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ROMANIA'S AGRO-FOOD FOREIGN TRADE CONCENTRATION WITH THE EUROPEAN UNION COUNTRIES, 2013-2021

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Abstract

The paper analyzed Romania's agro-food export, import and trade balance with the EU-27 countries in the period 2013-2021 using the empirical evidence from National Institute of Statistics. Fixed basis and structural indices, as well as Herfindahl-Hirschman Index (HHI), Gini-Struck Index (GSI) and the Coefficient of Concentration (CC) were used to characterize the concentration degree of the agri-food trade. In 2021, export value accounted for Euro 5,471.8 Million, import value for Euro 8,459.7 Million and the trade balance registered a deficit of Euro -2,987.9 Million. The figures reflect an increase both in export and import, but import exceeded the export reflecting that Romania is a net importer of agro-food products. The highest market share in Romania's export is kept by Italy, Bulgaria, Netherlands, Spain, Germany, Hungary, France, Greece, Belgium and Poland, while the main import partners are Germany, Hungary, Poland, Netherlands, Bulgaria, Italy, Spain, France, Greece and Belgium. The concentration degree both in case of export and import is small as proved by the values of HHI, ranging between 0.0845 and 0.0996 for export and between 0.1065 and 0.1106 for import. GSI values ranged between 0.2220 and 0.2406 for export and between 0.2687 and 0.2764 for import. CC values were below 0.5 also reflecting a competitive market. To diminish the dependence of imports, agro-food export has to be stimulated by the increase of agricultural production which has to provide more products with high value added and of a higher quality to enhance competitiveness, and also imports have to be revised and a better resource allocation is needed to strengthen internal production and cover better domestic consumption.

Key words: *agro-food foreign trade**, export,** import, trade balance, Herfindahl-Hirschman Index, Gini-Struck Index, Concentration coefficient, Romania*

INTRODUCTION

Agro-food trade plays a crucial role in ensuring food security through by the offer volume and diversity. At the same time, it is the driver of the agriculture capacity to produce more and of high quality products to cope with growing competition in the agro-food market [1, 20].

The development of the EU unique market allowed the free movement of agro-food products and, of all the commodities among the member states, under the condition of the lack of customs tariffs, checking the origin of products according to traceability principles, quality standards and favored the intensification of commerce transactions and transport with agro-food products [17].

The intensification of the commercial exchanges between the member states is a key factor for a faster economic growth, for improving production structure, productivity and product quality using the competitive advantage of each country regarding geo-climate conditions, resource availability in terms of land, capital, human experience and knowledge. More than this, trade relationships sustain producers to carry a higher output and to improve their incomes and living standard [5, 6, 11].

It is unanimously recognized that a rise in exports stimulates economic growth, as exports helps investment to the most efficient sectors of the economy, resulting a higher productivity and more competitive products for export [6, 35].

The EU enlargement has favored the extend of agro-food market developing close relations between countries.

The agro-food commerce development is closely linked to agriculture performance based on the degree of use of the agricultural area, production technologies, farm structure and size, incentives and subsidies for agriculture and the development of the rural communities [34].

A more intensive foreign trade diminishes the dependence of a country on imports, improves trade balance and supply foreign currency in the payment balance [8, 36].

The intensification of the agro-food trade flows has a multiplying effect which involves and strengthen the development of agri-business, modeling market structures to suit the market requirements.

Enhancing export is the desire of any country looking for an increased competitiveness and agriculture performance [4].

The development of agro-food intra trade in the EU is an image of economic integration and economic growth of each member state as a result of the enlargement process and Common Agricultural Policy [2, 3, 27].

Significant changes and new opportunities for intensifying production and commercial exchanges with agro-food products have been created grace to the accession of new member states from the Central and South Eastern Europe to the EU structures [12, 13].

Romania is an important "player" in the EU agro-food market, operating especially in cereal and oil seeds market as a top supplier and also with imports oriented much more to manufactured agro-food products of animal origin. Its foreign trade has grown continuously after accession and at present it is highly dependent on the EU market.

In this context, the goal of the paper was to analyze the dynamics of Romania's the agro-food trade in the period 2013-2021 with the EU countries, pointing out the value of export, import and trade balance, as well as the changes in commercial transactions with the main partners. More than this, the paper aimed to quantify the concentration degree of export and import in terms of Herfindahl-Hirschman Index, Gini-Struck Index and Concentration coefficient.

MATERIALS AND METHODS

A short overview on Romania's agriculture

Romania is an important "actor" in the EU agro-food market because agriculture is a basic branch in the economy contributing by 4,2% to GDP and has a high gross value added [23, 33].

Agriculture is a predominant occupation of the rural population, accounting for 45% of Romania's inhabitants and about 19% of the population is employed in agriculture compared to 4.1% the EU average and 2% the EU-15 average.

Romania has 3.2 million farms representing one third of the EU agricultural holdings, but the average farm size is very small of only 3.7 ha compared to 16.2 ha the EU-average. agriculture is dominated by family subsistence and semi-subsistence farms, only 1% of agricultural holdings are commercial companies which intensively work 46% of arable land [16, 19].

The geographical position and soil-climate conditions favor agriculture. About 11% of agricultural land is cultivated with cereal and oil seeds, Romania being the top supplier of maize in the EU [28] and sunflowers seeds [21, 29] and also is among the top five producers of wheat [28] and soybean [32].

Also, the country has orchards, vineyards and grasslands, and animal sector includes all the farm species: cattle [25, 31] , swine [24, 30], poultry, sheep and goats, beekeeping [18, 22, 26].

Agro-food trade is more oriented to exports of raw materials such as cereals grains and oil seeds, and imports are predominantly agro-food products including meat and dairy products, vegetables and fruits, feed ingredients and beverages.

This reflects the dual connection between Romania and the EU member states and strengthen their commercial relationships. Romania's intra-industry agro-food trade with the EU is of a vertical type, regarding commercialized products of different quality [9, 10, 27].

In fact, Romania is a net importing country of agro-food products which requires an improved future strategy to enhance production, create more value added and sustain competitiveness and diminish the deficit of agro-food trade balance [7, 14].

Data collection

The study is based on the empirical evidence provided by National Institute of Statistics, Tempo Online data base for the period 2013-2021.

Methodological approach

In this study, the following indicators characterizing agro-food foreign trade were used:

- agro-food export by EU member state and at the EU-27 level;
- agro-food import by EU member state and at the EU-27 level;
- share of agro-food export by country in Romania's agro-food export with the EU-27;
- share of agro-food import by country in Romania's agro-food import from the EU-27;
-agro-food trade balance by each EU member state and also at the EU-27 level.

The processing of the data involved various procedures and methods such as: dynamics analysis based on fixed basis indices, structural indices, and finally the concentration degree on exports and imports were assessed using Herfindahl-Hirschman Index (HHI), Gini-Struck Index (GSI) and the Coefficient of Concentration (CC), whose formulas are:

HHI= $\sum_{i=1}^{n} g_i^2$ ....(1)

GSI= $\sqrt{\frac{n\sum_{i=1}^{n} g_i^2-1}{n-1}}$ **...........................** (2)

CC = $\frac{n}{n-1}$ GSI ....(3)

The calculations were made for the whole studied period 2013-2021, and also for the year 2013 and for the year 2021 separately.

