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The Relevance of the Strategic Partnership between the European Union and the Russian Federation in the Sanction Period

Abstract. *The European Union and the Russian Federation are the major global geopolitical players with intensive trade links. Globalization has deepened the interdependence of economies, which plays an important role in the path of their further economic development. The Russian-Ukrainian conflict has become a driving force in the centrifugal relations between the EU and the Russian Federation, which resulted in the imposing of the sanctions. The article analyzes the impact of sanctions on foreign trade between the European Union and the Russian Federation. In addition to the impact of sanctions on trade turnover between the European Union and the Russian Federation, it also evaluates the impact of mineral fuels, which is the essence of the energy strategic partnership, through linear regression. It presents the factors that affect the volume of their exports based on extended gravity models,. Although the sanctions did not have such a significant economic impact, they were an incentive to end the formation of a new contractual framework for trade cooperation. The remedy of the geopolitical context between the European Union and the Russian Federation is essential for their economic progress and strengthening its competitiveness in the world economy.*

Keywords: *European union, gravity model, international trade, Russian federation, sanctions.*

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Introduction

Globalization is a boisterous process of developing the world economy. As a result of its influence, a grandiose increase in the interdependence between countries occurred. At the same time, engaging in international trade plays an important role in the economic development path of many economies. The European Union (EU) is the main trading partner of the Russian Federation (RF). In 2018, the share of exports to EU countries in the total export of the Russian Federation represented almost 45%. In terms of commodity structure, the share of mineral fuels in the Russian Federation›s total exports to the EU was almost 60%. Equally, significant dependence also applies from the other side. The share of mineral fuels of Russian origin in the consumption of European Union countries is 19%. Simultaneously, the share of goods produced in the EU in the total import of the Russian Federation was 37% in 2018. These facts declare a significant link between these economies. The Russian Federation is a strategic partner for the European Union, and it is the fuel-energy complex that is the main variable in their relations, on which the competitiveness of individual national economies greatly depends.

The formal relations between the two major geopolitical actors – the European Union and the Russian Federation have lasted for more than two decades. During this relatively short period,

we had the opportunity to observe periods of high expectations about the prospects for their cooperation, but also a critical period. The reasons used to be different, whether it was the dissonance of the direction of their mutual cooperation or the contradictions in the attitudes of the burning global issues. Nevertheless, cooperation between the European Union and Russian Federation has developed many times under very difficult conditions. Current EU-RF relations are based on three legal levels (Kalichenko, 2017). The first is the Partnership and Cooperation Agreement and other agreements concluded at the EU-RF level. The second consists of ‹Road maps› of four common areas, which can be regarded as ‹soft law›. The last level is represented by the Russian legislation and the EU acquis in the framework of sectoral cooperation. As the Russian Federation is the main supplier of mineral fuels to the EU, energy cooperation plays an important role. Infrastructure has been created for the sustainable supplies, mechanisms and technical regulations for the implementation of business operations have been agreed. European and Russian companies have a long-term cooperation in joint projects. The period until 2014 was characterized by the active development of energy relations. In 2000, the format «Energy Dialogue Russian Federation - EU» was launched. The EU-RF Energy Cooperation Plan up to 2050 was agreed in March 2013. The initiatives represent a solid basis for developing mutually beneficial and strategic cooperation in the energy sector. Following the transitional crises and political escalations in the context of the situation in Ukraine, the EU›s need to reduce dependence on Russian gas has intensified. These objectives have been presented in several EU programming documents. The Russian Federation has begun to look for sales markets to the east, through the conclusion of energy supply agreements, as was the case with China. In line with its 2014 Energy Security Strategy, the European Union has launched a process of seeking alternative energy supplies between the countries of North Africa and the Middle East. Some authors believe that relations between the Russian Federation and the EU have transformed from a strategic partnership level to traditional business interactions (Lichačev, 2017). Nevertheless, reality shows that there is a gap between the objectives (diversification of the EU energy security) and the true nature of the current cooperation, as evidenced by the soon finishing construction of the Nord Stream II pipeline.

We are currently able to observe the increasing geopolitical tensions in the global environment. One of the most recent is a new wave of protectionism, implemented through the application of restrictive measures. One of the persistent examples of new protectionism on the European continent is the sanctions between the European Union and the Russian Federation. The Russian-Ukrainian crisis has become a driving force in the centrifugal relations between the EU and the RF. In the Crimean and Sevastopol referendums, on the 16th of March 2014, over 95% of the population decided to unite with the Russian Federation. The international community did not recognize its legitimacy and the Russian Federation was accused of violating Ukraine›s sovereignty and territorial integrity. Many Western countries have imposed sanctions on RF in relation to these events. Beginning in March 2014, the EU gradually introduced restrictive measures against the RF: diplomatic, individual, restrictions on economic cooperation with Sevastopol and Crimea, economic sanctions, and restrictions on economic cooperation (European Council, 2019). The Russian Federation responded with retaliation measures on August 7, 2014, concerning a trade embargo on selected agri-food products.

More than five years after the introduction of sanctions, we can observe inconsistencies in the positions of individual Member States on their effectiveness within the EU.

Literature review. Sanctions are one of the tools by which countries or integration groups can respond to political challenges that conflict with their goals. According to Harvard economist Rogoff (2015), «*sanctions never work and have never worked*». He states that they usually have only mild effects, although they can be an essential means of demonstrating moral determination. Empirical analyses of the effectiveness of economic sanctions vary. These trade restrictions

may be reflected in the sanctioned country›s macroeconomic indicators, such as rising inflation, rising unemployment, and depreciation of the domestic currency against foreign countries. At the same time, they can also harm the sanctioning country. Countries with intense economic links are particularly facing lower economic growth prospects. It is therefore not surprising that, in many cases, the trade restriction measures taken appear to be ineffective. According to Kaempfer and Lowenberg (2007), the extent of trade between the sender of the sanctions and its recipient is an important factor in determining the ease with which a sanctioned country can find alternative markets and sources of supply. A model that is particularly useful in examining the effects of trade sanctions on the relative prices of imports and exports is the use of the supply curves used by Kaempfer and Lowenberg (1992, 1999). The supply of reciprocal demand curves shows the level of export trade that a country would wish for at different prices. Several empirical studies on sanctions Dehejia and Wood (1992), Dashti-Gibson et al. (1997), Drury (1998), Hart (2000) agree that there is a positive relationship between the cost of sanctions, measured as a percentage of the target country›s GNP and the success of sanctions.

