trade partner was the EU historically. However, its share became to fall, while the share of trade with China has been started to grow since sanction imposition. Export to the China has been raised by 55%. Meanwhile, the EU provided the same politics. Shares of USA and China in the EU's trade has been raised by a third from 2013 to 2018. Nonetheless, Russia and European Union are remaining to be key trade partners.

Answering the research question, the commodity structure of foreign trade between RF and EU consisted of food, drinks, and tobacco (0 and 1); raw materials (2 and 4); energy products (3); chemicals (5); machinery and transport equipment (7); other manufactured goods (6 and 8) according to the SITC classification. This structure has not change since 2014, besides traded volumes. The volume of Russian exports of mineral products and raw materials to the EU decreased the most, as well as the import of technologies and equipment from the EU. In this way, sanctions touched upon the crucial sectors for Russian economy. Energetics, technologies, military, finance, and space sectors suffered most of all. This supposed to weaken the economy of Russia and affect the Russian political course. However, not only the economy of Russia was affected, but also a number of the EU's countries. The worst affected in the EU was Germany, since this is the biggest Russian partner in the EU. The agricultural sector was also affected, due to the Russian embargo mainly. Thus, the countries most suffered from the embargo were Lithuania, Finland, Poland, Germany, and Netherlands.

To estimate real impact of sanctions on the partners, the regression analysis was used in this paper, and results were intriguing. It turned out that sanctions did not contribute to decline in the Russian economy, but even enhanced the growth. This could be caused by Russian countersanctions and the gradual change of key partners. As for the EU, results of

regression were not satisfying, because the statistical verification was not successful. Hence, with regards to the limitation of this paper, it is recommended to continue with econometric analysis such as analysis of VAR and VEC models. It is also recommended to increase a number of observations to achieve the most reliable results. Consideration should be also given to the fact that there are many factors affecting the economy and trade relations in general.

At the moment, the trade relations between RF and EU are not going to improve. Each side was trying to minimize consequences caused by sanctions instead of finding a way to settle relations. Steps to overcome consequences included the import substitution policy and search for new trade partners.

Thus, instead of achieving the goals of sanctions introduction, they led to a decrease in the intensity of cooperation between the parties to the pressure of sanctions. This leads to an increase in their independence and weakens the possibility of using sanctions in the future. Nevertheless, the settlement of the situation is possible even in such conditions, in connection with the geographical location of partners and historically established relations. However, for this, geopolitical relations must recede into the background.

7 References

- Aalto, P. (2008). *The EU-Russian energy dialogue : Europe's future energy security*. Aldershot: Ashgate.
- ACRA. (2018). *Analytical Credit Rating Agency (Joint Stock Company)*. Available at: Changes in economic policy are the main channel for the impact of sanctions on the Russian economy: <https://www.acra-ratings.ru/research/819/>
- Averre, D., & Wolczuk, K. (2016). *Introduction: The Ukraine Crisis and Post-PostCold War Europe*. Glasgow: University of Glasgow.
- CCIFR. (2020). *CCIFR-News*. Available at: <https://www.ccifr.ru/>
- Citybank. (2020). *Citibank*. Available at: <https://www.citibank.com>.
- Commission, E. (2020). *Restrictive measures (sanctions)*. Available at: https://ec.europa.eu/info/index_en.
- Crozet, M., & Hinz, J. (2018). *Friendly Fire: The Trade Impact of the Russia Sanctions and Counter-Sanctions*. Vienna: Oesterreichische Nationalbank. Available at: http://www.economic-policy.org/wp-content/uploads/2018/09/996_Friendly-Fire.pdf.
- Department of Energy. (2020). *U.S. Department of Energy*. Available at: <https://www.energy.gov/articles/us-poland-energy-partnership>
- Dougherty, C. (2007). *Introduction to Econometrics 3th Edition*. New York: Oxford University Press.
- Electronic fund of documents. (2021). *Partnership and cooperation agreement*. Available at: <https://docs.cntd.ru/document/1900668>.
- Emeljanova, E. (2009). *Russia and the European Union. Rivalry and partnership*. Moscow: International relations.
- European Commission. (2020). *ec.europa.eu/*. Available at European economic forecast: https://ec.europa.eu/info/sites/default/files/ip011_en.pdf
- European Council. (2020). *The Council of the European Union*. Available at: <https://www.consilium.europa.eu/en/council-eu/>.
- European Council. (2021). *EU restrictive measures in response to the crisis in Ukraine*. Available at: <https://www.consilium.europa.eu/en/policies/sanctions/ukraine-crisis/>.
- Gandolfo, G. (2010). *Economic dynamics*. Berlin: Springer.

