

## **The analysis of the international trade of Romania**

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**Abstract.** *The international commercial activity is important for any national economy, in the sense that the surplus of goods and services that can be realized is the object of the exports, and the harmonization of the correlations within the national economy can often be ensured by complementary imports. No country in the world under the current conditions can operate under autarchy, so it can no longer procure absolutely everything it needs to carry out its activity.*

*In 2019, Romania continued to grow on consumption, first and foremost, on investment. This aspect will be maintained further because, especially in the current conditions of the pandemic that invaded mankind, the conditions of macrostability can be ensured. Going beyond this, we are interested in 2019 how, within the economy of our country, imports and exports have been made. Imports and exports should be analyzed from the point of view of the contribution made by the economic agents to the exports and especially the efficiency of the imports in the context where the net export, that is the difference between export and import is negative and affects the annual results of Romania.*

*The analysis of the foreign trade activity is carried out both within the intra-community, but also in the extra-community one, meaning that the studies lead to the conclusion that Romania's main import-export activity is carried out within the intra-community framework of the 27 states, who are currently members after the Brexit that led to the United Kingdom leaving the European Union concert. The analysis of import and export inside and outside the EU shows that, especially within the European Union, the balance of foreign trade balance or foreign payments is negative. Also, the study shows that both imports and exports have increased year by year, but at the same time, the more alert pace has been the imports that have determined the widening of the value difference between the two activities of international economic exchanges, causing the surplus of the balance to increase. Foreign or commercial payments. The article addresses these issues as a whole and finally some analyzes are made using statistical and econometric methods and models, which highlight the correlation between imports and total trade, total imports and imports on the two structures, to detect exports on those two structures. The article makes complex references to the complete situation registered by Romania in 2019, with relevant analysis and on January 2020, in order to highlight and highlight the trend in the coming period.*

**Keywords:** import, export, trade balance, European Union, trade, economic growth.

**JEL Classification:** C10, C20, E01.

## Introduction

In this article, the focus is on the presentation of the way in which the imports and exports are carried out within the international trade, in this respect aiming to highlight the effect that the international commercial activity has on the results obtained by Romania in each period of time. Specifically, exports are necessary, imports are also needed especially when they are complementary and strictly necessary for the national economy, but the study shows that the structure of imports by part satisfies this perspective. From this point of view, it is studied and it is concluded that this evolution will cause a depreciation in a certain sense of the concrete results, both monthly, quarterly and annually.

There is also a longer-term analysis, in order to show on the basis of figures, charts and data series presented in the tables, that the evolution of the Romanian trade does not fully respect the need to support the economic growth, of the growth of the Gross Domestic Product as the national indicator of results.

The study is conducted both on the basis of data and on the basis of some interpretations of these data, correlated and adjusted, in the sense of intuiting what will be the evolutionary trend of the international trade activity of Romania. There is a study of the international commercial evolution of Romania in the intra-community case, as well as in the extra-community framework. The data are correlated and using the simple linear regression method, the influence of the export on the one hand and the import on the other hand in increasing the volume of international trade is emphasized. Also, the calculated regression parameters ensure the estimation and extension of the evolution prospects of the Romanian economy from the point of view of the net export (exports minus imports).

The article is accompanied by charts and tables, series of data that really and positively highlight the perspective that we should expect in the next period.

## Literature review

Algieri (2006) analyzed the development of the international tourism in some small states. Amiti, Itskhoki and Konings (2014) studied the correlation between the participants in the international trade activity and the evolution of the exchange rate. Anghel, Anghelache and Niță (2017) conducted a study on the impact of international trade on economic growth in the EU. Anghelache, Marinescu and Samson (2019) highlighted a number of elements of Eurostat's methodology used in the international trade statistics. Anghelache, Anghelache and Dumbravă (2009), as well as Bernard, Jensen, Redding, and Schott (2012) addressed a number of issues regarding the analysis of foreign trade activity as a whole, while Borio, James and Shin (2014) have been concerned about the international monetary system. Bütte and Milner (2008) addressed some issues regarding the FDI policy in the developing countries. Caron, Fally and Markusen (2014) highlighted the importance of knowing the correlation between production and consumer preferences in order to make international trade more efficient. Hummels (2007) analyzed the influence of transport costs on international trade.

Fajgelbaum, Grossman and Helpman (2011) studied some aspects of product quality and income distribution in international trade. A similar theme is also addressed by Waugh (2010). Guerrieri and Vergara Caffarell (2012) studied the implications of free market and international trade on production in the EU. Kehoe, Pujolàs and Ruhle (2016) analyzed aspects regarding the identification of opportunity costs by entrepreneurs in the activities carried out in international trade. Konya (2006) investigated the correlation between export levels and economic growth. Soderbery (2015) analyzed methods of estimating the import demand and supply. Staiger and Sykes (2011) presented a number of elements regarding the internal regulations of international trade.

### **Some methodological considerations**

The statistics of international trade in goods and services are established by cumulating data from the INTRASTAT and EXTRASTAT statistical databases.

The databases of the INTRASTAT system include the exchanges of goods between Romania and the other Member States of the European Union, and the databases on the EXTRASTAT system contain the data regarding the exchanges of goods between Romania and the states that are not members of the European Union.

Regarding the intra-EU trade, we specify that it includes shipments of goods from Romania to another EU member state and the introduction of goods to Romania having another EU member state as the country of dispatch. In another vision, intra-EU trade is also called intra-Community sales.