Studies by Morgan and Schwebach (1995) found out that only ‹smart› sanctions are effective. They expect to be gaining popularity in foreign policy because of their more precise focus. On the contrary, research findings by Hufbauer, Lopez and Lam (1990) suggest that only harsh measures can have an impact on the promotion of political interests. Moreover, the process of proposing sanctions is inherently based on the interests of the sanctioning countries. Game theory models suggest that the success of sanctions depends on the anticipation of conflicts and the level of commitment between entities. The effects of sanctions can be expressed both in terms of economic effects and in terms of their political impact - that is, they consider successful if they have led to the desired change.

Oeff, Eliott, Hufbauer, and Schott (2009) examined a significant set of sanctions and concluded that at least 1/3 of them were partially successful. However, this number is probably exaggerated. The success rate of sanctions decreases if the goal of sanctions is more ambitious - for example, a fundamental change in the state›s foreign policy. Kaempfer and Lowenberg (1988) emphasized the size factor of the target country. They are based on the assumption that larger and more self-sufficient countries are able to withstand sanctions more easily than smaller and open economies. The approach of Caruso (2003) was based on gravity regression, confirming the negative effects on trade. Sanctions may cause more harm if they are implemented multilaterally. In the case of unilateral sanctions, the sanctioned country may buy or sell goods through third independent countries.

Dizaji and van Bergeijk (2013) discussed the "lifespan" of sanctions. As they state, in the initial stages, the sender›s country sometimes tries to conceal or deny that it imposes sanctions. That was the case in the US in the 1970s against Chile or Nicaragua. Conversely, the sanctioning process can be officially communicated, as in our case. There is also ambiguity about how sanctions are terminated. Sometimes their end is more unclear than sharp, and countries are gradually getting into normal trade relations.

One of the most popular econometric models that seek to explain the mechanisms of international trade and the factors that affect the volume and direction of trade flows, is the gravity model. The first works using the gravity model of foreign trade were contributions by Israld (1959) and Tinbergen (1962). The initial specification of the gravity model is:

$$T_{ij} = \mathrm{A}\frac{Y_i^{\alpha_1} Y_j^{\alpha_2}}{D_{ij}^{\alpha_3}} \quad (1)$$

Where the variable Tij represents the volume of trade from country i to country j, Yi and Yj represent the GDP of the countries, Dij the distance between the countries and A is a constant. Empirical evidence based on the gravity equation confirms that bilateral trade flows are positively related to the size of countries and negatively to geographical variables. These factors are analogous to the force of resistance and attraction

in Newtonian physics, which explains its name (Porojan, 2001).

While specifying the model and using a suitable estimator, we used the following works. Authors such as Baltagi et al. (2003), Filippinni and Mollini (2003), Egger (2004), Sohn (2005), Tang (2005), Kucera and Sarna (2006) and others use export as dependent variable. Furthermore, according to Linemann's approach (1966) to the specifications of a gravity model, he adds a population to the equation as an additional measure of the size of countries. In addition to these factors, some authors are introducing other impedance factors into the gravity model specification to investigate potential barriers to trade flows. These factors include common language or borders, participation in customs unions or sanctions (Kepaptsoglou et al. 2010). In terms of estimation technique, when working with panel data in gravity models, the approaches of using Ordinary Least Squares, Fixed Effects, and Random Effects prevail, as used in Bussière et al. (2008), Lee and Park (2007), Péridy (2005) and others.

Methodology

The article aims to examine the position of sanctions in relation to the foreign trade between the European Union and the Russian Federation and to assess their impact on the direction of the strategic partnership resulting from energy cooperation.

The authors examined the historical context of the application of sanctions in international trade and the contractual framework of cooperation between the European Union and the Russian Federation. We analyzed the changes in the trade exchange between the EU and the Russian Federation in terms of territorial structure by the export and import of countries. Values from 2013 were chosen as a baseline value, for each country. From the baseline values, the percentage changes were calculated, over the duration of the sanctions based on available data until 2018. The data sources were mainly Eurostat, the International Trade Center, and the World Bank. For graphical representation, a cartogram method was used, which serves to express relative quantitative indicators, the output of which are cartograms. We used the R language and R Studio software to create a map reflecting the change in EU28 export and import. The map is based on the shapefile that contains the map of Europe itself. Shapefile is a data format used to store vector spatial data for geographic information systems. These files describe geometric points, lines, and surfaces, which may represent, for example, state borders or contour lines. They usually have a .shp extension. We have downloaded the shapefile from the Eurostat webpage. In addition to the geometric points themselves, the shapefile also includes a .dbf file that describes the attributes of each element (in this case, the geographic coordinates of each country). After loading the shapefile into the R studio, we linked our pre-prepared data to the .dbf database file to assign individual values to the countries. We then retrieved the necessary libraries using the packages and plotted the map. We used the libraries map tools (to load the shapefile) and ggplot2 (to render the map itself and to add a color scale).

To express the impact of sanctions on foreign trade between the EU and the RF, we used a linear model with two exogenous variables applying the least-squares estimator using Eviews software. The model specification is below:

$$y_1 = \beta_0 + \beta_1 x_i + \beta_2 x_i + u_i. \quad (2)$$

The period under review was 10 years (5 until the introduction of sanctions and 5 during the duration of the sanctions). As the endogenous variable, we chose the foreign trade turnover between the EU and the RF. Exogenous variables were selected as follows:

1) **The value of the sanctions,** which consisted of a cumulative expression of the items subject to sanctions and thus specifically:

- the EU›s export of vegetables of some roots and tubers;
- the EU›s export of fruits, nuts, peel of citrus fruits or melons;
- the EU›s export of meat and edible meat offal;
- the EU›s export of dairy products, bird eggs, natural honey, edible products of animal origin not elsewhere specified;

- the EU›s export of fish and crustaceans, molluscs and other aquatic invertebrates;
- the EU›s export of products from meat, fish or crustaceans, molluscs or other aquatic invertebrates;
- the EU›s export of arms, ammunition and their accessories;
- the Russian export of arms, ammunition and their accessories.

2) **The Russian export of mineral fuels,** oils, and products from their distillation bitumen substances to the EU.

Furthermore, we used a gravity model, which is one of the most popular econometric models that describe trade flow factors. In the model, we worked with panel data with a 10-year periodicity from 2009 to 2018, for 28 EU countries in relation to RF, and thus 280 observations were performed using R and R Studio programs. We estimated the gravity models from both sides, ie from the perspective of the EU as an exporter and the Russian Federation as an exporter. The model was specified as follows:

$$Ex_{ij} = \alpha_0 + = \alpha_1 GDP_{EU} + = \alpha_2 GDP_{RF} + = \alpha_3 POP_{EU} + = \alpha_4 POP_{RF} + = \alpha_5 DIST + \alpha_6 SAN + \varepsilon_{ij} \quad (3)$$

Dependent variable was export (Model 1: Export_EU; Model 2: Export_RF);

Explanatory variables were: GDP of EU countries, GDP of the Russian Federation, EU countries population, RF population, the distance between capitals of EU countries and RF;

Dummy variable that represented sanctions: 1 if they persisted, 0 if they did not.