- Gandolfo, G., & Trionfetti, F. (2014). *International trade theory and policy*. New York: Springer Heidelberg New York Dordrecht London.
- Gazeta.ru. (31. October 2014). *Gazeta.ru*. Available at:
https://www.gazeta.ru/science/news/2014/10/31/n_6611725.shtml
- Genesis-destatis. (2020). *Database of the Federal Statistical Office of Germany*. Available at: <https://www-genesis.destatis.de/genesis/online/data?operation=sprachwechsel&language=en>
- Gurevich, E., & Prilepskiy, I. (2016). *The impact of financial sanctions on the Russian economy*. Moscow: Voprosy Ekonomiki.
- Guzhva, E., Lesnaja, M. I., Kondratjev, A. V., & Egorov, A. N. (2009). *World economy*. Saint-Petersburg: Spbgasu.
- Hoffmann, F. (1967). The Functions of Economic Sanctions: a Comparative Analysis. *Journal of Peace Research*, 4(2), 140-160.
- Hufbauer, G., Schott, J., & Elliott, K. (1990). *Economic sanctions: Reconsidered. History and Current policy* (2. vyd.). Washington: Institute for International Economics.
- Hufbauer, G., Schott, J., Elliott, K., & Oegg, B. (2009). *Economic Sanctions Reconsidered - third edition*. Washington: Peterson Institute for International Economics.
- IMF. (2019). *IMF. Získáno 2020, z Russian Federation : 2019 Article IV Consultation- Press Release; Staff Report*: <https://www.imf.org/en/Home>
- Isachenco, T. (2015). *E`konomicheskaya diplomatiya v usloviyax politicheskogo krizisa* (series 5 E`konomika. vyd.). Saint Petersburg: Vestnik SPbGU.
- Isachenko, T., & Medvedkova, I. (2019). *Russia – EU: Trade Regulation as a Future of Bilateral Relations*. Moscow: Sovremennaja Evropa.
- Johnston, J., & Dinardo, J. (1997). *Econometric methods, 4th edition*. New York: Mcgraw Hill Higher Education.
- Jones, R. (2018). *International Trade Theory and Competitive Models: Features, Values, and Criticisms*. Rochester: University of Rochester, USA.
- Kraatz, S. (October 2014). *European Parliament*. Available at: The Russian Embargo: Impact on the Economic and Employment Situation in the EU:
[https://www.europarl.europa.eu/RegData/etudes/BRIE/2014/536291/IPOL_BRI\(2014\)536291_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2014/536291/IPOL_BRI(2014)536291_EN.pdf)