The results were tabled and graphically illustrated and the related comments were correspondingly made.

The main conclusions were presented at the end of this paper.

RESULTS AND DISCUSSIONS

Romania's agro-food export value with the EU-27

After its accession to the EU, new challenges and opportunities have appeared for Romania's agriculture due to CAP provisions and financial support with a deep impact on production performance and intensification of agro-food trade with the EU partners.

The agro-food export value has considerably increased and in the studied period it raised from Euro 3,167,642 thousand in the year 2013 to Euro 5,471,804 thousand in the year 2021, which means by +72.7%. Taking into account the whole period 2013-2021, the value of agro-food export accounted for Euro 37,299,193 thousand (Table 1).

Table 1. Romania's agro-food export value with the EU-27 in 2021 versus 2013
2013

	2013	2021	2021/ 2013 (%)	2013-2021
Export value (Euro Million)	3,167.64	5,471.8	172.74	37,299.19

Source: Own calculation based on NIS data, 2022 [15].

Romania exported agro-food products in all the EU countries in various amounts and at different prices, assuring a general increasing trend to export value. Analyzing the situation by country, the export value increased in relation with almost all the EU commercial partners, except Malta, where the export value declined by 70% in 2021 versus 2013 (Figure 1).

Figure 1 shows the agro-food export by EU country in the Year 2013 reflecting that, the highest export value was achieved with the following countries, in the decreasing order: Italy, Hungary, Netherlands, Germany, Spain, France, Greece, Belgium, and the lowest export value was with Finland, Luxembourg, Latvia and Estonia.

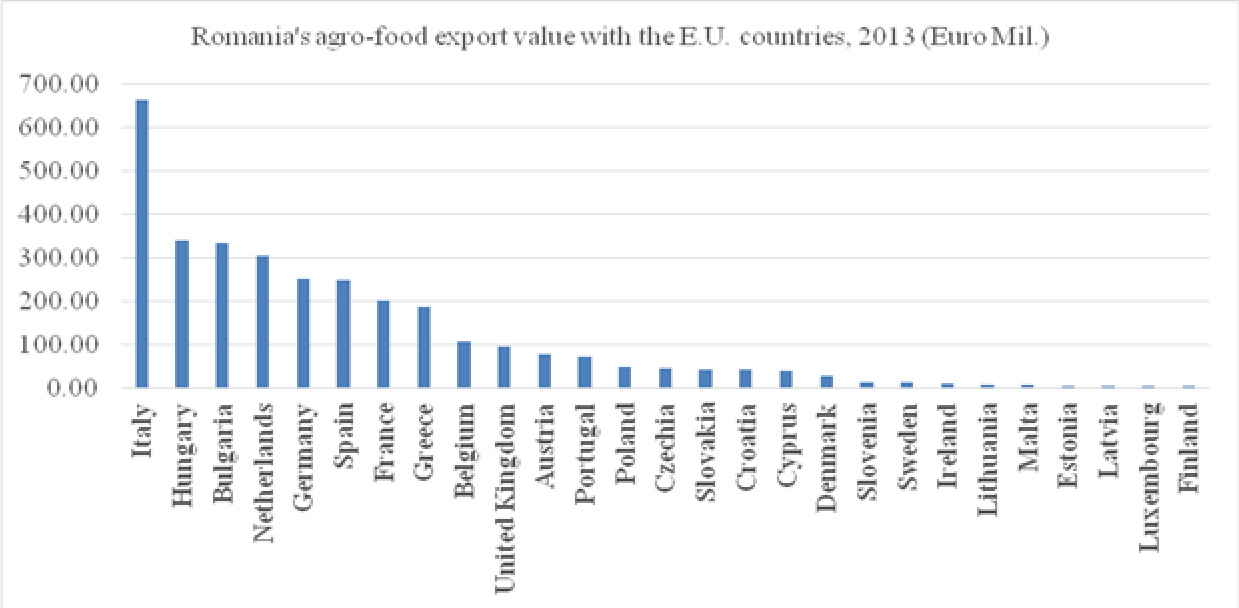

Fig. 1. Romania's agro-food export value with the E.U. countries, 2013 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

Figure 2 also reflects the absolute value of agro-food export with the EU countries, but in the year 2021, allowing us to make a comparison with the situation in the year 2013 and identify what changes have appeared in the interval of nine years. Italy keeps its top position, but, it is followed by Bulgaria and Netherlands, while Hungary passed from the 2nd position to the 4th one. Spain jumped on the 5th position, while Germany moved to the 6th. France maintained its 7th position, while Poland has become an important commercial partner passing from the 13th position in 2013 to the 8th in 2021. Greece remained on its 9th position, while Czechia climbed from the 14th position in 2013 to the 10th position in the year 2021. Therefore, in nine years, there were some movements in the hierarchy of the top EU beneficiaries of Romania's agro-food exports (Figure 2).

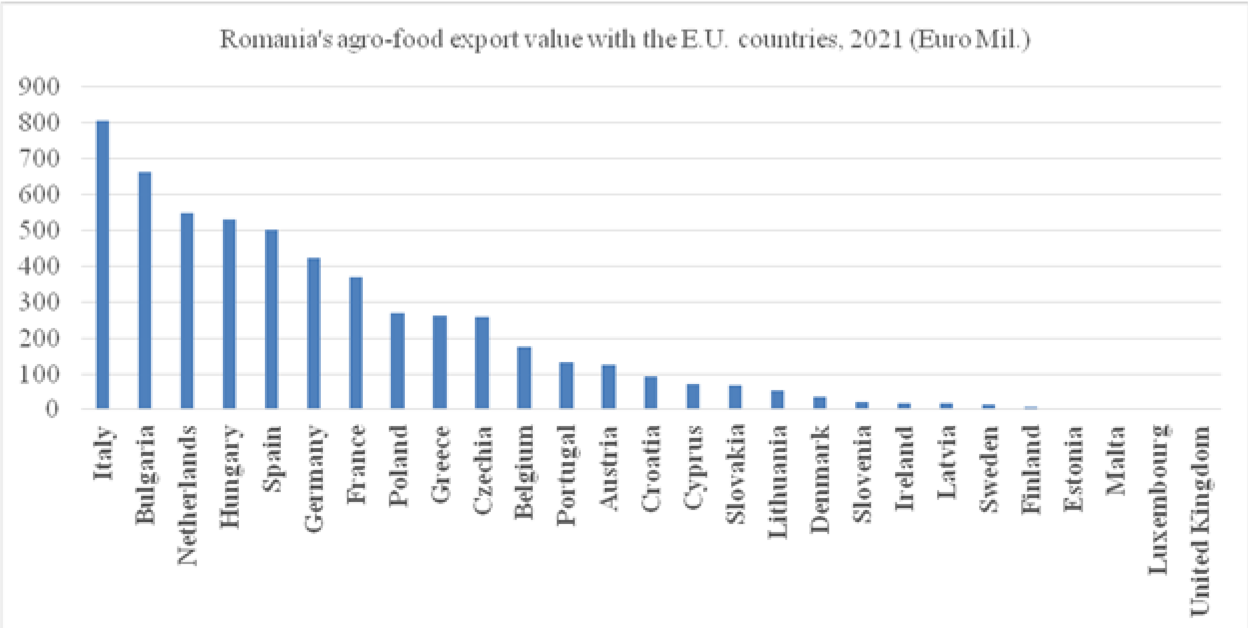

Fig. 2. Romania's agro-food export value with the E.U. countries, 2021 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

The growth rate of agro-food exports varied from a country to another. In relation to Finland, in 2021, Romania registered an export value 23 times higher than in 2013. Also, in the same year, high growth rates of export were recorded with: Lithuania (+748.3%), Czechia (+476.2%), Poland (+473.2%), Latvia (+454.7%), Croatia (+132.9%), Ireland (+132.6%), and Spain (+100.4%), Lower growth rates were recorded in case of Sweden (+26.9%) and Italy (+21.7%) as shown in Table 2.