We have further modified this equation by logging both sides, and in log-log form, the gravity model has the shape:

$$ln(Ex_{ij}) = \alpha_0 + \alpha_1 ln(GDP_{EU}) + \alpha_2 ln(GDP_{RF}) + \alpha_3 ln(POP_{EU}) + \alpha_4 ln(POP_{RF}) + \alpha_5 ln(DIST) + \alpha_6 SAN + \eta\, \varepsilon_{ij} \quad (4)$$

From a methodological point of view, the use of OLS in estimating the gravity model is limited, especially after the conclusions of Anderson and Wincoop (2003). They further state that the choice between the fixed effect model (FEM) and the random effect model (REM) depends on the interests of the analysis, the sample of countries and the characteristics of the data. These cases are distinguished as follows (Lukáčiková et al., 2018):

Fixed Effect Model (FEM) - if individual effects Z_1 to Z_q are unobservable but correlated with explanatory variables, the solution is to include all effects in an estimated conditional average using the formula

$$\alpha_i = \alpha_1 z_{i1} + \alpha_2 z_{i2} + \ldots + \alpha_q z_{iq}$$

and FEM model has the form:

$$y_{it} = \alpha_i + \beta_1 x_{it1} + \beta_2 x_{it2} + \ldots + \beta_k x_{itk} + u_{it} \quad (5)$$

In which the fixed effect αi means a specific constant for each cross-sectional unit.

- Random Effects Model (REM) – if individual effects Z_1 to Z_q are unobservable but not correlated with explanatory variables, the solution is composed of a random component $\varepsilon_i + u_{it}$, which in addition to the original assumes a specific random component for each cross-sectional unit and REM model has the form:

$$y_{it} = \beta_1 x_{it1} + \beta_2 x_{it2} + \ldots + \beta_k x_{itk} + (\alpha + \varepsilon_i) + u_{it} \quad (6)$$

The Hausmann test is used to determine the most effective estimator. If there is no correlation between regressors and effects, then fixed effects (FE) and random effects (RE) are consistent, but FE is ineffective. If there is a correlation, FE is consistent and RE is inconsistent. Based on the above, we define zero and alternative hypotheses:
⇒ *H0:* The appropriate is Random Effects Model. There is no correlation between the error term and the independent variables in the panel data model.

$$Cov\alpha i, \boldsymbol{xit} = 0$$

⇒ *H1:* The appropriate model is Fixed effects. The correlation between the error term and the independent variables in the panel data model is statistically significant.

$$Cov\alpha i, \boldsymbol{xit} \neq 0$$

The Hausman test is calculated from the formula (Greene, 2002):

$$H = (\boldsymbol{\beta}^{RE} - \boldsymbol{\beta}^{FE})' \, Var\, \boldsymbol{\beta}^{RE} - Var\, \boldsymbol{\beta}^{FE}{}^{-1} (\boldsymbol{\beta}^{RE} - \boldsymbol{\beta}^{FE}), \quad (7)$$

where $\boldsymbol{\beta}^{RE}$ and $\boldsymbol{\beta}^{FE}$ are coefficient estimation vectors for the random and fixed effects model. This statistic is $\chi 2\ (k)$ distributed under the null hypothesis. The degrees of freedom k equal to the number of factors.

Other factors also need to be considered when deciding which is more appropriate for our case. We need to take into account the effects of variables whose value does not change over time, in our case this is the distance value. In the Fixed Effects model, we cannot estimate the effect of variables that do not change, in our case the distance variable. The Random Effects model, on the other hand, will give us estimates at the time of unchanged variables, but these estimates may be slightly biased because we are not able to include all the important variables in the model. In the results part, we interpret a more efficient model.

Discussion and Results

Since 2014, it has been possible to observe the changes in the EU–RF exchange of the goods, which were caused, firstly, by the uncertainty of the markets as a result of the imposition of sanctions, but on the other hand by unfavorable developments in the world oil market. For a more detailed analysis at the level of individual EU countries and the Russian Federation, we observe the flows of goods in terms of export and import. Figure 1 shows the European Union countries according to the average year-on-year change in the volume of exports to the Russian Federation between 2014 and 2018. The starting point was 2013. The average year-on-year decrease in EU28 exports was 29 percentage points.

In the legend of Figure 1, a color scale is shown to reflect the average percentage change year-on-year since the introduction of sanctions. The darkest blue tint represents the largest decrease and the lighter the color becomes, the lower the year-on-year change in exports compared to the base year 2013.

Greece is at the top of the chart, with the highest average year-on-year decrease of 46.65 percentage

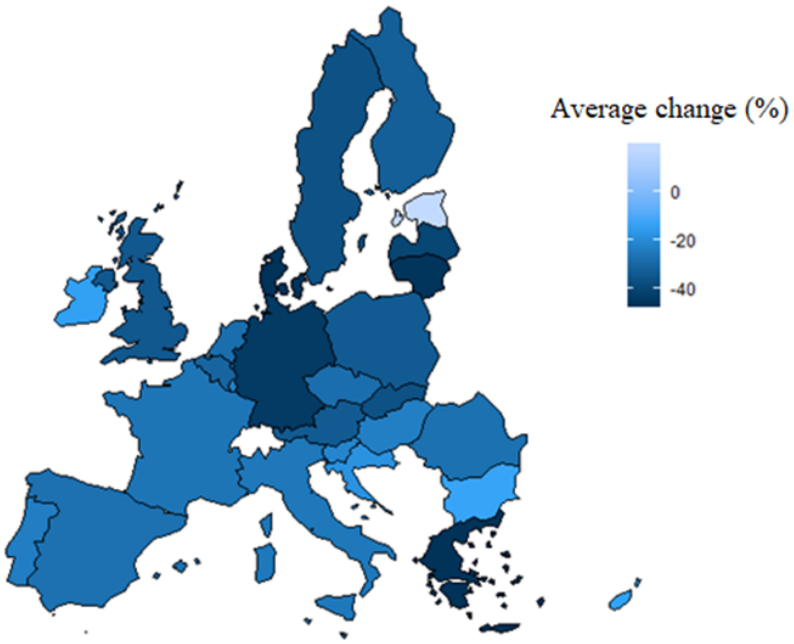

Figure 1 – Average year-on-year change in EU exports to the RF since the introduction of sanctions for 2014-2018 (in percentage points)

Source: author›s own calculations, 2020.

points. Germany, Denmark, Lithuania, and Latvia also fall into the group with a fall of more than 40 percentage points. Slovakia and Sweden also registered a significant decrease in exports, almost 37 percentage points. As we can see in the figure, most EU Member States fell within the interval with a year-on-year decrease in export volumes from 15 to 35 percentage points. The upper limit is formed by the United Kingdom and the lower limit by Croatia. Countries whose export to RF has changed the least, meaning from 0 to 15 percentage points include Bulgaria, Ireland, and Cyprus. Estonia was the only country to see an increase in the average export volume compared to the pre-crisis period. Unlike other countries, Estonia has managed to increase the volume of exports by an average of 17.70 percentage points year-on-year since the introduction of sanctions. However, this increase was due to a doubling of export volumes in 2014, and specifically, within the commodity group of electrical machinery and equipment. Estonian exports have remained almost constant over recent years.