- Kristof, N. (1989). A Reassessment of How Many Died In the Military Crackdown in Beijing. New York: New York Times. Available at: <https://www.nytimes.com/1989/06/21/world/a-reassessment-of-how-many-died-in-the-military-crackdown-in-beijing.html>.
- Krugman, P., & Obstfeld, M. (2006). *International economics : theory and policy*. Boston: Pearson/Addison Wesley.
- Krugman, P., Obstfeld, M., & Melitz, M. (2012). *International Economics: Theory & Policy, Global Edition*. New York: Pearson.
- MID RF. (2021). *Foreign Policy Concept of the Russian Federation (approved by President of the Russian Federation Vladimir Putin on November 30, 2016)*. Available at: https://www.mid.ru/en/foreign_policy/official_documents/-/asset_publisher/CptICk6BZ29/content/id/2542248.
- MINFIN RF. (2021). *Non-discrimination conditions of acces for Russssian exporters to foreign markets*. Available at: https://www.mid.ru/materialy-po-voprosam-ekonomiceskogo-razvitia-rossii/-/asset_publisher/oSUNZRJVOK4D/content/id/604832.
- Oja, T. (11. November 2014). *Majandus.postimees.ee*. Available at: Hololei: sanktsioonid kahjustavad ELis enim tehnoloogiasektorit: https://majandus.postimees.ee/2987077/hololei-sanktsioonid-kahjustavad-elis-enim-tehnoloogiasektorit#_ga=2.33107326.1987615648.1628440476-198042742.1628440474
- Pakhomov , A. (2014). Impact of trade and political sanctions on the foreign economic sector of Russia. (11). Moscow: Economic development of Russia.
- Pepe, R. (1997). Why Economic Sanctions Do not Work. (22). International security.
- Permanent Mission of the RF to the EU. (2020). *Brief overview of relations*. Available at: <https://russiaeu.ru/en/brief-overview-relations>.
- Reisman, W., & Stevick, D. (1998). The Applicability of international law standarts to United Nations Economic sanctions programmes. (9). European Journal of International Law.
- ria.ru. (5. April 2015). *ria.ru*. Available at Space program of Russia due to sanctions has risen in price by 30%: <https://ria.ru/20150521/1065690842.html>
- Rosario Alessandrello. (20. March 2018). President of the Italian-Russian Chamber of Commerce: "The Russian market has become more attractive". RIAC. Italy.

- Rosstat. (2020). *Rosstat database*. Available at: <https://rosstat.gov.ru/>
- Rowe, D. (2007). Economic sanctions do work: Economic statecraft and the oil embargo of Rhodesia. (9 (1-2)). Saint Paul, Minnesota: Security Studies.
- Russian Embassy in the Netherlands. (2015). *MID*. Available at: [z https://netherlands.mid.ru/-/aleksandr-sul-gin-?in](https://netherlands.mid.ru/-/aleksandr-sul-gin-?in)
- Sheleg, N., & Jenin, J. (2014). *International trade*. Minsk: "High School".
- TASS. (2021). *News agency*. Available at: [z https://tass.ru/ekonomika/11655415](https://tass.ru/ekonomika/11655415)
- The Minsk agreements. (2014). *The Minsk agreement*. Available at: <https://www.osce.org/files/f/documents/a/a/123258.pdf>
- Wallensteen, P. (1968). Characteristics of Economic Sanctions. *Journal of Peace Research*, 3(5), 248–267.
- Williams, B. (1933). *Boycotts and Peace. A Report by the Committee on Economic Sanctions*. Edited by Evans Clark. (27. vyd.). New York: Harper&Bros.: American Journal of International Law.
- WITS. (2020). *The World Integrated Trade Solution (WITS)*. Available at: <https://wits.worldbank.org/>.
- WTO. (2021). *Communication from the European Union, China, Canada, India, Norway, New Zealand, Switzerland, Australia, Republic of Korea, Iceland, Singapore, Mexico, Costa Rica and Montenegro to the General Council*. Available at: http://trade.ec.europa.eu/doclib/docs/2018/november/tradoc_157514.pdf.
- WTO. (2021). *Russian Federation and the WTO*. Available at: https://www.wto.org/english/thewto_e/countries_e/russia_e.htm.
- Wyciskiewicz, E. (2017). *The Centre for Polish-Russian Dialogue and Understanding*. Visited 5. February 2020, from The impact of Russian sanctions on the Polish agri-food sector: http://cprdip.pl/en/projects/russias_influence_activities_in_cee,the_impact_of_russian_sanctions_on_the_polish_agri-food_sector.html
- Zaitsev, U. (2018). Impact of the sanctions regime on foreign direct investment in the Russian Federation. (Series: Economics.). Moscow: Bulletin of the Peoples' Friendship University of Russia. .
- Zlobin, A. (28. September 2017). *Forbes.ru*. Visited 2020, from Overtake the USSR. Russia breaks 40-year grain harvest record: <https://www.forbes.ru/biznes/350805-obognat-sssr-rossiya-bet-40-letniy-rekord-po-sboru-zern>