Romania sells (exports) to the Member States of the European Union goods with free movement that leave the territory of Romania destined for another EU member state, as well as goods that have been placed under the customs procedure of active processing (in our country) or processing under customs control and which are intended to be delivered to other Member States.

As regards imports (entries) into Romania, these include goods with free movement in an EU member state, which enters the territory of Romania, as well as goods that have been placed under the active procedure of processing or processing under customs control in another EU member state, but entering Romania.

It is clear from the existing statistical data that, at present, intra-Community trade holds the share in the international trade of Romania.

EXTRA-COMMUNITY TRADE includes exchanges of goods between Romania and non-EU countries, which have as their object the direct import of consumer goods, imported goods removed from customs warehouses or free zones for consumption, export of goods produced in Romania, as well as and the export of imported goods, declared for domestic consumption.

Also, in this structure of EXTRA-EU exchanges we also consider the temporary imports of foreign goods for active processing within the country, the exports of compensating products resulting after the active processing, the temporary exports of goods for passive

processing in other countries, the imports of compensating products resulting after processing abroad and the goods imported or exported in the financial leasing system, at the full value of the goods, as well as the quasi-exports, for which, at the national border, customs declarations of export, related to the international transactions of the non-resident economic operators in Romania.

Please note that goods in transit, temporary goods admitted or removed to and from the country (except for processing), goods purchased by international organizations for their own use in our country, goods for and after repairs and spare parts are not included in international trade related to machines operating in the Romanian economy.

Values, goods are expressed in FOB prices for exports and in CIF prices for imports. The FOB price represents the price at the border of the exporting country and includes the value of the good, all the transport costs to the point of embarkation, as well as all the related taxes so that the goods can be exported.

The CIF price is the price at the border of the importing country and includes both the component elements of the FOB price, as well as the cost of international insurance and transport.

In the statistical data system the value data are expressed in euros and lei. The conversion into euro of the value data expressed in lei is made using the average monthly exchange rate lei/euro communicated by the National Bank of Romania, for INTRASTAT trade and the exchange rate lei/euro communicated by the National Bank of Romania for the penultimate day of Wednesday of the month, for EXTRASTAT trade.

In reporting the data on the international trade of Romania, the expression in foreign currency (Euro, Dollar etc.) is done to ensure comparability, but depending on the exchange rate, the value is diminished due to the weaker position on the currency market of the currency national.

The data sources in the case of INTRA-EU trade are the INTRASTAT statistical statements collected by the National Institute of Statistics directly from the economic operators who have made a value volume of intra-Community shipments of goods and/or a value volume of intra-Community goods deliveries. Also, the data are obtained from the customs declarations collected and processed by the National Agency for Tax Administration, for intra-Community trade regarding goods for internal processing or processing under customs control, goods that move from and to parts of the EU statistical territory but which do not belong to the fiscal territory of the EU.

We note that in the case of EXTRA-EU trade, the data are obtained from the National Agency for Tax Administration, which collects and processes the customs declarations of export and import. In the case of the authorized economic operators for simplified customs procedures, they send to the NIS export and import data using a form with a predetermined structure.

In connection with the international trade in goods, electricity and natural gas, data are collected through statistical forms from importing or exporting companies and from network operators.

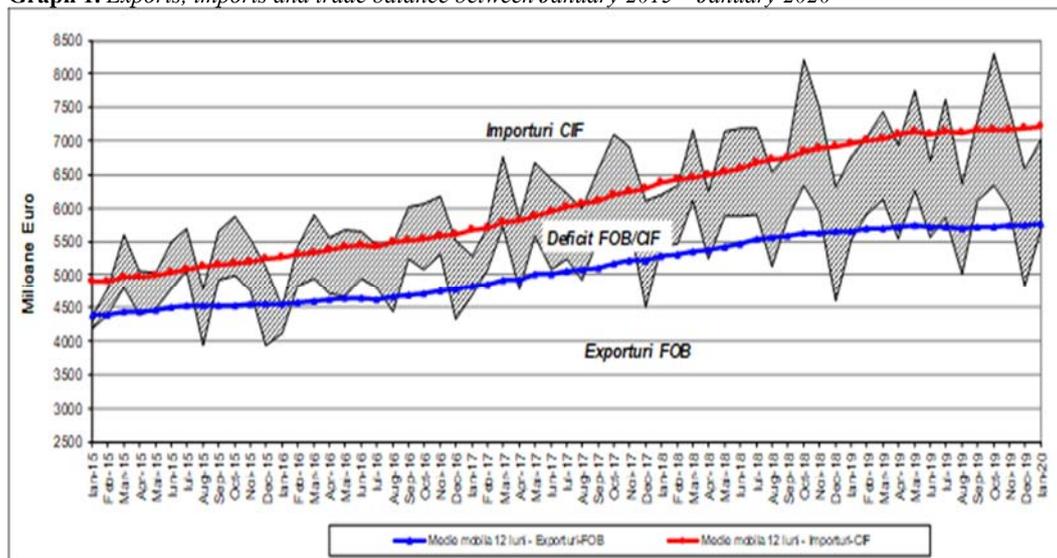
### Data, results and discussions

During 2019, the export and import of goods from Romania was carried out on two fronts, namely intra-community and extra-community. The study shows that, over time, exports increased in value, but the deficit of the international trade balance increased, as a result of the share, in absolute data, of imports.

