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A VIEW OF STRUCTURAL EVOLUTIONS OF THE ROMANIAN AGRI-FOOD TRADE AND ITS COMPETITIVENESS IN THE LAST TWO DECADES

ABSTRACT

In the post-accession period, the Romanian agri-food trade expanded significantly, both in terms of value and volume of exports and imports. The Romanian agri-food trade registered a permanent deficit in the last three decades (with a short exception, in the period 2013–2014). The deficit was increased by the negative trade balance with the EU countries, but since 2010, the deficit has been partially offset by the commercial surplus with the extra-EU countries. The present paper analyses the evolution of the agri-food trade balance for the main product groups, and the results highlight those product groups that have been the main contributors to the deficit and have remained the main import goods (fruits, vegetables, milk and dairy products) over time, those goods in which trade balances vary from negative to positive depending on the economic situation (poultry, eggs), as well as those with a permanent positive balance (cereals, oilseeds). The competitiveness of the agri-food trade is assessed using two indices: Balassa index (Revealed Comparative Advantage) and Grubel-Lloyd index (GLI).

Key words: agri-food trade, Romania, trade balances, RCA index, GL index.

JEL Classification: Q17.

1. INTRODUCTION

For all the new member states, joining the EU represented an extraordinary opportunity, and for Romania it meant an unprecedented expansion of its agri-food sector and trade. The severe sanitary-veterinary and quality requirements that condition the presence on the Single Market and on international markets represented an essential incentive for the alignment on food production standards, as well as for making new investments in production enterprises in the field.

In the last two decades, covering the pre-accession and post-accession periods, the trade policies, the geographical orientation and the structure of Romania's agri-food exports and imports have changed significantly. The imbalances between the actors of the agri-food chains have led to the emergence of power polarization zones on the market, and, inevitably, to important dysfunctions in the operation of the supply chains.

The agri-food sector is of major importance in the country's economy, due to its contribution to GDP, production and international trade. Despite favourable soil and climate conditions, after 1990, Romania continuously needed agri-food imports to meet domestic demand. Imports were much higher than exports, leading to a continuous agri-food trade deficit.

The expansion of Romanian trade, although very significant, was uneven in terms of exports and imports, fuelling a constantly negative agri-food trade balance (with a short exception in 2013–2014). The analysis by product groups and as a geographical orientation of trade shows important deficits in basic products (meat, dairy products, vegetables, fruits), partially counterbalanced by important surpluses in agricultural commodities (cereals, oilseeds), which translates into an inadequate trade structure: export of raw materials and import of processed products.

The present work aims to present an overview of the changes occurred in the last two decades in the structure, value and geographical orientation of Romania's international agri-food trade. It also aims to assess the competitiveness of the main agri-food product groups, by analysing the dynamics of trade balances and by calculating two competitiveness indexes: RCA (the Balassa index – Revealed Comparative Advantage) and the GL index (Gruber-Lloyd index).

2. STATE OF KNOWLEDGE

Since the beginning of economic sciences, there have been many attempts to explain trade between countries. Over time, many theories emerged on this subject, two of them standing out: David Ricardo's theory and Heckscher-Ohlin theory.

The Ricardian theory tries to explain the structure of commercial exchanges between countries, why and how exchange ratios are formed, the level of gains obtained through exchanges and their distribution among the countries participating in the exchange. Ricardo starts from the premise that it is inefficient (taking into consideration the Pareto efficiency thesis) to have more than one country producing two or more goods at different relative marginal costs of production. Ricardo demonstrated that mutually beneficial trade can emerge precisely by removing this inefficiency, and a country should specialize by allocating its limited resources to produce goods and services for which it has a comparative cost advantage.

The Heckscher-Ohlin theory states that it is not technological differences that underlie comparative advantage, but the prices of production factors, determined by their abundance or scarcity.

Starting from these theories, several authors have proposed different indicators/indices to measure competitiveness in international trade (Michaely, 1962; Balassa, 1965, 1989; Vollrath, 1991; Lafay, 1992).