8 Appendix

Table 21 The Eu's export to Russia in 2013-2018 (current mil.EUR)

REPORTER/PERIOD	2013	2014	2015	2016	2017	2018
Total- EU28	119,468	103,282	73,786	72,369	85,990	85,099
Germany	35,789	29,231	21,672	21,532	25,809	25,955
Italy	10,772	9,503	7,093	6,690	7,955	7,567
Poland	8,113	7,006	5,119	5,203	6,195	6,752
Netherlands	7,956	6,611	4,807	4,686	5,948	6,065
France	7,719	6,819	4,534	4,943	5,592	5,356
Lithuania	4,869	5,081	3,139	3,046	3,920	3,962
Belgium	5,114	4,139	3,080	3,507	4,053	3,610
Czechia	4,474	4,105	2,889	2,781	3,126	3,456
Finland	5,359	4,638	3,157	2,983	3,427	3,335
United Kingdom	4,667	4,177	3,330	3,084	3,220	2,798
Austria	4,308	3,988	2,608	1,952	2,195	2,124
Spain	2,813	2,583	1,670	1,597	1,915	2,026
Sweden	2,728	2,427	1,570	1,545	1,943	1,948
Latvia	1,760	1,606	1,252	1,255	1,684	1,841
Slovakia	2,576	2,130	1,527	1,416	1,561	1,543
Hungary	2,526	2,069	1,504	1,408	1,693	1,530
Romania	1,382	1,452	988	970	1,103	1,068
Estonia	1,411	1,187	772	773	926	871
Denmark	1,562	1,153	745	728	821	828
Slovenia	1,190	1,129	861	790	865	802
Ireland	633	718	366	366	496	520
Bulgaria	583	527	401	391	741	407
Greece	405	356	213	215	234	231
Portugal	263	204	158	147	180	201
Croatia	282	275	199	191	180	148
Luxembourg	156	129	112	129	154	134
Cyprus	24	37	19	36	54	21
Malta	36	3	3	3	1	1

Source: Own calculation based on Eurostat data (2020)

Table 22 The Eu's import from Russia in 2013-2018(current mil.EUR)

REPORTER/PERIOD	2013	2014	2015	2016	2017	2018
Total-EU28	207,015	182,164	136,442	118,956	144,686	168,929
Germany	39,127	36,206	27,399	24,100	28,599	32,878
Netherlands	28,974	25,053	18,371	18,378	22,028	24,293
Poland	18,654	17,060	12,618	10,280	12,897	15,955
Italy	20,197	17,276	14,408	10,643	12,349	14,970
Belgium	9,992	10,643	8,322	7,546	9,335	10,049
France	10,263	9,876	6,063	5,332	7,341	9,555
Finland	10,485	8,576	5,954	6,113	8,208	9,199
United Kingdom	7,965	7,457	6,123	5,016	6,426	8,017
Hungary	6,395	5,404	3,282	2,380	3,462	4,878
Sweden	5,550	6,213	4,202	3,505	3,910	4,551
Lithuania	7,368	5,348	4,138	3,432	3,590	4,395
Greece	6,622	4,891	3,399	2,822	3,421	4,141
Slovakia	6,107	4,491	3,414	2,698	3,041	3,948
Bulgaria	4,782	3,963	3,171	2,337	3,103	3,125
Romania	2,361	2,277	1,983	1,981	2,481	3,116
Spain	8,103	5,945	3,333	3,084	3,167	2,963
Czechia	5,383	4,148	3,133	2,117	2,686	2,920
Austria	3,069	2,153	2,173	2,016	2,268	2,680
Denmark	950	942	1,299	1,377	1,603	1,710
Estonia	840	873	831	769	993	1,446
Latvia	1,087	1,103	1,149	1,000	1,109	1,380
Portugal	1,000	711	637	1,187	1,577	1,293
Ireland	141	215	149	183	307	549
Slovenia	464	428	256	253	320	399
Croatia	1,069	857	433	302	302	385
Cyprus	53	29	124	77	142	115
Luxembourg	2	13	7	5	14	15
Malta	8	15	73	25	10	5