Thus, for example, only in January 2020, exports increased, reaching 5.6921 billion euros, 3.3% more than in January 2019. In the same comparable period, imports reached 7.0151 billion euro, i.e. 3.4% more than in January 2019. In these conditions, the deficit of the trade balance was of -1.323 billion euros, 50 million more than in January 2019.

By analyzing the monthly evolution of exports, imports and trade balance, between January 2015 and January 2020, we find that all three mentioned indicators have grown permanently. Imports are growing faster, which has led to an increase in the trade balance deficit. The evolution of the three indicators is presented suggestively in Graph 1.

**Graph 1.** Exports, imports and trade balance between January 2015 – January 2020



Source: INS press release 64/11 March 2020.

During the analyzed period, it is clear that in the structure of imports, the share held by the transport machinery and equipment and other manufactured products. At export, the machines and equipment held the highest weight. Comparing the trade in January 2020, with the same month of 2019, it is precisely the trend that we mentioned earlier. Table 1 presents, briefly, the structure of trade in January 2020.

**Table 1.** International trade by product group according to CSCI Rev. 4, in January 2020

	Exports FOB			Imports CIF		
	January 2020			January 2020		
	Millions euro	Total import weight (%)	% compared to January 2019	Millions euro	Total import weight (%)	% compared to January 2019
<b>TOTAL</b>	<b>5692,1</b>	<b>100,0</b>	<b>+3,3</b>	<b>7015,1</b>	<b>100,0</b>	<b>+3,4</b>
of which, in relation to UE	4446,4	78,1	+2,5	5108,1	72,8	+1,6
<b>Live food and animals</b>	<b>394,7</b>	<b>6,9</b>	<b>+18,9</b>	<b>588,1</b>	<b>8,4</b>	<b>+13,1</b>
of which, in relation to UE	178,8	3,1	-8,0	504,9	7,2	+11,1
<b>Drinks and tobacco</b>	<b>106,8</b>	<b>1,9</b>	<b>+30,8</b>	<b>55,5</b>	<b>0,8</b>	<b>+10,8</b>
of which, in relation to UE	93,4	1,6	+35,1	42,5	0,6	+21,0
<b>Raw materials, non-edible, excluding fuel</b>	<b>206,9</b>	<b>3,6</b>	<b>+24,0</b>	<b>180,0</b>	<b>2,6</b>	<b>-9,4</b>
of which, in relation to UE	128,3	2,3	+24,1	117,5	1,7	-5,0
<b>Mineral fuels, lubricants and derivatives</b>	<b>243,4</b>	<b>4,3</b>	<b>+8,8</b>	<b>610,3</b>	<b>8,7</b>	<b>+8,8</b>
of which, in relation to UE	115,1	2,0	+46,6	113,4	1,6	-16,9
<b>Oils, fats and waxes of animal and vegetable origin</b>	<b>15,5</b>	<b>0,3</b>	<b>-21,5</b>	<b>14,8</b>	<b>0,2</b>	<b>+16,2</b>
of which, in relation to UE	10,4	0,2	-37,5	13,5	0,2	+23,9
<b>Chemicals and derivatives not specified in another section</b>	<b>223,3</b>	<b>3,9</b>	<b>-11,7</b>	<b>966,7</b>	<b>13,8</b>	<b>+5,2</b>
of which, in relation to UE	160,8	2,8	-9,6	782,2	11,2	+0,8
<b>Manufactured goods classified mainly by raw material</b>	<b>911,4</b>	<b>16,0</b>	<b>-1,1</b>	<b>1259,6</b>	<b>18,0</b>	<b>-0,8</b>
of which, in relation to UE	692,3	12,2	-2,3	934,3	13,3	-4,1
<b>Transport machinery and equipment</b>	<b>2738,6</b>	<b>48,1</b>	<b>+3,5</b>	<b>2539,2</b>	<b>36,2</b>	<b>+1,6</b>
of which, in relation to UE	2315,0	40,7	+4,4	2009,6	28,6	+3,9
<b>Different manufactured articles</b>	<b>840,8</b>	<b>14,8</b>	<b>-1,6</b>	<b>799,0</b>	<b>11,4</b>	<b>+6,6</b>
of which, in relation to UE	750,0	13,2	-2,4	588,5	8,4	+1,7
<b>Goods not included in another section of the CSCI</b>	<b>10,7</b>	<b>0,2</b>	<b>+5,1</b>	<b>1,9</b>	<b>*</b> )	<b>+2,4</b>
of which, in relation to UE	2,3	*)	+59,7	1,6	*)	+6,9

Source: National Institute of Statistics, press release no. 64/11 March 2020.