Table 2. Growth rate of Romania's agro-food export value with the EU countries in 2021 versus 2013 (%)

Country	Export value growth rate (%)	Country	Export value growth rate (%)
1. Austria	164.4	15.Latvia	554.4
2.Belgium	164.5	16.Lithuania	848.3
3.Bulgaria	199.1	17.Luxembourg	198.9
4.Czechia	576.2	18.Malta	29.66
5.Cyprus	177.2	19.Netherlands	179.2
6.Croatia	232.9	20.Poland	573.2
7.Denmark	142.0	21.Portugal	186.6
8.Estonia	142.2	22.United Kingdom	-
9.Finland	2,300.9	23.Slovakia	169.5
10.France	183.2	24.Slovenia	167.6
11.Germany	168.7	25.Spain	200.4
12.Greece	139.0	26.Sweden	126.9
13.Ireland	232.6	27.Hungary	156.4
14.Italy	121.7		

Source: Own calculation based on NIS data, 2022 [15].

Taking into account the whole analyzed period 2013-2021, we may notice that the most important EU countries where Romania sold its agro-food products were, in the descending order: Italy, Bulgaria, Netherlands, Spain, Germany, Hungary, France, Greece, and Belgium (Figure 3).

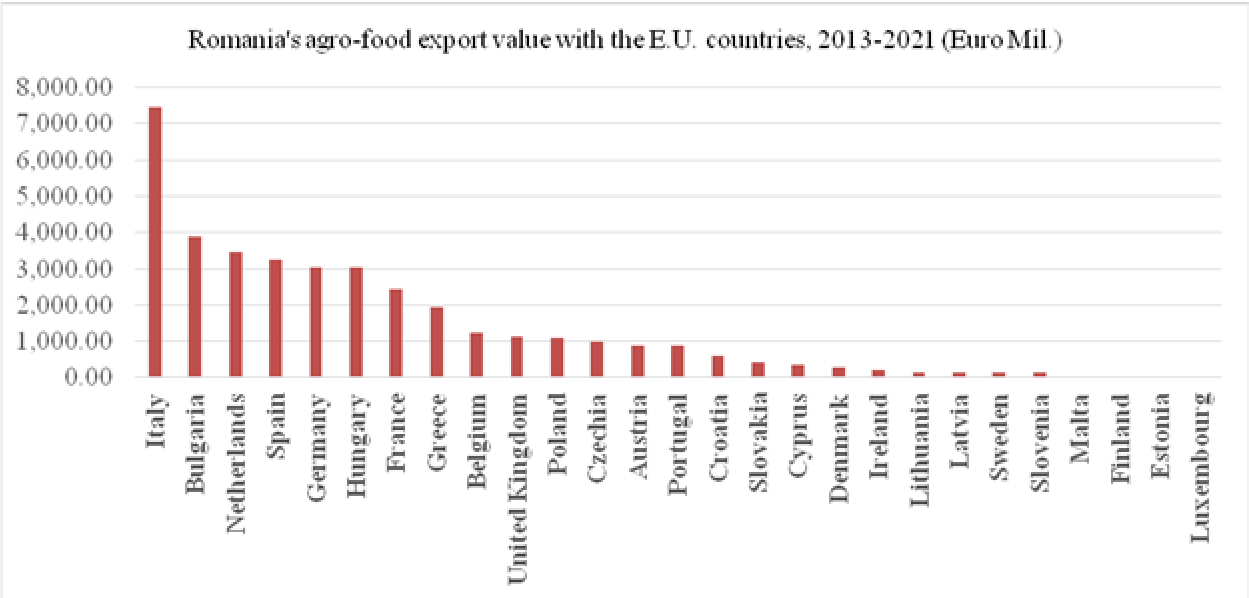

Fig. 3. Romania's agro-food export value with the E.U. countries, 2013-2021 (Euro Mil.)
Source: Own design based in NIS, 2022 [15].

The market share of the top 8 EU countries in Romania's agro-food export value in 2013, 2021 and in the period 2013-2021 is presented in Table 3.

Table 3. The market share of the top 8 EU countries in Romania's agro-food export value in 2013, 2021 and 2021-2013 (%)

2013		2021		2013-2021	
Country	Market share (%)	Country	Market share (%)	Country	Market share (%)
1.Italy	20.90	1.Italy	14.73	1.Italy	20.04
2.Hunagry	10.70	2.Bulgaria	12.12	2.Bulgaria	10.39
3.Bulgaria	10.50	3.Netherlands	9.99	3.Netherlands	9.25
4.Netherlands	9.63	4.Hungary	9.69	4.Spain	8.71
5.Germany	9.62	5.Spain	9.14	5.Germany	8.19
6.Spain	7.87	6.Germany	7.74	6.Hungary	8.14
7.France	6,36	7.France	6.74	7.France	6.51
8.Greece	5.92	8.Poland	4.92	8.Greece	5.25

Source: Own calculation based on NIS data, 2022 [15].

Romania's agro-food import value with the EU-27 countries

Imports are called to cover the non sufficient amount of agro-food products on Romania's domestic market as production is not able some times to cover the market needs. There are many reasons why this happens, and among them we could mention: the unbalanced ratio between vegetal and animal sector, the negative effects of the climate changes on harvests (droughts, floods, storms etc), milk and pork crisis, the decline of the livestock and African Swine Fever, not sufficient incentives for farmers, high farm input prices and low acquisition prices etc.

In 2013, the value of agro-food imports in Romania accounted for Euro 4,040,099 thousand, and in the year 2021, it was more than double, that is Euro 8,459,748 thousand. This means, an increase by +109.3%. In the whole period, 2013-2021, the import value accounted for Euro 54,694,569 thousand (Table 4).

Table 4. Romania's agro-food import value with the EU-27 in 2021 versus 2013
2013

	2013	2021	2021/2013 (%)	2013-2021
Import value (Euro Million)	4,040.0	8,459.7	209.3	54,694.5

Source: Own calculation based on NIS data, 2022 [15].

The import value increased in case of almost all EU suppliers, except Cyprus and Portugal, from which the imports declined by 46.7%, and, respectively, by 18.9%.