The present paper continues and builds on further analyses of Romania's agri-food trade dynamics (Gavrilesco, 2018, 2019; Gavrilesco *et al.*, 2019), and

various evaluations of trade competitiveness using a variety of methods (Rusali and Gavrilescu, 2008; Rusali, 2012; Gavrilescu and Voicilas, 2014).

3. MATERIAL AND METHOD

The data needed for analysing the dynamics of exports, imports, trade balances, as well as their distribution by geographical areas come from Eurostat trade database (Comext). The CN nomenclature was used to classify the agri-food products into 24 groups of products (HS01-HS24).

The RCA index (Revealed Comparative Advantage index, also known as Balassa index) measures the relative export performance of countries and sectors, calculated as the ratio between the share of the sector in the world export and the share of the country's export in the world export. If the initial index was asymmetric, sensitive to the number of goods taken into consideration, and did not take into consideration imports, it was perfected over time, to reach this formula:

$$RCA = \frac{\frac{X_{ij}}{X_{it}}}{\frac{X_{nj}}{X_{nt}}}$$

where: X_{ij} = export value of the product group
 X_{it} = value of total exports
 X_{nj} = import value of the product group
 X_{nt} = value of total imports

If the value of the index is between 0 and 1, the respective product group has no comparative advantage. If the value of the index is greater than 1, then there is a comparative advantage.

The international Romanian agri-food trade was analysed. The indices were calculated at the level of each year from 2000–2021, by 24 product groups of the Combined Nomenclature, separately for total agri-food trade, for trade with the EU and for trade with other extra-EU countries.

Although largely used in the economic analysis, the RCA index has been criticized for its apparent flaws: the index is asymmetric (all values are above 0); the arithmetic mean obtained is not equal to 1 and varies both between economies and over time (Proudman and Redding, 2000); it does not take into consideration imports. Therefore, several authors proposed different ways to correct these issues (Vollrath, 1991; Laursen, 1998; Lafay, 1992). Yu *et al.* (2009) proposed a normalised index (NRCA – Normalised Comparative Advantage), by taking into consideration the deviation of the real data from the value reached by the comparative advantage in the neutral point, which in the case of high positive values for certain commodities

reflects a high competitiveness of the output of the respective commodity on the external markets.

$$NRCA_j = \frac{X_j * \sum_i \sum_j X_j - \sum_i X_j * \sum_j X_j}{(\sum_i \sum_j X_j)^2}$$

As such, the value of the normalised index varies in the range [-0.25; 0.25], around the neutral point of comparative advantage, which is equal to 0. This index is perfectly comparable in time and space, and both its average value and the sum of the values are stable. But NRCA reaches very low values and therefore it is difficult to compare.

Due to the characteristic of the normalised trade balance to measure the imbalance of trade flows, it is also used for evaluating the relative intensity of inter- and intra-industry specialisation. The closer the balances are to zero, the more exports tend to equalise imports of the same goods and the more we see intra-industry trade. Considered in absolute values, the normalised trade balance is equal to the complement to unity of the Grubel and Lloyd index, the most used in measuring the specialisation of intra-industry foreign trade (Zaman and Vasile, 2012). The mathematical formula of the GL index is:

$$GLI = 1 - \frac{\sum |X_{ij} - M_{ij}|}{\sum |X_{ij} + M_{ij}|}$$

where: Xi = exports of a certain group of products
 Mi = imports of the same group of products.

The GL index measures the intra-industry exchange of a certain product, that is the exports and imports of the same product group. It was developed by Herb Grubel and Peter Lloyd in 1971 (intra-industry trade refers to the exchange of similar products belonging to the same industry or product groups). The term usually applies to international trade, where the same types of goods or services are both imported and exported. If $GL = 1$, there is only intra-industry trade and no inter-industry trade. This means, for example, that the country in question exports the same amount of goods in group i as it imports. Conversely, if $GLI = 0$, there is no intra-industry trade, only inter-industry trade. This could mean that the country in question either imports or exports only the product i .