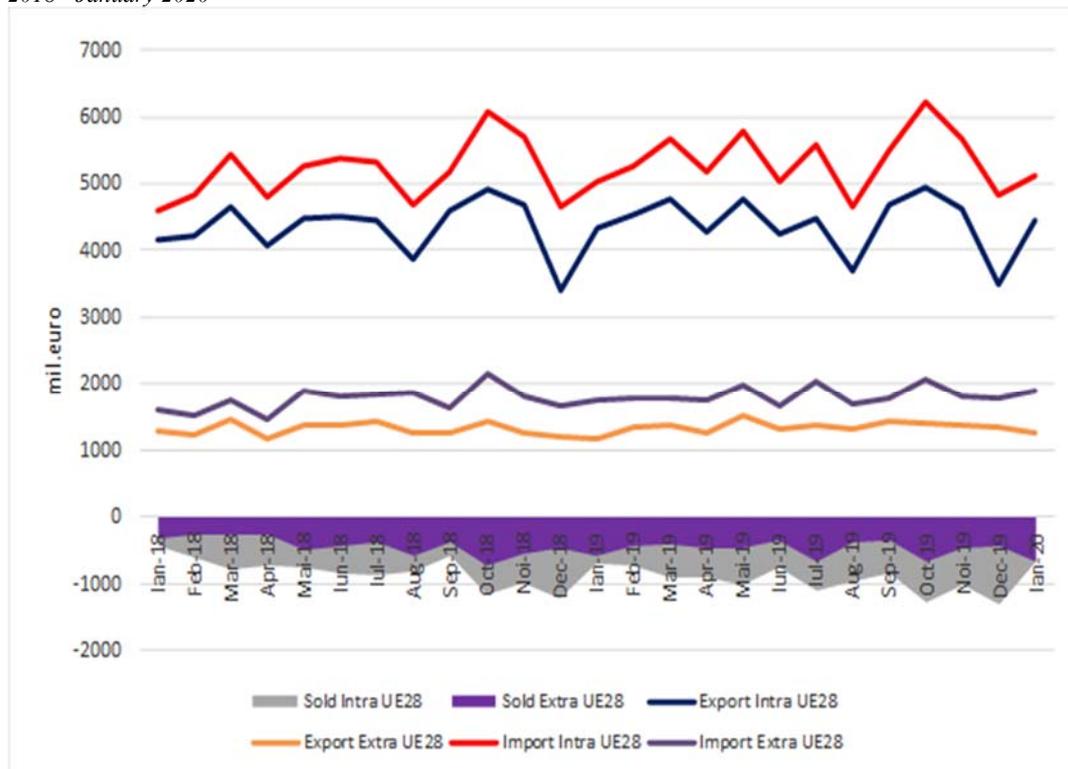
Analyzing the evolution of exchanges (import and export) on the two data groups, intra-EU and extra-EU, we find that the value of intra-EU28 exchanges of goods in January 2020 was 4446.4 million euros for export (shipments) and of 5108.1 million euros on imports (introductions), representing 78.1% of total exports and 72.8% of total imports.

In the case of trade with non-EU countries, the value of trade in goods in January 2020 was 1245.7 million euros for exports and 1907.0 million euros for imports, representing 21.9% of total exports and 27.2% of total exports total imports.

Table 1 contains these data from a product group, Rev4, according to the International Trade Standard Classification.

In Graph 2 we presented the evolution of exports, imports and trade balance, by intra-state and extra-state during the last two years (January 2018 - January 2020).

**Graph 2.** Exports, imports and balances of intra-EU28 and extra-EU28 trade balances between January 2018 - January 2020



**Source:** National Institute of Statistics, press release no. 64/11 March 2020.

The graph shows that the evolution of the three indicators showed the same trend.

Next we performed a larger analysis of exports, imports and balance of foreign trade balance for a longer period of time, respectively January 2016 - December 2019. The data are presented quarterly and the analysis is performed on a total, intra-Community and extra-Community. Also, the value expression of the mentioned indicators is in EURO. We only used calculated data, these being more expressive.

The European Union is considered with 28 states, aiming that in the future, after the break, data will be recalculated and brought to the level of 27 Member States, or more, depending on the accession of other Balkan states to the European Union. The data are presented in Table 2.

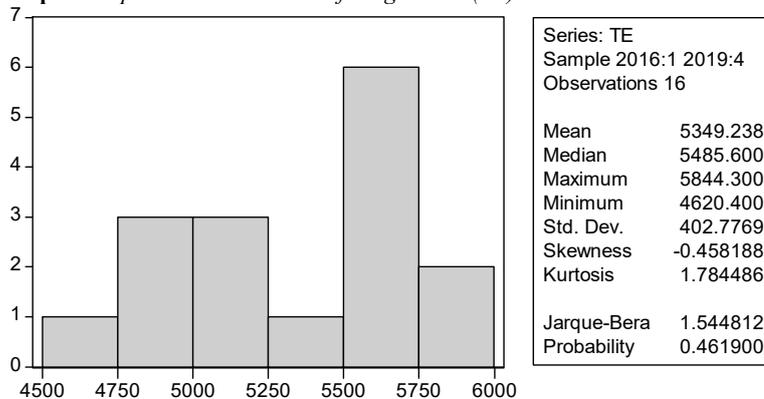
**Table 2.** Exports (FOB), imports (CIF) and FOB/CIF balance of international trade in goods