A similar approach was chosen to quantify the average year-on-year changes in exports of the Russian Federation to the European Union after the imposition of sanctions from 2014 onwards. The average year-on-year decrease in the share of EU28 imports from the RF was at 23 percentage points. As shown in Figure 2, over the period 2014-2018, it is possible to observe not only the expected decline in imports of Russian goods in some EU countries, but also an increase. The color scale suggests that the countries with the brightest shade of green have seen the largest increase in RF imports. Gradually, as on the color scale, there is a transition to the darkest shade of green, meaning that imports are decreasing.

The first interval, shown in the lightest shade, shows countries whose average year-on-year increase in imports exceeded 100 percentage points of imported goods in the pre-sanction period. This includes countries such as Luxembourg, Austria, and Denmark. Analyzing the commodity structure at the country-country level provides a clearer picture of what is behind this increase. In the case of Luxembourg, the imports of mineral fuels increased by more than 75% in 2018. The same applies to Denmark. The increase in Russian exports to Austria was

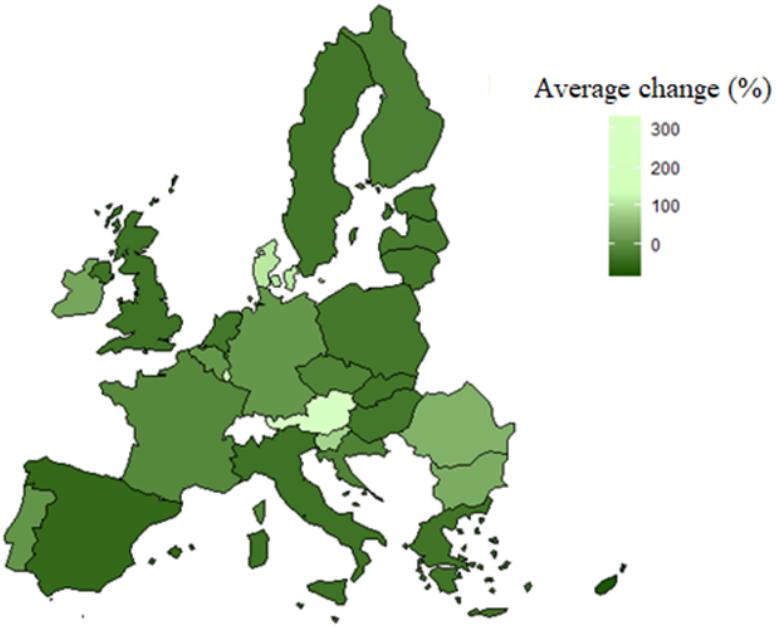

Figure 2 – Average year-on-year change in EU imports from the RF since the introduction of sanctions for 2014-2018 (in percentage points)

Source: author›s own calculations, 2020.

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primarily due to «commodities not elsewhere specified», which accounted for 85% of the share in 2018. According to the interpretation of the statistics, only those commodities that are involved in the minimum share of trade should be included in this group and cannot be included in other groups. The second interval includes countries whose import remained either at the same level or did not exceed the imported pre-sanction value by more than 99 percentage points. Countries within this range include Slovenia, Ireland, Romania and Bulgaria. The largest representation by countries can be found in the third interval, under which imports of goods have been reduced by up to 75 percentage points, as was the case in Cyprus. This was due to a year-on-year reduction in imports of mineral fuels of almost 20 percentage points. The Slovak Republic recorded an average year-on-year change in the decrease in imports of Russian products in the last four years of 31.36 percentage points.

1.1 Quantification of the impact of sanctions on foreign trade between the EU and the Russian Federation in relation to mineral fuels

As mentioned above, mineral fuels represent a significant share of the EU-RF trade. The justification for using this approach stems from the boom in the world oil market. Given that oil prices have fallen considerably in parallel with the introduction of sanctions in 2014, this may be one of the dominant factors behind the decline in the EU-RF balance. Based on the relationship (1) given in the methodology, we estimate the linear model in the form:

$$Trade = \beta_0 + \beta_1 * MINERAL\_FUELS + \beta_2 * SANCTIONS\_VALUE \quad (8)$$

Table 1

The result of the linear model estimation

Dependent Variable: Trade Method: Least Squares Sample: 2009 2018				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	53182567	22189105	2.396787	0.0477
Mineral_Fuels	1.670866	0.252147	6.626554	0.0003
Sanction_Value	-4.648299	3.492491	-1.330941	0.2249
R- Squared		Mean	dependent	var
0.919894		2.27E+08		
Adjusted R-Squared		S.D.	dependent	var.
0.897007		45882586		
S.E. of regression		Akaike	info	criterion
14724890		36.09130		
Sum squared resid		Schwarz		criterion
1.52E+15		36.18208		
Log likelihood		Hannan-Quinn		criter.
-177.4565		35.99172		
F-statistic		Durbin-Watson		stat.
40.19222		2.097157		
Prob(F-statistic)				
0.000145				

Source: author›s own calculations, 2020.

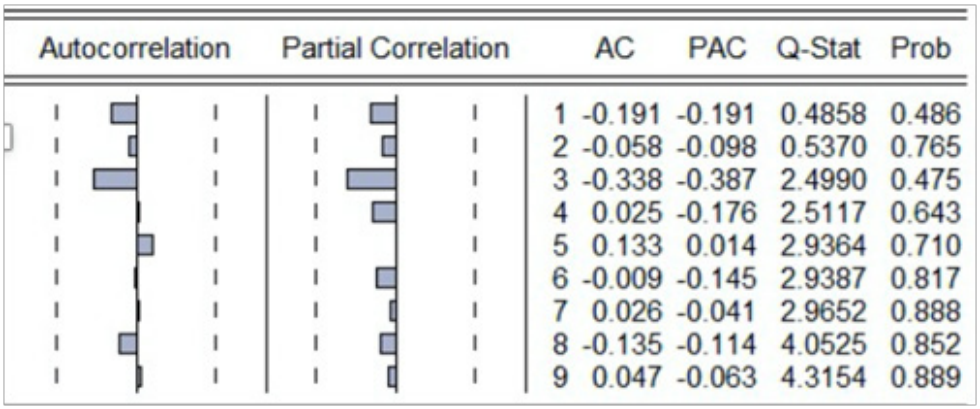

Figure 3 – Correlogram of Residuals
Source: author›s own calculations, 2020.