Source: Own calculation based on Eurostat data (2020)

Table 23 Annual changes of EU-RF trade in 2013-2018 (%)

REPORTER/PERIOD	2014vs.2013	2015vs.2014	2016vs.2015	2017vs.2016	2018vs.2017	2016vs.2013	2018vs.2016
EU28	-12.57%	-26.35%	-8.99%	20.57%	10.12%	-41.40%	32.77%
Germany	-12.65%	-25.01%	-7.01%	19.23%	8.13%	-39.09%	28.93%
Netherlands	-14.26%	-26.80%	-0.49%	21.30%	8.51%	-37.55%	31.63%
Poland	-10.09%	-26.30%	-12.71%	23.31%	18.93%	-42.16%	46.66%
Italy	-13.53%	-19.71%	-19.38%	17.13%	11.00%	-44.03%	30.02%
France	-7.16%	-36.52%	-3.04%	25.87%	15.29%	-42.86%	45.12%
Belgium	-2.15%	-22.86%	-3.06%	21.12%	2.03%	-26.83%	23.58%
Finland	-16.59%	-31.06%	-0.16%	27.91%	7.73%	-42.59%	37.80%
United Kingdom	-7.90%	-18.75%	-14.31%	19.08%	12.13%	-35.88%	33.53%
Lithuania	-14.78%	-30.22%	-10.97%	15.91%	11.29%	-47.06%	29.00%
Sweden	4.36%	-33.20%	-12.50%	15.90%	11.05%	-39.00%	28.70%
Hungary	-16.23%	-35.95%	-20.86%	36.08%	24.31%	-57.54%	69.17%
Czechia	-16.28%	-27.03%	-18.66%	18.64%	9.72%	-50.31%	30.17%
Slovakia	-23.75%	-25.38%	-16.73%	11.87%	19.31%	-52.62%	33.47%
Spain	-21.88%	-41.34%	-6.42%	8.55%	-1.83%	-57.11%	6.57%
Austria	-16.76%	-22.15%	-16.99%	12.45%	7.64%	-46.21%	21.04%
Greece	-25.33%	-31.16%	-15.91%	20.34%	19.63%	-56.77%	43.96%
Romania	-0.39%	-20.31%	-0.70%	21.48%	16.73%	-21.17%	41.80%
Bulgaria	-16.31%	-20.45%	-23.62%	40.89%	-8.11%	-49.15%	29.47%
Latvia	-4.85%	-11.37%	-6.08%	23.86%	15.36%	-20.80%	42.88%
Denmark	-16.59%	-2.47%	2.98%	15.21%	4.70%	-16.23%	20.62%
Estonia	-8.52%	-22.19%	-3.81%	24.46%	20.74%	-31.53%	50.27%
Portugal	-27.57%	-13.15%	67.90%	31.68%	-14.96%	5.61%	11.98%
Slovenia	-5.88%	-28.22%	-6.66%	13.59%	1.33%	-36.94%	15.11%
Ireland	20.66%	-44.85%	6.72%	46.25%	33.11%	-28.98%	94.68%
Croatia	-16.26%	-44.22%	-22.00%	-2.12%	10.42%	-63.56%	8.07%
Luxembourg	-10.58%	-15.87%	12.48%	25.59%	-11.59%	-15.38%	11.03%
Cyprus	-14.73%	116.66%	-20.56%	73.25%	-30.78%	46.75%	19.92%
Malta	-57.31%	310.49%	-63.41%	-62.00%	-49.54%	-35.89%	-80.82%

Source: Own calculation based on Eurostat data (2020)