Period		Total foreign trade			Trade intra-UE			Trade extra-UE		
		Export FOB	Import CIF	Sold	Export FOB	Import CIF	Sold	Export FOB	Import CIF	Sold
		mil. euro	mil. euro	FOB/CIF	mil. euro	mil. euro	FOB/CIF	mil. euro	mil. euro	FOB/CIF
2016	Trim I	4620.4	5272.8	-652,4	3515.1	4117.6	-602,5	1105.4	1155.2	-49,8
	Trim II	4773.8	5616.4	-842,6	3583.3	4352.3	-769	1190.6	1264.1	-73,5
	Trim III	4832.7	5648.2	-815,5	3606.5	4302.8	-696,3	1226.2	1345.4	-119,2
	Trim IV	4903.8	5917.4	-1013,6	3655.2	4544.1	-888,9	1248.5	1373.3	-124,8
2017	Trim I	5159.3	5925.7	-766,4	3921.2	4503.7	-582,5	1238.0	1422.0	-184
	Trim II	5139.4	6312.7	-1173,3	3906.0	4778.2	-872,2	1233.4	1534.6	-301,2
	Trim III	5234.7	6261.4	-1026,7	3962.2	4756.3	-794,1	1272.5	1505.2	-232,7
	Trim IV	5348.0	6701.5	-1353,5	4038.0	5055.4	-1017,4	1309.9	1646.0	-336,1
2018	Trim I	5662.7	6568.8	-906,1	4337.0	4950.1	-613,1	1324.7	1618.7	-294,0
	Trim II	5662.8	6859.8	-1197,0	4354.5	5146.8	-792,3	1308.3	1713.0	-404,7
	Trim III	5623.2	6838.6	-1215,4	4301.9	5061.4	-759,5	1321.2	1777.2	-456,0
	Trim IV	5625.8	7346.0	-1720,2	4333.2	5467.3	-1134,1	1292.6	1878.7	-586,1
2019	Trim I	5844.3	7085.2	-1240,9	4548.1	5317.9	-769,8	1296.2	1767.3	-471,1
	Trim II	5787.5	7123.1	-1335,6	4425.1	5331.1	-906,0	1362.4	1792.1	-429,7
	Trim III	5650.8	7093.4	-1442,6	4280.2	5248.6	-968,4	1370.5	1844.9	-474,4
	Trim IV	5718.6	7459.9	-1741,3	4358.4	5569.5	1211,1	1360.2	1890.4	-530,2

Source: National Institute of Statistics, press release no. 64/11 March 2020 (data processed by authors).

The analysis was also extended by using the statistical-econometric method of simple linear regression. The data series expressed in euro, used in Table 2, were used, because the obtained results can be used in intra-Community comparisons.

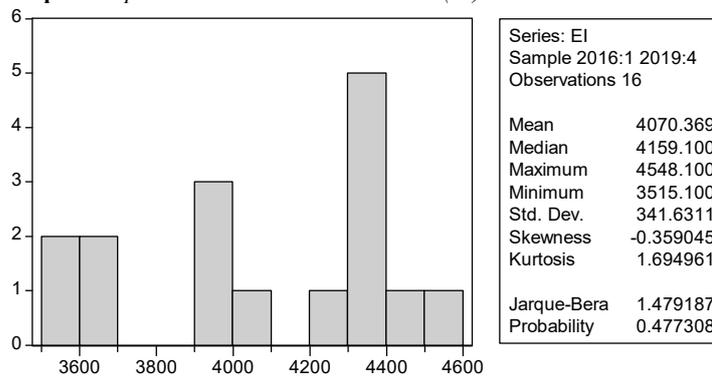
Therefore, for the statistical-econometric analysis of the correlation that exists between the evolution of exports in total foreign trade (scored with TE) and the intra-EU trade (scored with EI), we will first proceed to the independent analysis of the two indicators. Thus, the evolution of exports in total foreign trade is presented in Graph 3.

**Graph 3.** Export evolution in total foreign trade (TE)

Analyzing Graph 3, we find that during the period subjected to the analysis the indicator the export in total foreign trade registered an average of 5349.238 million euros, and regarding the distribution of Kurtosis we find that the evolution is slow considering the test value of 1.78 which is less than 3. Also, according to the significantly different value of zero of the Skewness test we can say that the evolution of this indicator is not perfectly symmetrical.

Regarding the evolution of exports in intra-EU trade, it is presented in Graph 4.

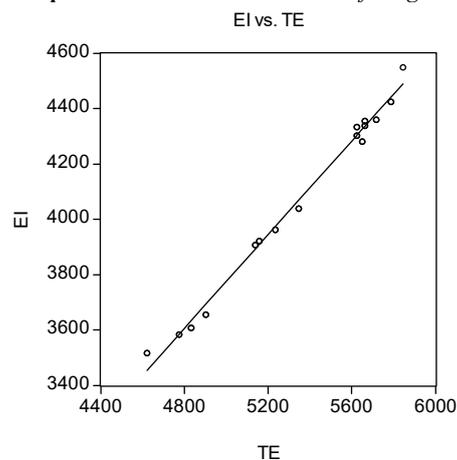
**Graph 4.** *Export evolution in intra-EU trade (EI)*



Analyzing Graph 4, we find that during the analysis period, the export indicator in intra-EU trade registered an average of 4070.369 million euros, and regarding the distribution of Kurtosis we find that the evolution is slow considering the test value of 1, 69 which is smaller than 3. Also, according to the significantly different value of zero of the Skewness test we can say that the evolution of this indicator is not perfectly symmetrical.

Regarding the correlation between export in total foreign trade and intra-EU trade, it is presented in Graph 5.

**Graph 5.** *Correlation between total foreign trade (TE) and intra-EU (EI) exports*



We observe from Graph 5 that the point cloud described by the recorded values has a linear evolution, which allows us to analyze the evolution of the two indicators using a simple linear regression model, of the form:

$$TE = a + b \cdot EI + \varepsilon \quad (1)$$

where:

TE represents the dependent variable;

EI represents the independent variable;

a and b represent the regression parameters;

$\varepsilon$  represents the residual variable.