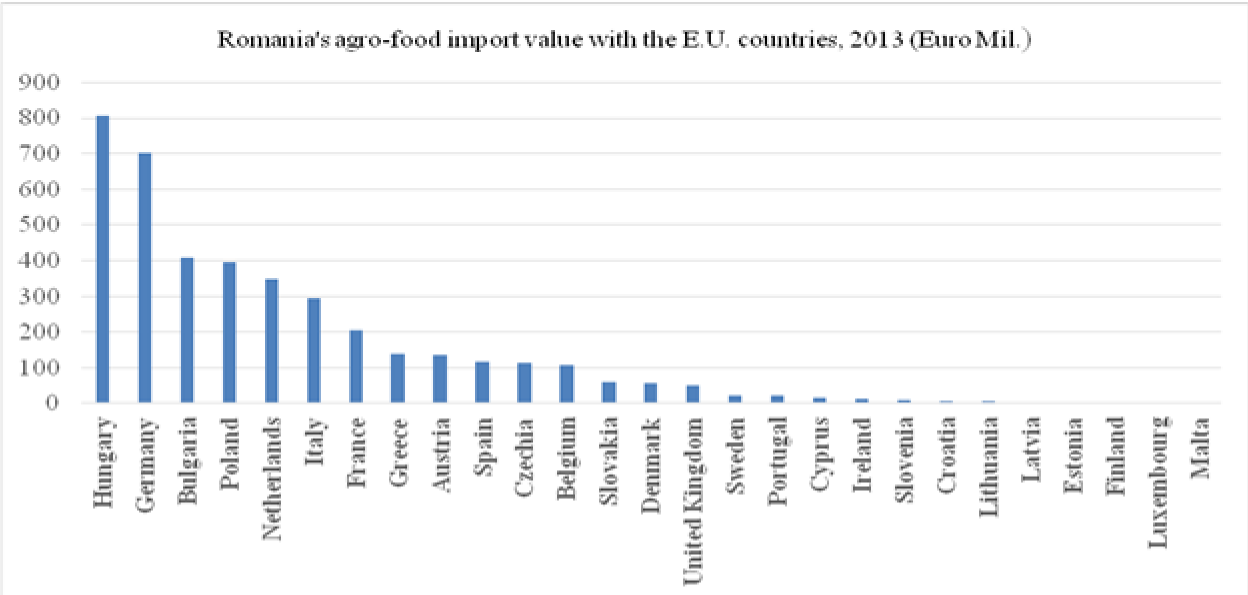

Fig. 4. Romania's agro-food import value with the E.U. countries, 2013 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

Figure 4 reflects that the main suppliers of agro-food products for Romania in 2013, in the decreasing order, were: Hungary, Germany, Bulgaria, Poland, Netherlands, Italy, France, Greece, Austria, Spain, Czechia and Belgium (Figure 4).

Figure 5 also shows the absolute value of agro-food imports, but in the year 2021. At that moment, on the top position came: Germany, followed by Hungary, Poland, Netherlands, Bulgaria, Italy, Spain, France, Belgium and Greece.

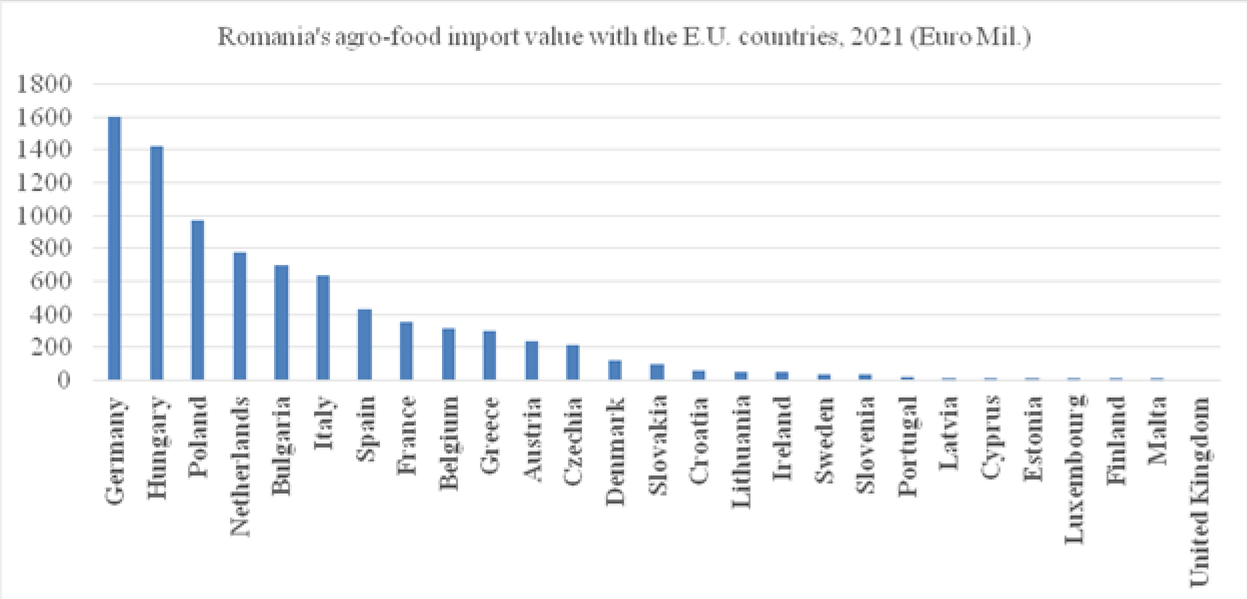

Fig. 5. Romania's agro-food import value with the E.U. countries, 2021 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

Figure 6 emphasizes the position of the leading EU countries which supply agro-food products to Romania, the hierarchy being identical with the one registered in the year 2021, for the first 8 positions. The only change was between Greece and Belgium, the first passing to the 9th position and the latter on the 10th position.