The result of the estimated model is an equation:

*Trade = 53182566.7086 + 1.6709*MINERAL_ FUELS 4.6483*SANCTIONS_VALUE* (9)

As we can see in the output, the explanatory variable value of sanctions is not statistically significant. On the contrary, the variable expressing the export of mineral fuels is statistically significant at the significance level α= 0.05. Furthermore, the coefficient of determination *(R-squared)* indicates that 91.98% of the variability of the variables is explained. We also tested the presence of auto-correlation in the model, which is a correlation of random components in the model. To determine the presence of the first-order autocorrelation, we formulate a null hypothesis about the absence of the autocorrelation H0: ρ_1 1 = 0. The Durbin-Watson test was used to determine it. The value of this statistic can be seen in the output and our case is 2.097157. The area of acceptance of the null

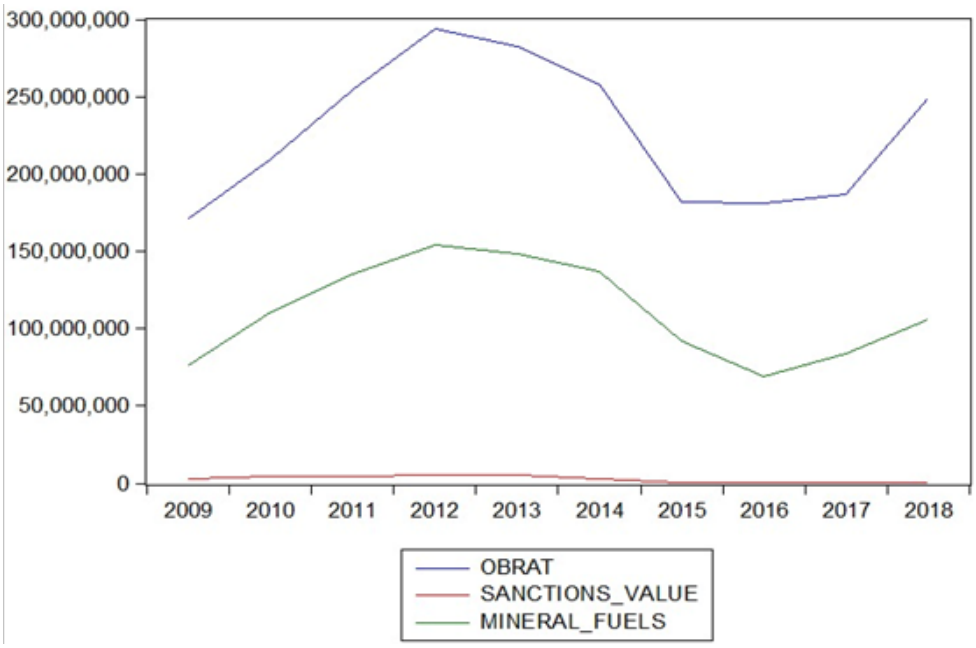

Figure 4 – The output of the development of individual variables from the model in time
Source: author›s own calculations, 2020.

hypothesis lies within interval <1.320; 2.68> - as we can see, the Durbin-Watson statistic belongs to this interval and thus we can accept the null hypothesis about the absence of autocorrelation, which can be also seen in figure 3.

As mentioned above, the value of sanctions does not have a statistically significant impact on the model. On the contrary, mineral fuels and products from them have a significant impact on the value of foreign trade between the EU and the Russian Federation.

Figure 4 shows that exports of mineral fuels and their products represent almost half of the total EU-RF trade during the period under review. Therefore, it is logical that this variable has a significant effect on its value. Conversely, the variable representing the value of sanctions is low, which means that it does not significantly affect overall trade. This was also confirmed by the econometric model. It can, therefore, be stated that the sanctions introduced have brought a reduction in trade between the EU and the RF. However, in terms of the total volume of traded goods, this has shown only a negligible impact. The variable representing the export of mineral fuels, which significantly interferes with the EU-RF turnover, has an inverse effect. Consequently, the price reductions in the commodities represented in the group of mineral fuels, oils, and products from their distillation bituminous substances were largely responsible for the reduction of EU and RF turnover since 2014. At the same time, the increase in turnover between the RF and the EU, which we had the opportunity to observe in 2018, was flagrantly caused by the favorable boom in the commodity energy markets.

1.2 Extended gravity models between the EU and the Russian Federation

In this section, we interpret the results of gravity models. In the first model, there was a dependent variable export from EU countries to the RF. Based on the results of the Hausman test, we accepted the hypothesis H0 and rejected hypothess H1, and thus the most effective estimator was the Random Effects Model.

As we can be seen in Table 2, the GDP of the Russian Federation, the GDP of the EU countries, the population of the EU countries and the distance are statistically significant variables. The population of the Russian Federation and the dummy variable sanctions were statistically insignificant. This confirms the conclusions of the econometric model in section 4.1.

The output of the gravity model 1 is an equation:

^l_EXPORT_EU = 417 + 0.980*l_GDP_RF - 22.4*l_POP_RF + 0.0939*l_GDP_EU + 0.887*l_POP_EU - 2.40*l_DST + 0.0125*SAN. (10)

The variables representing the GDP of the Russian Federation, the GDP of the EU countries and the EU population have a positive effect on EU countries› exports. An increase in the Russian

Table 2

Results of the gravity model 1 with random effects

	coefficient	Std. error	z	p-value
const	416.710	492.637	0.8459	0.3976
l_GDP_RF	0.979573	0.282421	3.468	0.0005 ***
l_POP_RF	−22.4257	26.1937	−0.8561	0.3919
l_GDP_EU	0.0938834	0.0256834	3.655	0.0003 ***
l_POP_EU	0.887181	0.0687470	12.91	4.22e-38 ***
l_DST	−2.40154	0.142682	−16.83	1.43e-63 ***
SAN	0.0125038	0.244627	0.05111	0.9592

Source: author›s own calculations, 2020.

Federation›s GDP of 1% will cause an increase in EU countries› exports of 0.98%, and a 1% increase in the GDP of EU countries will generate a 0.09% increase in their exports. An increase in population by 1% would cause a 0.88% growth in exports from EU countries to the Russian Federation. Distance has a negative effect on the explained variable, and its 1% growth would cause a 2.4% decrease in EU exports to the Russian Federation, confirming the theoretical basis of the gravity model.