The estimation of the parameters and the test of the significance of the model are done using the EViews statistical-econometric analysis program, the results being presented in Figure 1.

**Figure 1.** The results of the simple linear regression model analysis between TE and EI

Dependent Variable: TE

Method: Least Squares

Sample: 2016:1 2019:4

Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	570.8515	118.8259	4.804102	0.0003
EI	1.173944	0.029097	40.34592	0.0000
R-squared	0.991473	Mean dependent var		5349.238
Adjusted R-squared	0.990864	S.D. dependent var		402.7769
S.E. of regression	38.49913	Akaike info criterion		10.25562
Sum squared resid	20750.56	Schwarz criterion		10.35219
Log likelihood	-80.04494	F-statistic		1627.793
Durbin-Watson stat	1.212105	Prob(F-statistic)		0.000000

Interpreting the data in Figure 1 we find that the coefficients recorded in the second column (the Coefficient column) are significantly different from zero, which validates the model, meaning that it is a correct one and can be used to forecast the evolution of these indicators for the next period.

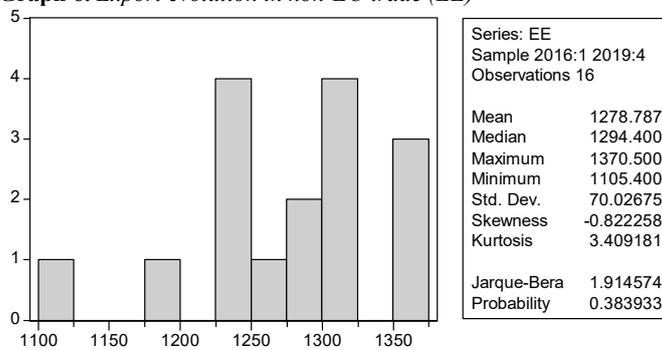
Also, the R-squared correlation coefficient has the value of 0.99, very close to the unitary one, which indicates the probability of 99.14% that this model is correct.

In other ideas, according to the data contained in Figure 1, we can estimate the theoretical values of the endogenous variable, according to the relation:

$$TE = 570.85 + 1.17 \cdot EI + \varepsilon \quad (2)$$

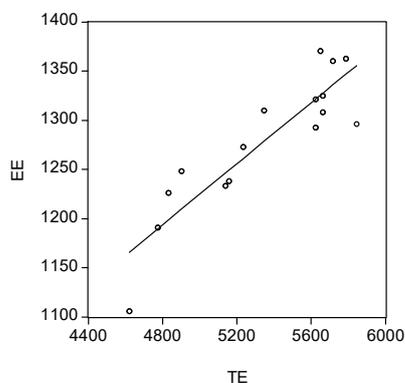
The relation (2) can be used in forecasts on the evolution of this indicator.

Regarding the evolution of the export in the extra-EU trade is presented in the Graph 6.

**Graph 6.** Export evolution in non-EU trade (EE)

Analyzing Graph 6, we find that during the period subjected to the analysis, the export indicator in the extra-EU trade registered an average of 1278.787 million euros, a value much lower than that registered in the case of intra-EU trade, and regarding the distribution of Kurtosis we find that the evolution is a normal one considering the test value of 3.4 which is greater than 3. Also, according to the significantly different value of zero of the Skewness test we can say that the evolution of this indicator is not perfectly symmetrical.

Regarding the correlation between exports in total foreign and non-EU trade, it is presented in Graph 7.

**Graph 7.** Correlation between total foreign trade (TE) and non-EU (EE) exports  
EE vs. TE

We observe from Graph 7 that the point cloud described by the recorded values has a linear evolution, which allows us to analyze the evolution of the two indicators using a simple linear regression model, of the form:

$$TE = a + b \cdot EE + \varepsilon \quad (3)$$

where:

TE represents the dependent variable;

EE represents the independent variable;

a and b represent the regression parameters;

$\varepsilon$  represents the residual variable.

The estimation of the parameters and the test of the significance of the model are done using the EViews statistical-econometric analysis program, the results being presented in Figure 2.

**Figure 2.** Results of simple linear regression model analysis between TE and EE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1218.930	886.0052	-1.375759	0.1905
EE	5.136246	0.691876	7.423650	0.0000
R-squared	0.797426	Mean dependent var		5349.238
Adjusted R-squared	0.782957	S.D. dependent var		402.7769
S.E. of regression	187.6454	Akaike info criterion		13.42345
Sum squared resid	492951.1	Schwarz criterion		13.52003
Log likelihood	-105.3876	F-statistic		55.11059
Durbin-Watson stat	1.121002	Prob(F-statistic)		0.000003

Interpreting the data in Figure 2 we find that the coefficients recorded in the second column (the Coefficient column) are significantly different from zero, which validates the model, meaning that it is a correct one and can be used to forecast the evolution of these indicators for the next period. Also, the correlation coefficient R-squared has the value of 0.79, close to the unit, which indicates the probability of 79.74% that this model is a correct one.