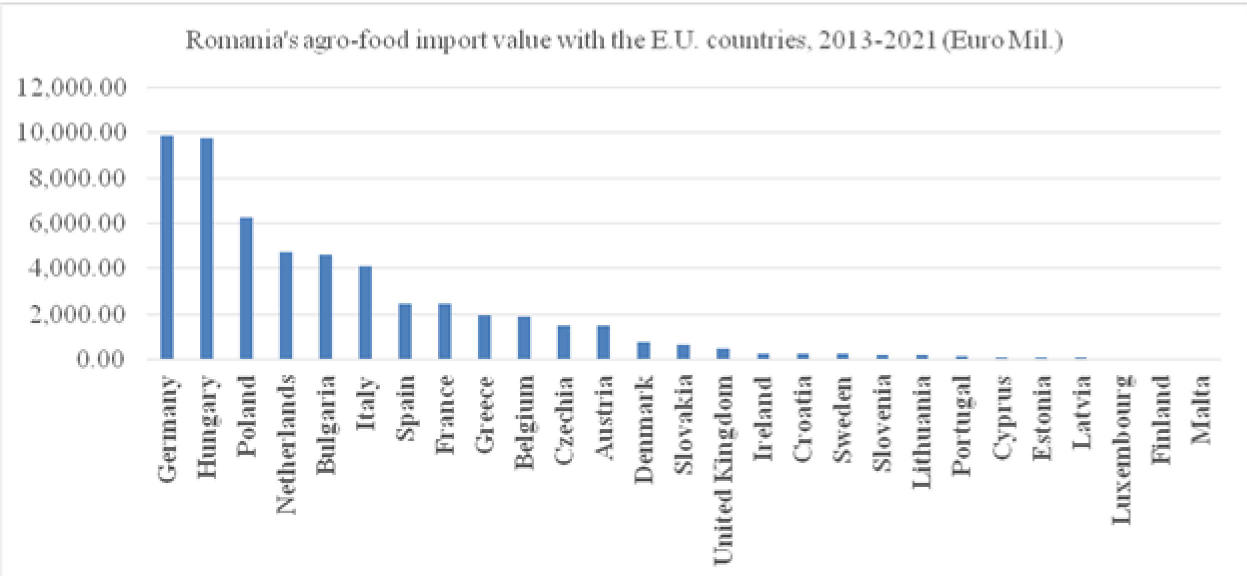

Fig. 6. Romania's agro-food import value with the E.U. countries, 2013-2021 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

The growth rate of agro-food import value ranged from a country to another. In the period 2013-2021, the highest growth rate was registered by Croatia (+824.7%), Lithuania (+970.6%), Latvia (+375.9%), Ireland (+411.1%), Luxembourg (+204.6%) and Belgium (+192.3%).

The lowest growth rates were recorded in relation to Sweden (+63.2%), Slovakia (+54.5%) and Finland (+18.7%) (Table 5).

Table 5. Growth rate of Romania's agro-food import value with the EU countries in 2021 versus 2013 (%)

Country	Import value growth rate (%)	Country	Import value growth rate (%)
1. Austria	177.9	15.Latvia	475.9
2.Belgium	292.3	16.Lithuania	970.6
3.Bulgaria	172.4	17.Luxembourg	304.6
4.Czechia	190.0	18.Malta	248.6
5.Cyprus	53.3	19.Netherlands	221.7
6.Croatia	924.7	20.Poland	245.9
7.Denmark	212.1	21.Portugal	81.1
8.Estonia	263.3	22.United Kingdom	-
9.Finland	118.7	23.Slovakia	154.5
10.France	173.8	24.Slovenia	380.0
11.Germany	228.2	25.Spain	367.8
12.Greece	216.4	26.Sweden	163.2
13.Ireland	411.1	27.Hungary	176.4
14.Italy	217.2		

Source: Own calculation based on NIS data, 2022 [15].

The share of the top 10 EU suppliers of agro-food products for Romania in 2013, 2021 and 2013-2021 is shown in Table 6.

Table 6. The market share of the top 10 EU countries in Romania's agro-food import value in 2013, 2021 and 2021-2013 (%)

2013		2021		2013-2021	
Country	Market share (%)	Country	Market share (%)	Country	Market share (%)
1. Hungary	20.00	1.Germany	18.98	1.Germany	18.10
2.Germany	17.41	2.Hungary	16.85	2.Hungary	17.87
3.Bulgaria	10.06	3.Poland	11.49	3.Poland	11.47
4.Poland	9.79	4.Netherlands	9.12	4.Netherlands	8.60
5.Netherlands	8.61	5.Bulgaria	8.29	5.Bulgaria	8.39
6.Italy	7.25	6.Italy	7.52	6.Italy	7.52
7.France	5.28	7.Spain	5.09	7.Spain	4.54
8.Greece	3.47	8.France	4.22	8.Franec	4.49
9.Austria	3.34	9.Belgium	3.74	9.Greece	3.61
10.Spain	2.90	10.Greece	3.58	10.Belgium	3.44

Source: Own calculation based on NIS data, 2022 [15].

Romania's agro-food trade balance with the EU-27 countries

The dynamics of export and import value of agro-food products reflected discrepancies regarding the high value of imports compared to the export value. This means that Romania is a net importing country of agro-food products, the value of the trade balance being a negative one both in 2013, 2021 and in the whole period 2013-2021 (Table 7).

The figures show that in the interval 2013-2021, the negative trade balance increased 3.4 times, as the growth rate of imports exceeded the growth rate of the export value.

Table 7. Romania's agro-food trade balance with the EU-27 countries in 2021 versus 2013
2013

	2013	2021	2021/2013 (%)	2013-2021
Trade balance (Euro Million)	-872.4	-2,987.9	342.47	-17, 395.3

Source: Own calculation based on NIS data, 2022 [15].

The dynamics of agro-food trade balance in 2013 is shown in Figure 7, from which we may see that the countries with whom Romania had a positive trade balance, in the descending order, are: Italy, Spain, Portugal, Greece, United Kingdom, Croatia, Cyprus, Malta and Slovenia, while the countries with whom Romania registered a negative balance are: Hungary, Germany, Poland, Bulgaria, Czechia, Austria, Netherlands, Denmark, Slovakia, Sweden, France, Ireland.

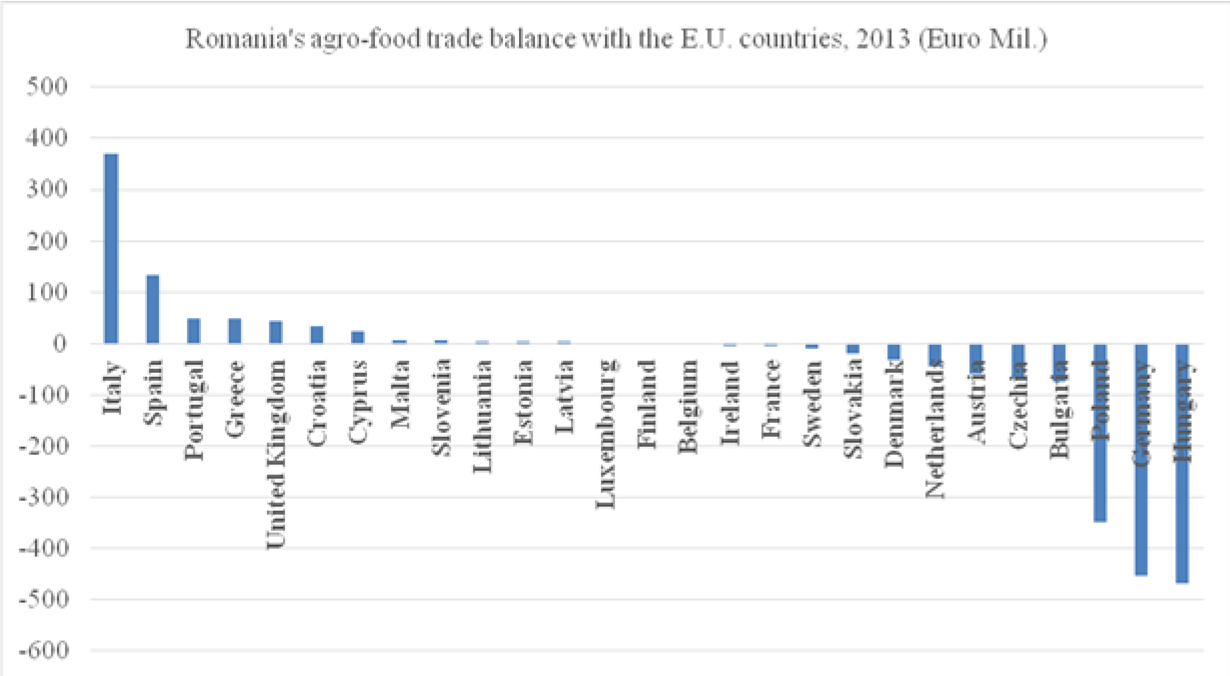

Fig. 7. Romania's agro-food trade balance with the E.U. countries, 2013 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

Figure 8 shows Romania's agro-food trade balance with the EU-27 by country in the year 2021, from which we may notice that the commercial exchange with Italy, Portugal, Spain, Cyprus, Czechia, Croatia, France, Lithuania, Latvia, Finland resulted in a positive trade balance, while the commerce with Germany, Hungary, Poland, Netherlands, Belgium, Austria, Denmark, Greece, Bulgaria, Ireland, Slovakia, Slovenia led to a negative trade balance.