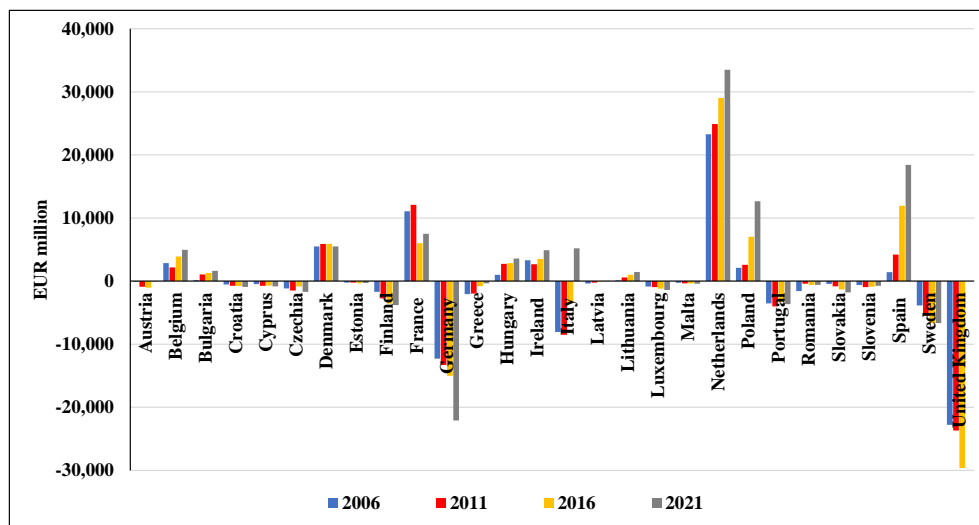
The international Romanian agri-food trade was analysed using the GL index. The indices were calculated for all years between 2000–2021, for the 24 product groups of the Combined Nomenclature, separately for total agri-food trade, for trade with the EU and for trade with other extra-EU countries.

For the calculations, the application <https://competitiveness.app> was used (Uzunovic, 2018; Mesic, 2022).

4. RESULTS AND DISCUSSIONS

4.1. MAIN TRENDS OF THE ROMANIAN AGRI-FOOD TRADE IN THE LAST TWO DECADES

The analysis of the agri-food trade balance of the EU member states shows that in the last decade, only 10 countries show positive balances: Belgium, Bulgaria, Denmark, France, Hungary, Ireland, Lithuania, the Netherlands, Poland and Spain (Figure 1).



Source: calculations based on Eurostat data

Figure 1. Total agri-food balance in EU Member States

Among these, the Netherlands stands out, with a trade surplus exceeding EUR 33 billion (in 2021), double compared to that of the next ranked (Spain). The other 17 countries have negative balances. Romania is in the group of countries with an agri-food trade deficit (over EUR -1.9 billion in 2019), but far from the countries with the maximum deficit such as Great Britain (over EUR -31 billion) and Germany (over EUR -22 billion) in 2021.

It is worth noting that among the 13 countries that have joined the EU since 2004, only Bulgaria, Hungary, Lithuania and Poland have agri-food trade surpluses. The value of the surpluses showed variations in the period 2000–2019 in the case of Bulgaria and Hungary. The surplus increased constantly in the case of Poland, while the Czech Republic and Romania showed somewhat similar variations in the

trade deficit: the deficit gradually decreased in the post-crisis period (2010–2015), only to increase again in 2016 and to reach maximum values in 2019.

The COVID-19 pandemic meant a decrease in the volume and value of trade in goods in 2020–2021, resulting in the deepening of trade deficits (Cyprus, Estonia, Finland, Germany, Luxembourg, Malta, UK). The vast majority of the new member states (NMS) either increased their surpluses (Bulgaria, Hungary, Poland) or reduced their deficits (Romania).