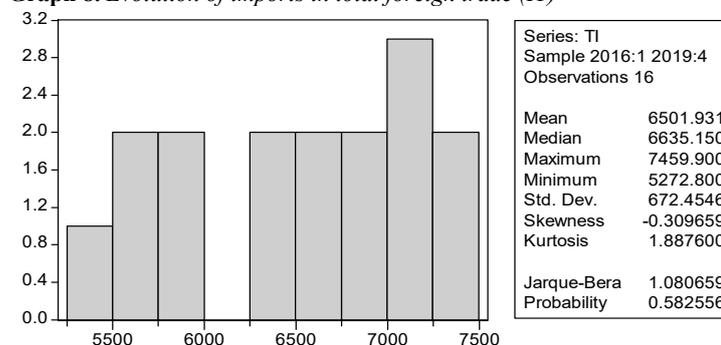
In other ideas, according to the data contained in Figure 2, we can estimate the theoretical values of the endogenous variable, according to the relation:

$$TE = -1218.93 + 5.13 \cdot EE + \varepsilon \quad (4)$$

The relation (4) can be used in forecasts on the evolution of this indicator.

Another analysis was made of the correlation that exists between the evolution of imports in total foreign trade (scored by IT) and the intra-EU trade (scored by II), starting with the independent analysis of the two indicators. Thus, the evolution of imports in total foreign trade is presented in Graph 8.

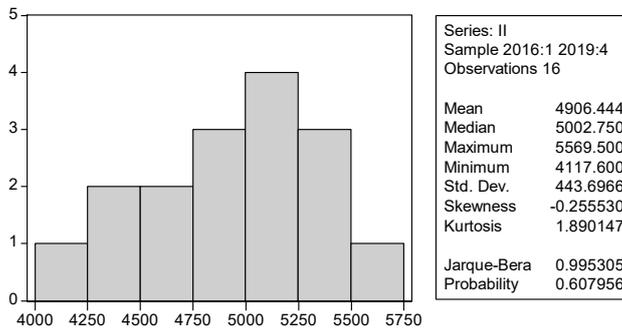
**Graph 8.** Evolution of imports in total foreign trade (IT)



Analyzing Graph 8, we find that during the period subjected to the analysis the indicator the import in the total foreign trade registered an average of 6501.931 million euros, and regarding the distribution of Kurtosis we find that the evolution is slow considering the test value of 1.88 which is less than 3. Also, according to the significantly different value of zero of the Skewness test we can say that the evolution of this indicator is not perfectly symmetrical.

Regarding the evolution of imports in intra-EU trade, it is presented in Graph 9.

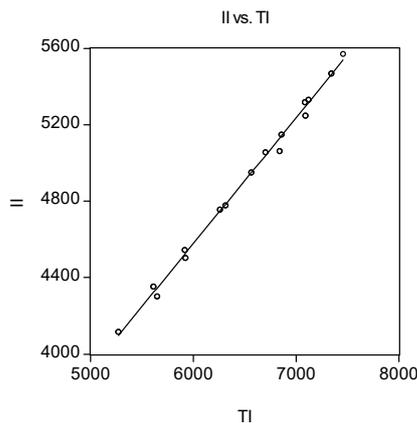
**Graph 9.** Evolution of imports in intra-EU trade (II)



Analyzing Graph 9, we find that during the period under analysis the indicator import in intra-EU trade registered an average of 4906.444 million euros, and regarding the distribution of Kurtosis we find that the evolution is slow considering the test value of 1, 89 which is smaller than 3. Also, according to the near zero value of the Skewness test we can say that the evolution of this indicator is quite symmetrical.

Regarding the correlation between imports in total foreign trade and intra-EU trade, it is presented in Graph 10.

**Graph 10.** Correlation between total foreign trade (TI) and intra-EU (II) imports



We observe from Graph 10 that the point cloud described by the recorded values has a linear evolution, which allows us to analyze the evolution of the two indicators using a simple linear regression model, of the form:

$$TI = a + b \cdot II + \varepsilon \quad (5)$$

where:

TI represents the dependent variable;

II represents the independent variable;

a and b represent the regression parameters;

$\varepsilon$  represents the residual variable.

The estimation of the parameters and the testing of the significance of the model are done using the EViews statistical-econometric analysis program, the results being presented in Figure 3.

**Figure 3.** Results of simple linear regression model analysis between TI and II

Dependent Variable: TI

Method: Least Squares

Sample: 2016:1 2019:4

Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-917.5102	133.3570	-6.880106	0.0000
II	1.512183	0.027076	55.84881	0.0000
R-squared	0.995532	Mean dependent var		6501.931
Adjusted R-squared	0.995212	S.D. dependent var		672.4546
S.E. of regression	46.52884	Akaike info criterion		10.63449
Sum squared resid	30309.06	Schwarz criterion		10.73106
Log likelihood	-83.07592	F-statistic		3119.089
Durbin-Watson stat	2.479045	Prob(F-statistic)		0.000000

Interpreting the data in Figure 3 we find that the coefficients recorded in the second column (the Coefficient column) are significantly different from zero, which validates the model, meaning that it is a correct one and can be used to forecast the evolution of these indicators for the next period.

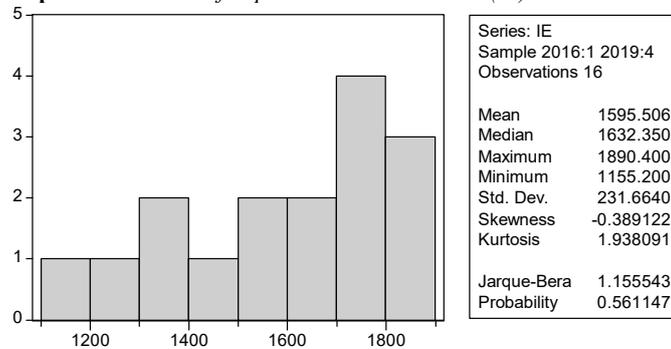
Also, the correlation coefficient R-squared has the value of 0.99, close to the unit, which indicates the probability of 99.55% that this model is correct.