Figure 9 presents the agro-food trade balance for the whole period 2013-2021. It reflects that the commercial relations had a positive impact on trade balance with Italy, Spain, Portugal, United Kingdom, Croatia, Cyprus, Latvia, Malta, while with Germany, Hungary, Poland, Netherlands, Bulgaria, Belgium, Austria, Czechia, Denmark, Slovakia, Sweden and Ireland it had a negative result.

The analysis reflected that Romania is still a net importing country as it started to be after 1990.

A study made in the period 2007-2015 confirmed Romania's status of net importing country of agro-food products in relation to the EU [27].

A continuous growth of Grubel-Lloyd intra-industry trade index was noticed for almost all the agro-food products, reflecting a high intensity of intra-industry trade. Also, Brülhart marginal intra-industry trade index A value values reflected a higher intensity of marginal intra-industry trade, while Brülhart marginal intra-industry trade index B confirmed a high performance of agro-food industry. In the period 2007-2015, import coverage by export accounted for 0.57 in 2007 and 0.86 in 2015 [27].

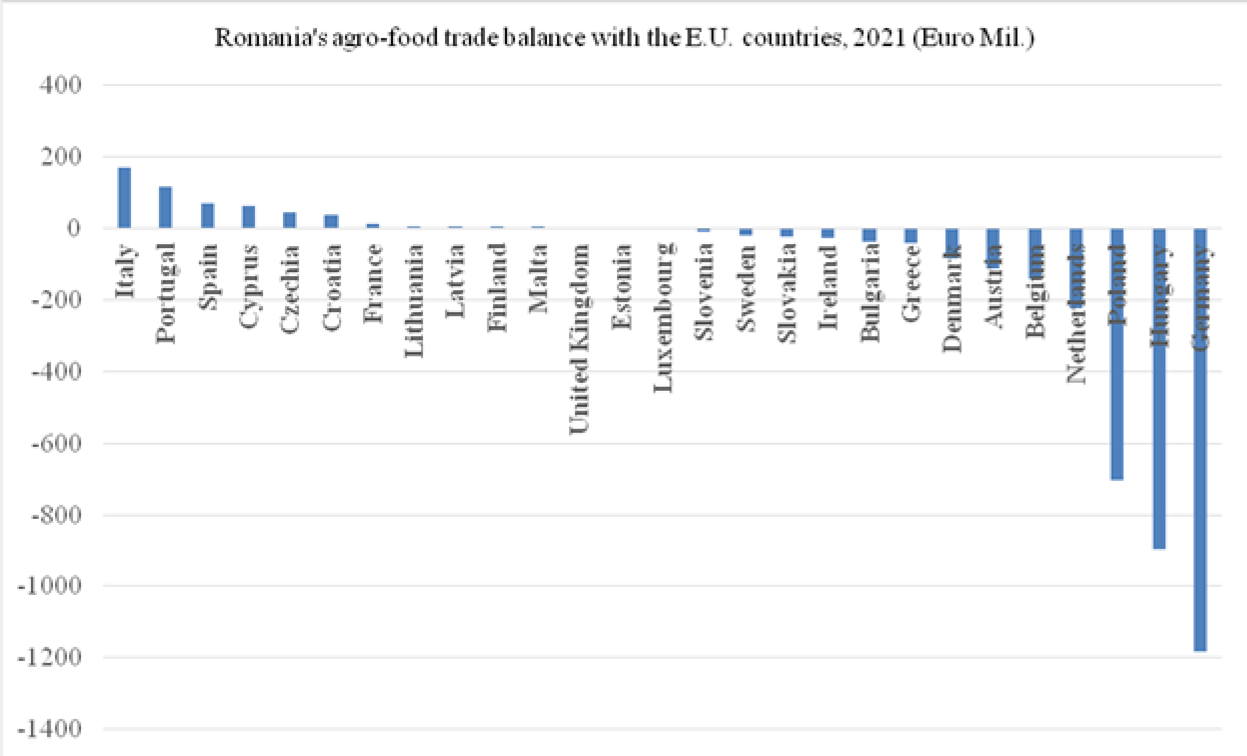

Fig. 8. Romania's agro-food trade balance with the E.U. countries, 2021 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