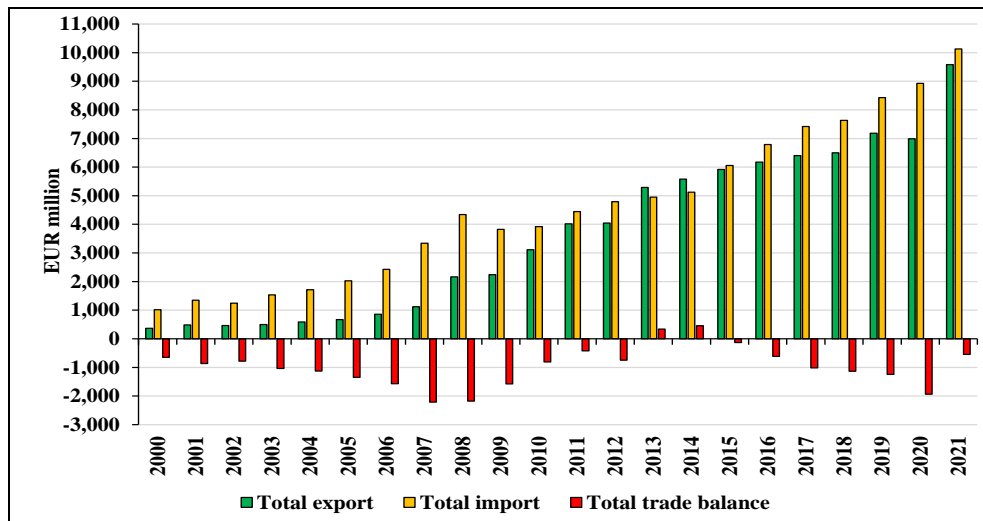
From the comparison with the last year before accession (fixed base), it can be seen that Romanian exports showed the greatest expansion (an increase of 11.2 times in 2021 compared to 2006), followed by Poland, with an increase of 9.4 times the value of exports. On the other hand, the value of imports increased only 3.5 times. Although the export growth index was much more than double the import growth index, the agri-food trade balance remained continuously negative (with a very short exception, 2013–2014).

Free access to the EU Single Market favoured Romanian exports and required raising the level of quality and food safety required by community rules. Although Romanian products have faced various non-tariff barriers (especially in the phyto-sanitary and sanitary-veterinary category), exports have registered spectacular increases in the post-accession period.

At the same time, the free access to the EU Single Market allowed the unrestricted access of EU products to the Romanian markets, putting pressure on the less developed and less competitive domestic markets. Thus, Romanian products faced significant competition from imported products on domestic markets, in terms of prices (lower) and quality (higher and more diversified products). It is important to mention that unfair competition has also appeared from counterfeit products, which are sold at very low prices and which cause problems for Romanian producers who come to the market with good quality products, but at prices that reflect the quality of raw materials and compliance with quality standards.

Figure 2 shows the overall image of the total agri-food trade of Romania in the period 2000–2021. The constant upward trend of both exports and imports is noted. The maximum values of trade balance were registered in the first two years after accession (2007–2008), when a process of adapting to the new “rules of the game” occurred; similar phenomena happened in the other new Member States immediately after their accession to the EU.

By separating agri-food trade by major destinations / origins, the picture changes. Thus, it can be noticed that in the trade with the EU, the balance was permanently highly negative (over EUR 500 million annually).