Furthermore, we interpret the results of gravity model 2 from the perspective of the Russian Federation as an exporter. Again, we evaluate the consistency of the estimator used based on the Hausman test and accept the hypothesis H0, which means that we are again using the random effect model. In the case of gravity model 2, only the Russian Federation GDP variables, the EU population, and distance are statistically significant, other variables are statistically insignificant.

The output of the gravity model 2 is an equation:

^l_EXPORT_RF = -456 + 0.775*l_GDP_RF + 24.2*l_POP_RF + 0.0405*l_GDP_EU + 0.758*l_POP_EU - 1.55*l_DST - 0.101*SAN (11)

Here again, the assumption of the construction of a gravity model was confirmed, in which the variables that represent the economic dimension act as an attractive force, while distance is a repulsive force. An increase of 1% in the GDP of the Russian Federation would cause an increase in exports to EU countries of 0.77%, and an increase in the population of the EU countries of 1% would cause a 0.75% increase in their imports from the Russian Federation. Increasing the distance by 1% would result in a decrease of 1.55% in exports from the Russian Federation to EU countries.

Conclusion

The trade links between the European Union and the Russian Federation are very intense. The European Union is the main trading partner of the Russian Federation, with a share of the Russian Federation›s total exports up to 45% in 2018. In terms of the commodity structure of the export of the Russian Federation, mineral fuels have a dominant position in its total export, almost 60%. Equally, significant dependence also applies from the other side. Up to 19% of mineral fuels consumed by the European Union are from the Russian Federation.

Since 2014, relations between the European Union and the Russian Federation have entered a new era that resembles a period of confrontation where both sides are affected by sanctions. Over the past five years, there has been a significant decline in their exchange of goods. In terms of exports of EU countries, the average year-on-year decrease was 29 percentage points, compared to the baseline in 2013. On the other hand, the average year-on-year decrease in exports from the Russian Federation to the European Union was 23 percentage points compared to

Table 3

Results of the gravity model 2 with random effects

	coefficient	Std. error	z	p-value
const	−456.263	747.840	−0.6101	0.5418
l_GDP_RF	0.774639	0.428724	1.807	0.0708 *
l_POP_RF	24.2190	39.7630	0.6091	0.5425
l_GDP_EU	0.0404812	0.0389883	1.038	0.2991
l_POP_EU	0.758463	0.104360	7.268	3.66e-13 ***
l_DST	−1.55040	0.216596	−7.158	8.18e-13 ***
SAN	−0.101412	0.371353	−0.2731	0.7848

Source: author›s own calculations, 2020.

the baseline in 2013. To analyze the impact of sanctions on the strategic partnership between the EU and the RF, we constructed a linear model in which we examined the impact of the value of sanctions, which consisted of commodities they are covered, as well as the impact of mineral fuels. The results of this model have shown that sanctions do not have a statistically significant impact on trade between the EU and the RF, and vice versa, mineral fuels largely interfere with the volume of trade. Another approach, which we sought to determine the effects of sanctions on foreign trade between the EU and the Russian Federation, was the use of an extended gravity model with a dummy variable sanctions. The gravity model of international trade is one of the most popular approaches to analyzing factors affecting goods exchange between countries. For the purposes of our research, we interpret the two most effective models, one from the perspective of the EU as an exporter and second in terms of the Russian Federation as an exporter. These models allow us to identify factors of potential export growth. For example, a 1% increase in the Russian Federation›s GDP will result in a 0.98% increase in EU exports to the Russian Federation, or a 1% increase in the EU population would result in a 0.75% increase in Russian Federation exports to the EU. Both gravity model 1 and gravity model 2 showed that the sanctions were not statistically significant.

This is in line with the conclusions of the authors claiming that sanctions do not work and have only minor effects. Sanctions did not have the economic dimension to serve the purpose from which they were initiated, and given the inconsistency of EU positions on sanctions against the Russian Federation, their imposition was rather an act of loyalty to Western values. Some EU Member States are aware of the close links between their economies and the Russian Federation, which affects the competitiveness of their economies. Today, the European Union faces many challenges, such as the impact of Brexit, the change in ECB policy, China›s expansion in the context of the Belt and Road initiative, the unstable US foreign policy and other factors. It is therefore important to make efforts to redress the geopolitical context in the relations between the European Union and the Russian Federation. Although the sanctions did not have the massive impact that was initially expected, it is in the interest of both sides to enter a new phase of cooperation. As a result of the sanctions, the negotiation processes for a new contractual framework for their cooperation have been suspended, which requires a more up-to-date review as their relations are still governed by the 1997 Partnership and Cooperation Agreement. The conclusion of a comprehensive trade cooperation agreement between the European Union and the Eurasian Economic Union could be a platform through which new rules of mutually beneficial relations can be established.

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References

1. Anderson J.,Wincoop E. Gravity with Gravitas: A Solution to the Border Puzzle // The American Economic Review. – 2003. - Vol. 93. - № 1. – P. 170-192.

2. Baltagi B.H., Egger P., Pfaffermayr M. A generalized design for bilateral trade flow models.// Econ Lett. – 2003. – T. 80. - № 3. – P. 391-7.

3. Caruso R. (2004). The Impact of International Economic Sanctions on Trade An empirical Analysis. [Электрон. ресурс] – URL: https://ideas.repec.org/p/wpa/wuwpit/0306001.html (дата обращения: 01.05.2021)

4. Dashti-Gibson J., Davis P., Radcliff B. On the determinants of the success of economic sanctions: An empirical analysis // American Journal of Political Science. – 1997. – T. 41. – P. 608–618.

5. Dehejia R.H., Wood B. Economic sanctions and econometric policy evaluation: A cautionary note // Journal of World Trade. – 1992. – T. 26. – P. 73–84.

6. Dizaji S.F., Bergeijik P. (2013). Potential early phase success and ultimate failure of economic sanctions: A VAR approach with an application to Iran. [Электрон. ресурс] – URL: https://journals.sagepub.com/doi/full/10.1177/0022343313485487 (дата обращения: 01.05.2021)

7. Drury A.C. Revisiting 'Economic Sanctions Reconsidered' // Journal of Peace Research. – 1998. – T. 35. – P. 497– 509.

8. Egger P. Estimating regional trading bloc effects with panel data // Rev World Econ. – 2004. – T. 140. - № 1. – P. 151-66.

9. European Council. (2019). Timeline – EU restrictive measures in response to the crisis in Ukraine. The General Secretariat of the Council. [Электрон. ресурс] – URL: https://www.consilium.europa.eu-/en/policies/sanctions/ukraine-crisis/history-ukraine-crisis/# (дата обращения: 01.05.2021)

10. Filippini C., Molini V. The determinants of East Asian trade flows: a gravity equation approach // J Asian Econ. – 2003. – T. 14. - № 5. – P. 695-711.