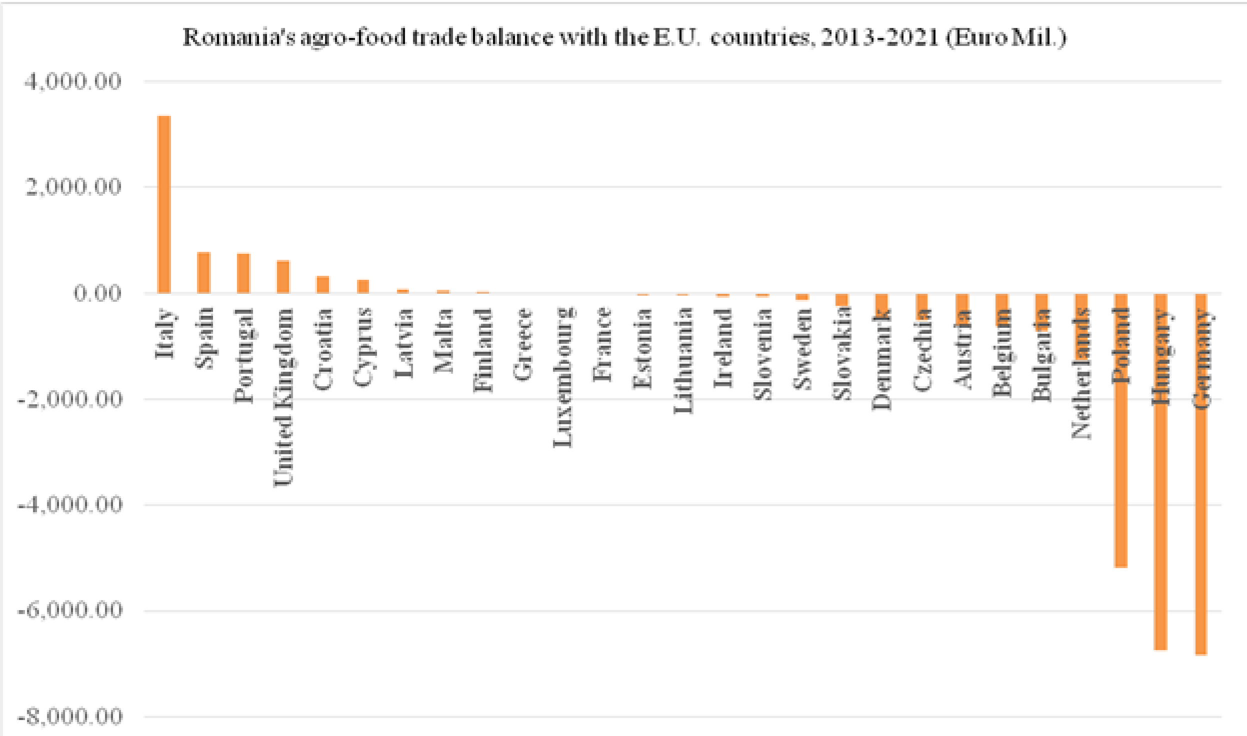

Fig. 9. Romania's agro-food trade balance with the E.U. countries, 2013-2021 (Euro Mil.)
Source: Own design based on NIS data, 2022 [15].

Comparatively analyzing the agro-food export and agro-food import value in the period 2007-2015 and 2013-2021, we may notice that export value increased, but in 2021 is below the level of 2015. Import value also increased, and in 2021 is by 25% over the level of 2015.

Trade balance is negative in all the years, but in 2015 had the smallest negative value. In 2021, the negative trade balance is 22 times higher than in 2015.

Analyzing import coverage by export index, we may notice the highest value of 0.86 in the year 2013, and the lowest values 0.57 in 2013 and 0.65 in 2021. This reflects a high dependence of Romania on the EU market to supply agro-food products to assure food security (Table 8).

Table 8. Import coverage by export index in the period 2013-2021 versus 2007-2015 in Romania's agro-food trade with the EU

	Popescu, A., 2017 [27]		Popescu, A., Dinu, T.A., Stoian, E., Serban, V., 2021, present study	
	2007	2015	2013	2021
Export value, Euro Mill.	1,122.3	5,918.2	3,167.6	5,471.8
Import value, Euro Mill.	3,338.7	6,055.2	4,040	8,459.7
Trade balance	-2,216.4	-137	-872.4	-2,987.9
Import coverage by export	0.57	0.86	0.78	0.65

Source: Own results.

Concentration of Romania's agri-food export and import with the EU countries

In case of agro-food export, the values of Herfindahl-Hirshman Index (HHI) both in the year 2013, 2021 and for the whole analyzed period 2013-2021 were smaller than 0.15 and ranged between 0.0845 and 0.0996, reflecting that there is a lack of concentration, and there are no signs of anti-competitive aspects.

A similar situation was noticed in case of agro-food import, where the values of Herfindahl-Hirshman Index were also below 0.15, ranging between 0.1065 and 0.1106. In this case, there is an unconcentrated situation and no signs of anti-competitive effects.

Gini Struck Index (GSI) also does not have high values, as they ranged between 0.2220 and 0.2406, reflecting that agro-food export value has a small inequality among the EU countries, therefore Romania has a competitive market. A similar situation was identified in case of agro-food import, where Gini Struck Index values ranged between 0.2687 and 0.2764.

The values of Concentration coefficient (CC) are below 0.5 both in case of agro-food export and agro-food import, reflecting a competitive market.

However, if we compare the values of these three indices for agro-food export with the values obtained for agro-food import, we may easily notice that in case of import the values are a little higher (Table 9).

Table 9. Concentration degree of Romania's agro-food export and import on the EU market, 2013-2021

Trade indicator	Concentration Indices	2013	2021	2013-2021
Agro-food export	HHI	0.0996	0.0845	0.0928
	GSI	0.2548	0.2220	0.2406
	CC	0.4756	0.4383	0.4598
Agro-food import	HHI	0.1106	0.1074	0.1065
	GSI	0.2764	0.2704	0.2687
	CC	0.4923	0.4904	0.4986

Source; Own results.

CONCLUSIONS

The analysis regarding Romania's agro-food trade with the EU-27 countries in the period 2013-2021 pointed out a positive dynamics both of export and import values reflecting the efforts made by the country to improve agricultural production for covering internal market needs and also to be more competitive on the EU market.

In 2021, agro-food export value reached Euro 5,471.8 Million being by +72.7% higher than in 2013, while import value accounted for Euro 8,459.7 Million being 2 times higher than in 2013. As a result, the trade balance was negative, Euro -2,987.9 Million, by +242.4% higher than in the first year of the analysis.

This reflects the good commercial relationships exiting between Romania and the European Union, which is its main partners both for export and import for agro-food products and not only.

However, the status of net importing country reflects that import value is much higher than export value.

The study emphasized that the position and market share of each commercial partner and also the movements among EU countries in their hierarchy and importance either in Romania's export and import of agro-food products have changed during the period 2013-2021.

The main export partners for Romanian agro-food products are Italy, Bulgaria, Netherlands, Spain, Germany, Hungary, France, Greece, Belgium and Poland, and the main partners for import are Germany, Hungary, Poland, Netherlands, Bulgaria, Italy, Spain, France, Greece and Belgium.

While in relation with Italy, Spain, Portugal, Croatia and Cyprus, the trade balance is positive, the highest deficit in the trade balance is achieved in the commercial exchanges of agro-food products with Germany, Hungary, Poland, and Netherlands, and also in a lower proportion with Bulgaria, Belgium, Austria, Czechia and Denmark.

The results showed that Romania has penetrate with its exports in all the EU countries and also imports agro-food products from all the EU members states in various proportions, structures, prices and value. Therefore, its market is a competitive one, as long as the values of Herfindahl-Hirschman Index, Gini-Struck Index and Concentration coefficients were very small reflecting a lack of concentration both in case of agro-food export and import.

Taking into account the results of this analysis, it is obviously that more incentives have to be allotted to export and a new orientation in export structure and product quality has to improve the links between agricultural performance and competitiveness of agro-food export. Export has to become the image of a viable and sustainable agriculture in Romania.

Agricultural production has to increase its volume and harmonize its structure and to deliver only high quality products. Romania has to carry out agro-food products with more value added to strengthen the competitiveness of Romanian products on the EU market.

For diminishing Romania's dependence on imports, import structure has to be revised and to look for solutions in agriculture and food-industry where to allocate more resources and incentives to produce in the country a part of the imported products.

Only in this way, the deficit of the agro-food trade balance could be reduced.

In this context, the strategy for the future development of agro-food system for a medium and long-run horizon 2020-2030 is destined to valorize the agro-food potential of Romania and assure the development of rural areas as well, so that to increase the coverage of food consumption from the domestic production and Romania to regain its status of net agro-food exporter.

REFERENCES

[1]Bazgă, B., Petrariu, I.-R. 2019, Analyzing the Importance of Food Security for the Romanian Economy, The Romanian Economic Journal, Year XXII no. 74, 114-127.
[2]Bojnec, Š., Ferto, I., 2009, Agro-food trade competitiveness of Central European and Balkan countries. Food Policy, 34: 417–425.