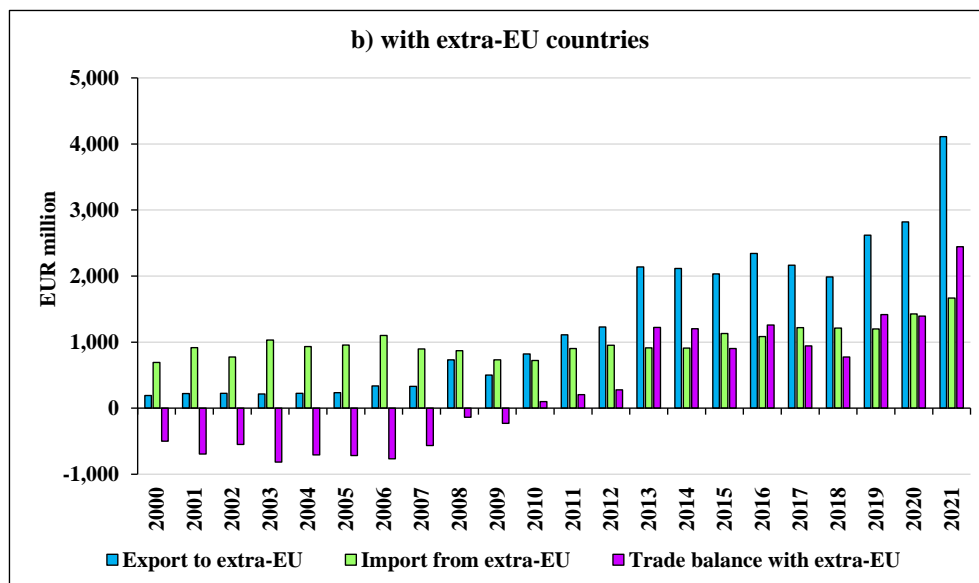
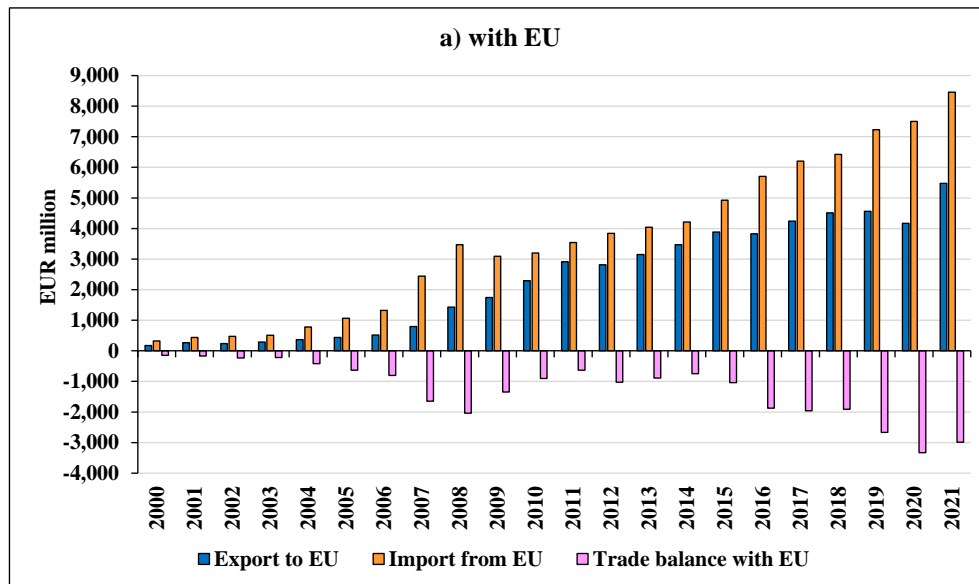


Source: calculations based on Eurostat data

Figure 2. Romania's total international agri-food trade (2000–2021)