11. Greene W.H. Econometric analysis. Fifth edition. - New York, Prentice Hall, 2002.

12. Hart R.A. Democracy and the successful use of economic sanctions // Political Research Quarterly. – 2000. – T. 53. – P. 267–284.

13. Hufbauer G. et al. Economic Sanctions Considered. 3rd. - Washington: Peterson Institute for International Economics, 2009. - 248 p. ISBN 978-0-88132-408-2.

14. Israld W. (1954). Location Theory and Trade Theory: Short- Run Analysis. [Электрон. ресурс] – URL: https://doi.org/10.2307/-1884452 (дата обращения: 01.05.2021)

15. Kaempfer W.H., Lowenber A.D. The Theorey of International Economic Sanctions: A Public Choise Approach // American Economic Review. – 1988. – T. 78. - № 4. – P. 786 – 793.

16. Kaempfer W.H., Lowenber A.D. The political economy of economic sanctions. Handbook of Defense Economics, Volume 2, Elsevier B.V., 2007. – 867 p.

17. Kaempfer W.H., Lowenberg, A.D. International Economic Sanctions: A Public Choice Perspective. - Westview Press, Boulder, CO, 1992.

18. Kaempfer W.H., Lowenberg A.D. Unilateral versus multilateral international sanctions: A public choice perspective // International Studies Quarterly. – 1999. – T. 43. – P. 37–58.

19. Kalinichenko P. (2017). Post-crimean twister: Russia, the EU and the law of sanctions // Russian law journal. Moscow: Kutafin Moscow State Law University. – 2017. - Vol. V (2017). - Issue 3. – P. 9-28.

20. Kepaptsoglou K., Karlaftis M., Tsambuolas D. The Gravity Model Specification for Modeling International Trade Flows and Free Trade Agreement Effects, A 10-Year Review of Empirical Studies // The Open Economics Journal. – 2010. -No. 3. – P. 1-13.

21. Kucera D., Sarna R. Trade union rights, democracy, and exports: a gravity model approach // Rev Int Econ. – 2006. – T. 14. - № 5. – P. 859-82.

22. Lam S.L. Economic sanctions and the success of foreign policy goals: A critical evaluation // Japan and the World Economy. – 1990. - Vol. 2. - Issue 3. – P. 239-248.

23. Lee H., Park I. In search of optimized regional trade agreements and applications to East Asia // World Econ. – 2007. – T. 30. - № 5. – P. 783-806.

24. Lichačev V. Vozmozhnosti sotrudnichestva Rosii i ES v sfere energetiki // Otnoshenia Rossii i ES v sfere energetiki. Moskva: Rossijskij sovet po mezhdunarodnym delam. – 2017. - No. 35/2017. – P. 4-17.

25. Linemann H. (1966). An econometric study of international trade flows. [Электрон. ресурс] – URL: https://www.worldcat.org/title/econometric-study-of-international-trade-flows/oclc/239355 (дата обращения: 01.05.2021)

26. Lukáčiková A. a kol. Úvod do ekonometrie s programom Gretl. - Bratislava: Letra Edu, 2018. - 345 s.

27. Morgan C., Schwebach V. Economic sanctions as an instrument of foreign policy: The role of domestic politics // International Interaction: Empirical and Theoretical Research in International Relations. - 1995. - T. 21. -№ 3. - P. 247 – 263.

28. Pèridy N. The trade effects of the Euro-mediterranean partnership: what are the lessons for ASEAN countries? // J Asian Econ. – 2005. – T. 16. - № 1. – P. 125-39.

29. Porojan A. Trade flows and spatial effects: the gravity model revisited // Open Econ Rev. – 2001. - № 12. – P. 265-80.

30. Rogoff K. (2015). Do Economic Sanctions Work? [Электрон. ресурс] – URL: https://www.project-syndicate.org/commentary/do-economic-sanctions-work-by-kenneth-rogoff-2015-1 (дата обращения: 01.05.2021)

31. Sohn C-H. Does the gravity model explain South Korea's trade flows? // Japanese Econ Rev. – 2005. T. 56. - № 4. – P. 417-30.

32. Tang D. Effects of the regional trading arrangements on trade: evidence from the NAFTA, ANZCER and ASEAN Countries, 1989-2000 // J Int Trade Econ Dev. – 2005. – T. 14. - № 2. – P. 241-65.

33. Tinbergen J. (1962). Shaping the World Economy Suggestion for an International Economic Policy. [Электрон. ресурс] – URL: https://repub.eur.nl/pub/16826 (дата обращения: 01.05.2021)

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Санкциялар кезеңінде Еуропалық Одақ пен Ресей Федерациясы арасындағы стратегиялық серіктестіктің маңыздылығы

Аннотация. Еуропалық Одақ пен Ресей Федерациясы қарқынды сауда байланыстары бар негізгі жаһандық геосаяси ойыншылар. Жаһандану экономикалардың өзара тәуелділігін тереңдетті, бұл олардың одан әрі экономикалық даму жолында маңызды рөл атқарады. Ресей-Украина қақтығысы Еуропалық Одақ пен Ресей Федерациясы арасындағы орталықтан тепкіш қатынастардың қозғаушы күшіне айналды, бұл санкцияларға әкелді. Бұл мақалада санкциялардың Еуропалық Одақ пен Ресей Федерациясы арасындағы сыртқы саудаға әсері талданады. Еуропалық Одақ пен Ресей Федерациясы арасындағы тауар айналымына санкциялардың әсерінен басқа, біз сызықтық регрессия арқылы энергетикалық стратегиялық серіктестіктің негізі болып табылатын минералды отынның әсерін бағалаймыз. Кеңейтілген гравитациялық модельде біз олардың экспортына әсер ететін факторларды көрсетеміз. Санкциялар айтарлықтай экономикалық әсер етпесе де, олар сауда ынтымақтастығы үшін жаңа шарттық негіздерді қалыптастыруды тоқтатуға түрткі болды. Еуропалық Одақ пен Ресей Федерациясы арасындағы геосаяси контекстті түзету олардың экономикалық прогресі мен әлемдік экономикадағы бәсекеге қабілеттілікті нығайту үшін маңызды.

Түйін сөздер: Еуропалық Одақ, гравитациялық модель, халықаралық сауда, Ресей Федерациясы, Санкциялар.

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Важность стратегического партнерства между Европейским Союзом и Российской Федерацией в период санкций

Аннотация. Европейский Союз и Российская Федерация являются основными глобальными геополитическими игроками с интенсивными торговыми связями. Глобализация углубила взаимозависимость экономик, которая играет важную роль на пути их дальнейшего экономического развития. Российско-украинский конфликт стал движущей силой в центробежных отношениях между Европейским Союзом и Российской Федерацией, что привело к введению санкций. В этой статье мы анализируем влияние санкций на внешнюю торговлю между Европейским Союзом и Российской Федерацией.