Table 24 Shares of Russia in total trade of main EU partners in 2013-2018 (%)

Member/Year	2013	2014	2015	2016	2017	2018
Germany	22.95%	22.92%	23.34%	23.85%	23.59%	23.16%
Netherlands	11.31%	11.09%	11.03%	12.05%	12.13%	11.95%
Poland	8.20%	8.43%	8.44%	8.09%	8.28%	8.94%
Italy	9.49%	9.38%	10.23%	9.06%	8.80%	8.87%
France	5.51%	5.85%	5.04%	5.37%	5.61%	5.87%
Belgium	4.63%	5.18%	5.42%	5.78%	5.80%	5.38%

Source: Own calculation based on Eurostat data (2020)

Table 25 Oil current prices in 2010-2018 (\$ per barrel inflation adjusted)

2010	2011	2012	2013	2014	2015	2016	2017	2018
84.24	99.83	97.17	100.95	93.24	45.55	39.02	43.97	57.77

Source: Inflation Calculators from InflationData.com [online]. Available at:

<https://inflationdata.com/articles/inflation-adjusted-prices/historical-crude-oil-prices-table/>

(2020)

Table 26 Exchange rate RUB/USD (on the last month of a year)

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
30.31	30.57	32.19	30.35	32.89	58.05	72.95	61.3	57.66	69.8	62.1

Source: Tradingeconomics.com. Available at:

<https://tradingeconomics.com/russia/currency>(2020)

Table 27 EU's export to Russia in 2009-2019 by main sectors

Units	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Other manufactured goods										
mil.ECU/EUR	13280.9	16406.5	19946.4	21955.9	21934.7	19450.3	13950.5	13607.2	15801.2	15873.7	16595
% change		123.53%	121.58%	110.07%	99.90%	88.67%	71.72%	97.54%	116.12%	100.46%	104.54%
	Machinery and transport equipment										
mil.ECU/EUR	21665.3	28435.2	38775	45903.1	41945.6	34293.7	22816.2	22273.9	28861	27897.1	28156.1
% change		131%	136%	118%	91%	82%	67%	98%	130%	97%	101%

Source: Own calculation based on Eurostat data (2020)

Figure 4 Results of Gretl estimation for the 1 model

Model 1: OLS, using observations 1999-2018 (T = 20)

Dependent variable: LNTrade

	Coefficient	Std. Error	t-ratio	p-value	
const	25.0923	0.0833123	301.2	<0.0001	***
Rus_GDP	0.00101158	9.17069e-06	11.03	<0.0001	***
Sanctions	-0.0187671	0.0987364	-0.1901	0.0515	**
Mean dependent var	25.93122	S.D. dependent var	0.511133		
Sum squared resid	0.561843	S.E. of regression	0.181795		
R-squared	0.886814	Adjusted R-squared	0.873498		
F(2, 17)	66.59749	P-value(F)	9.06e-09		
Log-likelihood	7.343876	Akaike criterion	-8.687752		
Schwarz criterion	-5.700555	Hannan-Quinn	-8.104620		
rho	0.443157	Durbin-Watson	1.623510		

LM test for autocorrelation up to order 1 -

Null hypothesis: no autocorrelation

Test statistic: LMF = 4.19694

with p-value = $P(F(1, 16) > 4.19694) = 0.0572699$

White's test for heteroskedasticity -

Null hypothesis: heteroskedasticity not present

Test statistic: LM = 3.17364

with p-value = $P(\text{Chi-square}(4) > 3.17364) = 0.529198$

Test for normality of residual -

Null hypothesis: error is normally distributed

Test statistic: Chi-square(2) = 9.30765

with p-value = 0.0952512

Source: Gretl

Figure 5 Results of Gretl estimation for the 2 model

Model 2: OLS, using observations 1999-2018 (T = 20)