In other ideas, according to the data contained in Figure 3, we can estimate the theoretical values of the endogenous variable, according to the relation:

$$TI = -917.51 + 1.51 \cdot II + \varepsilon \quad (6)$$

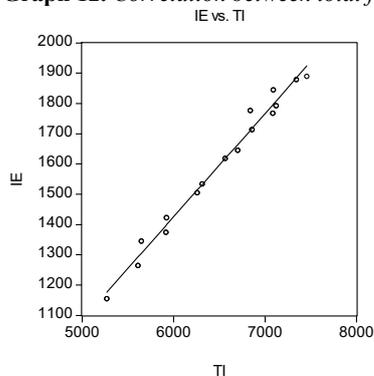
The relation (6) can be used in forecasts on the evolution of this indicator.

Regarding the evolution of imports in extra-EU trade, it is presented in Graph 11.

**Graph 11.** Evolution of imports in extra-EU trade (IE)

Analyzing Graph 11, we find that during the period subjected to the analysis the indicator the import in the extra-EU trade registered an average of 1595.506 million euros, significantly lower than the average recorded in the case of intra-EU trade, and regarding the distribution of Kurtosis we find that the evolution is a slow one considering the test value of 1.93 which is less than 3. Also, according to the significantly different value of zero of the Skewness test we can say that the evolution of this indicator is not perfectly symmetrical.

Regarding the correlation between the import in the total foreign trade and the extra-EU trade, it is presented in the Graph 12.

**Graph 12.** Correlation between total foreign trade (TI) and non-EU (IE) imports

We observe from Graph 12 that the point cloud described by the recorded values has a linear evolution, which allows us to analyze the evolution of the two indicators using a simple linear regression model, of the form:

$$TI = a + b \cdot IE + \varepsilon \quad (7)$$

where:

TI represents the dependent variable;

IE represents the independent variable;

a and b represent the regression parameters;

$\varepsilon$  represents the residual variable.

The estimation of the parameters and the test of the significance of the model are done using the EViews statistical-econometric analysis program, the results being presented in Figure 4.

**Figure 4.** Results of simple linear regression model analysis between TI and IE

Dependent Variable: TI  
Method: Least Squares  
Sample: 2016:1 2019:4  
Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1908.770	160.0816	11.92373	0.0000
IE	2.878811	0.099356	28.97479	0.0000
R-squared	0.983598	Mean dependent var		6501.931
Adjusted R-squared	0.982426	S.D. dependent var		672.4546
S.E. of regression	89.14503	Akaike info criterion		11.93487
Sum squared resid	111255.7	Schwarz criterion		12.03145
Log likelihood	-93.47900	F-statistic		839.5383
Durbin-Watson stat	2.574332	Prob(F-statistic)		0.000000

Interpreting the data in Figure 4 we find that the coefficients recorded in the second column (the Coefficient column) are significantly different from zero, which validates the model, meaning that it is a correct one and can be used to forecast the evolution of these indicators for the next period. Also, the correlation coefficient R-squared has the value of 0.98, close to the unit, which indicates the probability of 98.35% that this model is correct.

In other ideas, according to the data contained in Figure 4, we can estimate the theoretical values of the endogenous variable, according to the relation:

$$TI = 1908.77 + 2.87 \cdot IE + \varepsilon \quad (8)$$

The relation (8) can be used in forecasts on the evolution of this indicator.

## Conclusions

The article published in the study by the authors on the evolution of the international trade of Romania, highlights a series of theoretical and practical conclusions, useful for the activity of macroeconomic, but also microeconomic management.

In this sense, a first conclusion is that at present the weight of Romania's international trade relations within the European Union has become predominant, but at the same time it must be emphasized that exports are well below the level of imports, which leads to the depreciation of the quarterly results and annuals that Romania obtains on the national level.

Another conclusion is that the trade balance deficit has increased from time to time (the analysis being performed over a longer period of time), which is expected to occur in the next period as well. From here we can immediately draw the conclusion that it is necessary to support the exports of our country and to reduce as much as possible some imports that are not strictly necessary in order to achieve macrostability. Thus, for

example, many products from the agri-food field or from fields that have no relevance for the economic-financial situation of Romania, have the share of imports. Of course, we are a member of the European Union which has the directive according to which the free movement of goods and services is ensured, but at the same time we must see that they must also be achieved in order to balance the Romanian economy at a macroeconomic level.

Another conclusion that emerges from the study carried out by the authors is that the data provided by the National Institute of Statistics offer a wide possibility to use statistical-econometric methods, based on which to make estimates on the perspective of the future evolution of the Romanian economy. In this context, conclusions can be drawn that ensure the undertaking of measures at the level of macroeconomic management that will ensure macrostability, ensure the proportions and macroeconomic correlations required by a balanced development of the economy and in this way can obtain some results growing during the next period.

One conclusion at the moment is that this virus crisis can produce huge destabilizations at the level of the economy, at the level of social activity and at the level of the whole activity. Therefore, analyzes on this side of a component in the development and growth of the Gross Domestic Product must be a priority.

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