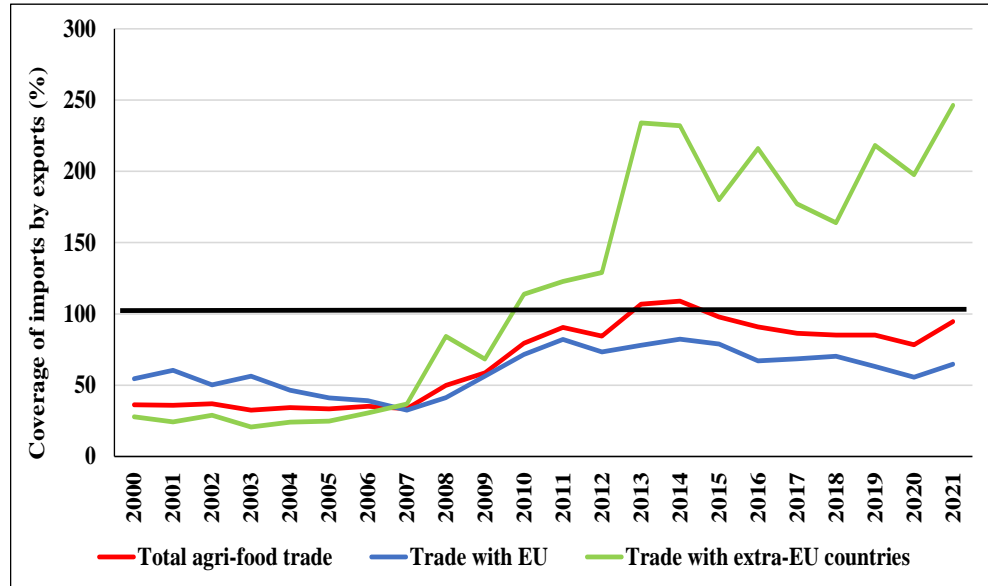
In the relationship with countries outside the EU, since 2010, the balance was permanently positive. This is due to the Near and Middle East entry on the market, where Romania exports large quantities of cereals, oilseeds and live animals, partially compensating the trade deficit in the relationship with the EU (Gavrilescu *et al.*, 2018; Gavrilescu, 2018) (Figure 3 a and b).

Exports are mainly directed to the EU (their share varied between 60–79%); in the last 7 years they got stabilised, standing around an average of approx. 66%. On the other hand, due to the community preference principle, the EU is the main source of imports; while before accession, the share of imports from the EU was around 55%, after accession it increased and stabilised somewhere between 80–86%. As a result, the degree of coverage of imports by exports (Figure 4) varied between 32–36% in the pre-accession period, increased substantially in the first post-accession years, and after 2011 it constantly exceeded 80%, over 100% in the 2 years when Romania registered a trade surplus (2013–2014). The degree of coverage is net over 100% for the extra-EU relationship, reaching a maximum in 2021 (246%), while for the EU relationship the maximum value was 82.3% in 2014.



Source: calculations based on Eurostat data

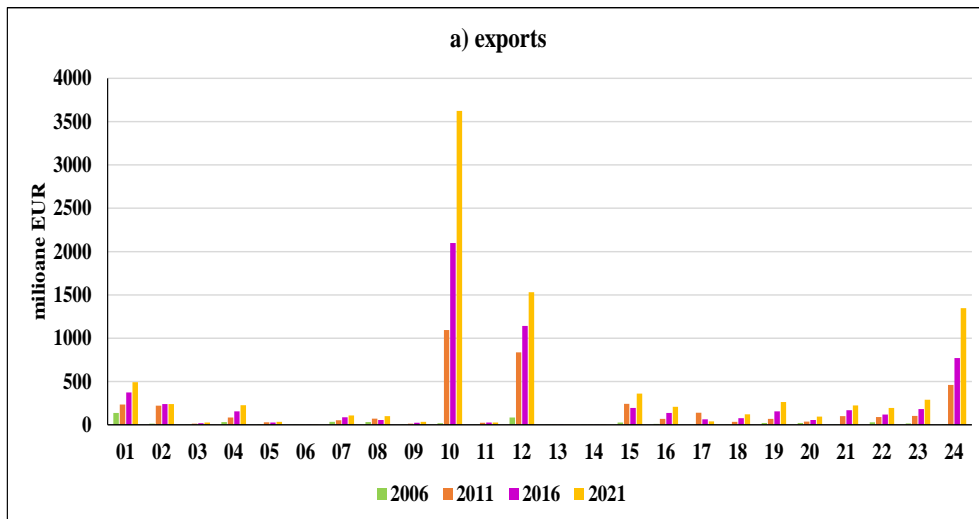
Figure 3. Romania's agri-food trade by main destinations (2000–2021)