Dependent variable: LNTrade

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	23.8504	0.200870	118.7	<0.0001	***
Sanctions	-0.0654160	0.106530	-0.6141	0.0473	**
EU_GDP	0.002719759	6.99820e-06	10.28	<0.0001	***
Mean dependent var	25.93122	S.D. dependent var		0.511133	
Sum squared resid	0.634580	S.E. of regression		0.193205	
R-squared	0.872161	Adjusted R-squared		0.857121	
F(2, 17)	57.98965	P-value(F)		2.55e-08	
Log-likelihood	6.126468	Akaike criterion		-6.252935	
Schwarz criterion	-3.265739	Hannan-Quinn		-5.669803	
rho	0.173625	Durbin-Watson		1.583211	

LM test for autocorrelation up to order 1 -

Null hypothesis: no autocorrelation

Test statistic: LMF = 0.5075

with p-value = $P(F(1, 16) > 0.5075) = 0.486483$

White's test for heteroskedasticity -

Null hypothesis: heteroskedasticity not present

Test statistic: LM = 3.22254

with p-value = $P(\text{Chi-square}(4) > 3.22254) = 0.521297$

Test for normality of residual -

Null hypothesis: error is normally distributed

Test statistic: Chi-square(2) = 3.53856

with p-value = 0.170455

Source: Gretl

Figure 6 Results of Gretl estimation for the 3 model

Model 3: OLS, using observations 1999-2018 (T = 20)

Dependent variable: LNRus_GDP

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	6.99885	0.115431	60.63	<0.0001	***
Sanctions	0.291062	0.103326	2.817	0.0119	**
Trade	0.00847791	5.37707e-010	15.77	<0.0001	***
Mean dependent var	8.795961	S.D. dependent var		0.784159	
Sum squared resid	0.649230	S.E. of regression		0.195423	
R-squared	0.944431	Adjusted R-squared		0.937893	
F(2, 17)	144.4617	P-value(F)		2.14e-11	
Log-likelihood	5.898241	Akaike criterion		-5.796483	
Schwarz criterion	-2.809286	Hannan-Quinn		-5.213350	
rho	0.402897	Durbin-Watson		1.987907	

LM test for autocorrelation up to order 1 -

Null hypothesis: no autocorrelation

Test statistic: LMF = 3.3784

with p-value = $P(F(1, 16) > 3.3784) = 0.0846958$

White's test for heteroskedasticity -

Null hypothesis: heteroskedasticity not present

Test statistic: LM = 1.79562

with p-value = $P(\text{Chi-square}(4) > 1.79562) = 0.773284$

Test for normality of residual -

Null hypothesis: error is normally distributed

Test statistic: Chi-square(2) = 2.74115

with p-value = 0.253961

Source: Gretl

Figure 7 Results of Gretl estimation for the 4 model

Model 4: OLS, using observations 1999-2018 (T = 20)

Dependent variable: EU_GDP

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	14487.3	1657.60	8.740	<0.0001	***
Sanctions	2490.01	1483.77	1.678	0.1116	
dTrade	6.89698e-05	7.72152e-06	8.932	<0.0001	***
Mean dependent var	29137.79	S.D. dependent var	6762.755		
Sum squared resid	1.34e+08	S.E. of regression	2806.285		
R-squared	0.845932	Adjusted R-squared	0.827807		
F(2, 17)	46.67055	P-value(F)	1.25e-07		
Log-likelihood	-185.5459	Akaike criterion	377.0918		
Schwarz criterion	380.0790	Hannan-Quinn	377.6750		
rho	0.565159	Durbin-Watson	1.470485		

LM test for autocorrelation up to order 1 -

Null hypothesis: no autocorrelation

Test statistic: LMF = 8.13806

with p-value = $P(F(1, 16) > 8.13806) = 0.115158$

White's test for heteroskedasticity -

Null hypothesis: heteroskedasticity not present

Test statistic: LM = 2.53477

with p-value = $P(\text{Chi-square}(4) > 2.53477) = 0.63842$

Test for normality of residual -

Null hypothesis: error is normally distributed

Test statistic: Chi-square(2) = 0.976628

with p-value = 0.61366

Source: Gretl