Также мы оцениваем влияние минерального топлива, которое является основой энергетического стратегического партнерства посредством линейной регрессии. В расширенной гравитационной модели мы выражаем факторы, которые влияют на объем их экспорта. Хотя санкции не оказали существенного

экономического воздействия, они стали стимулом для прекращения формирования новых договорных рамок для торгового сотрудничества. Корректировка геополитического контекста между Европейским Союзом и Российской Федерацией имеет важное значение для их экономического прогресса и укрепления конкурентоспособности в мировой экономике.

Ключевые слова: Европейский союз, гравитационная модель, международная торговля, Российская Федерация, санкции.

References

1. Anderson J., Wincoop E. Gravity with Gravitas: A Solution to the Border Puzzle, The American Economic Review, 93(1), 170-192 (2003).

2. Baltagi B.H., Egger P., Pfaffermayr M. A generalized design for bilateral trade flow models, Econ Lett, 80(3), 391-7 (2003).

3. Caruso R. (2004) The Impact of International Economic Sanctions on Trade An empirical Analysis. [Electronic resource] - Available at: https://ideas.repec.org/p/wpa/wuwpit/0306001.html (Accessed: 01.05.2021)

4. Dashti-Gibson J., Davis P., Radcliff B. On the determinants of the success of economic sanctions: An empirical analysis, American Journal of Political Science, 41, 608–618 (1997).

5. Dehejia R.H., Wood B. Economic sanctions and econometric policy evaluation: A cautionary note, Journal of World Trade, 26, 73–84 (1992).

6. Dizaji S.F., Bergeijik P. (2013). Potential early phase success and ultimate failure of economic sanctions: A VAR approach with an application to Iran. [Electronic resource] - Available at: https://journals.sagepub.com/doi/full/10.1177/0022343313485487 (Accessed: 01.05.2021)

7. Drury A.C. Revisiting 'Economic Sanctions Reconsidered', Journal of Peace Research, 35, 497– 509 (1998).

8. Egger P. Estimating regional trading bloc effects with panel data, Rev World Econ, 1(140), 151-166 (2004).

9. European Council. (2019). Timeline – EU restrictive measures in response to the crisis in Ukraine. The General Secretariat of the Council. [Electronic resource] - Available at: https://www.consilium.europa.eu-/en/policies/sanctions/ukraine-crisis/history-ukraine-crisis/# (Accessed: 01.05.2021)

10. Filippini C., Molini V. The determinants of East Asian trade flows: a gravity equation approach, J Asian Econ, 5(14), 695-711 (2003).

11. Greene W.H. Econometric analysis. Fifth edition (New York, Prentice Hall, 2002).

12. Hart R.A. Democracy and the successful use of economic sanctions, Political Research Quarterly 53, 267–284 (2000).

13. Hufbauer G. et al. Economic Sanctions Considered. 3rd. (Washington: Peterson Institute for International Economics, 2009, 248 p.). ISBN 978-0-88132-408-2.

14. Israld W. (1954). Location Theory and Trade Theory: Short- Run Analysis. [Electronic resource] - Available at: https://doi.org/10.2307/-1884452 (Accessed: 01.05.2021)

15. Kaempfer W.H., Lowenber A.D. The Theorey of International Economic Sanctions: A Public Choise Approach, American Economic Review, 4(78), 786 – 793 (1988).

16. Kaempfer W.H., Lowenber A.D. The political economy of economic sanctions (Handbook of Defense Economics, 2007, Volume 2, 867 p.).

17. Kaempfer W.H., Lowenberg A.D. International Economic Sanctions: A Public Choice Perspective (Westview Press, Boulder, CO, 1992).

18. Kaempfer W.H., Lowenberg A.D. Unilateral versus multilateral international sanctions: A public choice perspective, International Studies Quarterly, 43, 37–58 (1999).

19. Kalinichenko P. Post-crimean twister: Russia, the EU and the law of sanctions, Russian law journal. Moscow: Kutafin Moscow State Law University, 3(V), 9-28 (2017).

20. Kepaptsoglou K., Karlaftis M., Tsambuolas D. The Gravity Model Specification for Modeling International Trade Flows and Free Trade Agreement Effects, A 10-Year Review of Empirical Studies, The Open Economics Journal, 3, 1-13 (2010).

21. Kucera D., Sarna R. Trade union rights, democracy, and exports: a gravity model approach, Rev Int Econ, 5(14), 859-82 (2006).

22. Lam S.L. Economic sanctions and the success of foreign policy goals: A critical evaluation, Japan and the World Economy, 2(3), 239-248 (1990).

23. Lee H., Park I. In search of optimized regional trade agreements and applications to East Asia, World Econ., 30(5), 783-806 (2007).

24. Lichačev V. (2017) Vozmozhnosti sotrudnichestva Rosii i ES v sfere energetiki, Otnoshenia Rossii i ES v sfere energetiki. Moskva: Rossijskij sovet po mezhdunarodnym delam, 35/2017, 4-17 (2017).

25. Linemann H. (1966). An econometric study of international trade flows. [Electronic resource] - Available at: https://www.worldcat.org/title/econometric-study-of-international-trade-flows/oclc/239355 (Accessed: 01.05.2021)

26. Lukáčiková A. a kol. Úvod do ekonometrie s programom Gretl (Bratislava: Letra Edu, 2018, 345 s.).

27. Morgan C., Schwebach V. Economic sanctions as an instrument of foreign policy: The role of domestic politics, International Interaction: Empirical and Theoretical Research in International Relations, 21(3), 247 – 263 (1995).

28. Pèridy N. The trade effects of the Euro-mediterranean partnership: what are the lessons for ASEAN countries? J Asian Econ., 16(1), 125-39 (2005).

29. Porojan A. Trade flows and spatial effects: the gravity model revisited, Open Econ Rev, 12, 265-80 (2001).

30. Rogoff K. (2015). Do Economic Sanctions Work? [Electronic resource] - Available at: https://www.project-syndicate.org/commentary/do-economic-sanctions-work-by-kenneth-rogoff-2015-1 (Accessed: 01.05.2021)

31. Sohn C-H. Does the gravity model explain South Korea's trade flows?, Japanese Econ Rev, 56(4), 417-30 (2005).

32. Tang D. Effects of the regional trading arrangements on trade: evidence from the NAFTA, ANZCER and ASEAN Countries, 1989-2000, J Int Trade Econ Dev, 14(2), 241-65 (2005).

33. Tinbergen J. (1962). Shaping the World Economy Suggestion for an International Economic Policy. [Electronic resource] - Available at: https://repub.eur.nl/pub/16826 (Accessed: 01.05.2021)

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