[3]Bojnec, Š., Ferto, I., 2016, Patterns and Drivers of the Agri-Food Intra-Industry Trade of European Union Countries, International Food and Agribusiness Management Review, Vol.19(2), 53-74

[4]Carraresi, L., Banterle, A., 2015, Agri-food competitive performance in EU countries: A fifteen-year retrospective. International Food and Agribusiness Management Review, 18(2), 37–62.

[5]Cristea, M.A., 2021, Leonardo Badea (BNR): Agri-food sector- A key element of Romania's economic development, https://business-review.eu/business/agriculture/leonardo-badea-bnr-agri-food-sector-a-key-element-of-romanias-economic-development-217850, Accessed on March 2, 2022.

[6]Emery, R.F., 1967, The relation of exports and economic growth,Kyklos Vol.20 (4), 470-486,

[7]Gavrilescu, C., 2018, The Romanian agri-food trade: In a permanent deficit? An analysis of the last two decades, In: Agrarian Economy and Rural Development - Realities and Perspectives for Romania. 9th Edition of the International Symposium, November 2018, Bucharest, The Research Institute for Agricultural Economy and Rural Development (ICEADR), Bucharest, pp. 16-22.

[8]Gilani, S.W., 2015, The Impact of Agricultural Imports and Exports on Agricultural Productivity, Journal of Economics and Sustainable Development, Vol.6(11), 109-117.

[9]International Trade Administration, 2021, Romania-Country commercial guide, https://www.trade.gov/country-commercial-guides/romania-agriculture, Accessed on March 2, 2022.

[10]Jambor, A., 2013, Country-specific determinants of horizontal and vertical intra-industry agri-food trade: the case of Bulgaria and Romania, Applied Studies in Agribusiness and Commerce, 7(4-5), 69–75. https://doi.org/10.19041/APSTRACT/2013/4-5/9.

[11]Kjeldsen-Kragh, S., 2001, International trade policy, Copenhagen Business School Press, 220-224.

[12]Matkovski, B., Zekic, S., Đokic, D., Jurjevic, Z., Đuric, I., 2021, Export Competitiveness of Agri-Food Sector during the EU Integration Process: Evidence from the Western Balkans, Foods, Foods 2022, 11, 10. https://doi.org/10.3390/foods11010010, Accessed on March 2nd, 2022.

[13]Matkovski, B., Zekic, S., Savic, M., Radovanov, B., 2018, Trade of agri-food products in the EU enlargement process: Evidence from the Southeastern Europe, Agric. Econ. – Czech, 64, 2018 (8): 357–366.

[14]Ministry of Agriculture and Rural Development, 2022, Strategy for agro-food sector development for medium and long run -Horizon 2020/2030, https://www.madr.ro/docs/agricultura/strategia-agroalimentara-2020-2030.pdf, Accessed on March 2nd, 2022.

[15] National Institute of Statistics, 2021, www.insse.ro, Accessed on March 2nd, 2022.

[16]Panait, I., Cucu, M.C., 2020, Romanian Foreign Agri-Food Trade in the Context of Global Challenges, Proceedings of the International Conference on Economics and Social Sciences. 615-623.

[17]Piglowski, M., 2021, The Intra-European Union Food Trade with the Relation to the Notifications in the Rapid Alert System for Food and Feed, Int J Environ Res Public Health, 18(4)623.

[18]Pirvutoiu I, Popescu Agatha, 2011, Analysis of Romania's Honey Market, Scientifical Papers: Animal Science and Biotechnologies), Timisoara, Vol.44(2), 500-503.

[19]Popescu, A., 2006, Gross margin a barometer of profitability in agriculture, International Symposium "Durable agriculture- The agriculture of the future, Craiova, 23-24.

[20]Popescu, A., 2010, Home and foreign trade, Dominor Rawex Coms Publishing House, Bucharest, 176-244.

[21]Popescu, A., 2012a, Research regarding oilseeds crops development in Romania in the EU context, Journal of Agricultural Economics, Ekonomika Poljoprivrede, Vol. 59(1): 129-138.

[22]Popescu, A., 2012b, Research on Beekeepers Income Estimation based on Honey Production, Bulletin UASVM Animal Science and Biotechnologies 69(1-2)/2012, 185-191.

[23]Popescu, A., 2015, 'Analysis of the dynamics of Gross Domestic Product and of its main factors of influence in Romania's agriculture, Proceedings of 25th IBIMA Conference Innovation Vision 2020: from Regional Development Sustainability to Global Economic Growth, Amsterdam, The Netherlands, May 7-8, 2015, pp.1379-1393.

[24]Popescu, A., 2016, Research on the concentration of pork production in Romania, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.16(1):405-410.

[25]Popescu, A., 2017a, Trends in milk market and milk crisis impact in Romania, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.17(4):281-289.

[26]Popescu, A., 2017b, Bee honey production in Romania 2007-2015 and forecast for 2016-2020 horizon, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.17(1):339-349.

[27]Popescu, A., 2017c, The Intra-Industry Trade in Agro-Food Products - The Case of Romania, Proceedings of 29th IBIMA International Conference, Vienna, May 4-5, 2017, pp.1261-1278.

[28]Popescu, A., 2018a, Maize and Wheat - Top agricultural products produce, exported and imported by Romania, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.18(3):339-352.

[29]Popescu, A., 2018b, Romania's sunflower seeds production, export and import-Analysis of the 2007-2017 period and forecast for 2018-2022 horizon, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.18(4):261-270.

[30]Popescu, A., 2020a, Pork market crisis in Romania: pig livestock, pork production, consumption, import, export, trade balance and price, Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, Vol.20, Issue 1/2020, pp.461-474
[31]Popescu, A., 2020b, Trends and Prospects in the EU's cow's milk marketed to dairies, Proceedings of 35th IBIMA International Conference on Vision 2025: Education Excellence and Management of Innovations through Sustainable Economic Competitive Advantage, April 1-2, 2020 Seville, Spain, pp. 10007-10022
[32]Popescu, A., 2020c, Soybean Production - Actual Statement and 2020-2024 Forecast in Romania, Proceedings of 36th IBIMA International Conference on Vision 2025: Education Excellence and Management of Innovations through Sustainable Economic Competitive Advantage, November 4-5, 2020, Granada, Spain, pp.2196-2206
[33]Popescu, A., 2020d, Contribution of Agriculture to Romania's Gross Domestic Product, Proceedings of 36th IBIMA International Conference on Vision 2025: Education Excellence and Management of Innovations through Sustainable Economic Competitive Advantage, November 4-5, 2020, Granada, Spain, pp.2207-2220.
[34]Rusali, M., 2012, Structural and qualitative changes in Romania's agrifood foreign trade facing post-accession competitiveness, Economics of Agriculture SI - 1, EP 2012 (59) SI - 1 (240-245).
[35]Subasat, T, 2002, Does export promotion increase economic growth? Some cross-section evidence, Development Policy Review, 20(3),333-349.
[36]Teignier, M., 2018, The role of trade in structural transformation. Journal of Development Economics, 130, 45–65.