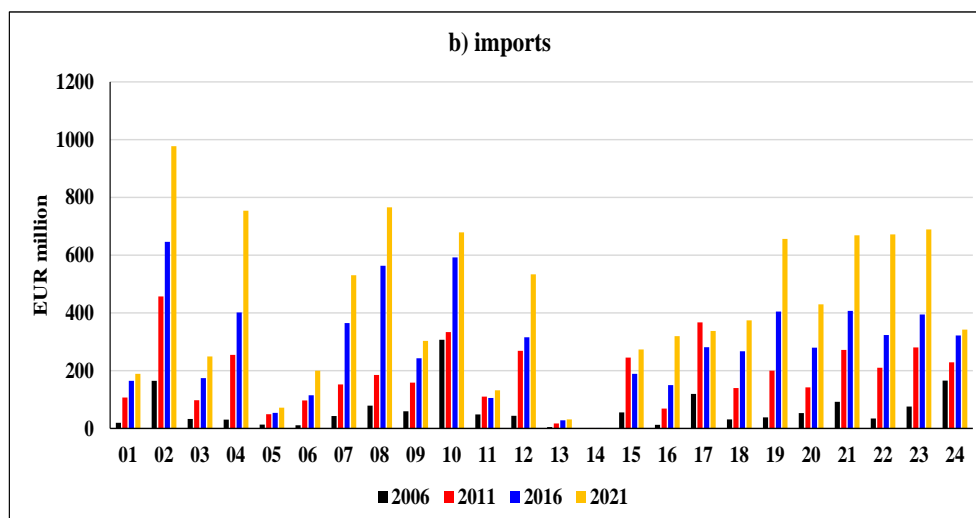


Source: calculations based on Eurostat data

Figure 4. Coverage of imports by exports (%) (2000–2021)

Analysing the structure of agri-food exports by product groups, a noticeable imbalance between product groups can be noted: massive exports of cereals (HS-10), oilseeds (HS-12), tobacco products (HS-24) and live animals (HS-01) (Figure 5a).





Notes: Chapters 01–24 cover all agri-food products. The 24 chapters in the Harmonised System are included in 4 sections, listed as such in the Official Journal of the European Union (<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ:C:2019:119:FULL&from=EN>), as following:

- Section I: Live animals and animal products (01-live animals; 02-meat and offal; 03-fish and seafood; 04-dairy products, eggs and honey; 05-other animal products);
- Section II: Vegetable products (06-live plants; 07-vegetables; 08-fruit; 09-coffee, tea and spices; 10-cereals; 11-products of the milling industry; 12-oilseeds; 13-lacs, gums and resins; 14-other vegetable products);
- Section III: Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes (15-oils and fats);
- Section IV: Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes (16-meat and fish preparations; 17-sugar and confectionery; 18-cocoa and cocoa products; 19-cereal baking and pastry products; 20-vegetable and fruit preparations; 21-miscellaneous edible preparations; 22-beverages; 23-animal feed; 24-tobacco and tobacco products).

Source: calculations based on Eurostat data

Figure 5. Romania's agri-food exports and imports – structure by product groups

The structure of Romanian agri-food imports is much more diversified (Figure 5b). Meat imports predominate (HS-02), followed by dairy products (HS-04), vegetables (HS-07), fruits (HS-08). Significant imports of processed products (HS-15-24) are also noticed: bakery and pastry (HS-19), canned vegetables and fruits (HS-20), various food preparations (HS-21), beverages (HS -22) and animal feed (HS-23), here soy and pet-food are included. There is a highly diversified range of imported products, as opposed to exports that are generally more focused on a narrower range of products.

From the analysis of the trade balance, for Romania (2021), 4 groups of products show a significant trade surplus: cereals (HS-10), over EUR 2.9 billion;

tobacco and tobacco products (HS-24) (EUR 1 billion), oilseeds (HS-12), EUR 997 billion, live animals (HS-01) (EUR 253 million) (Table 1).

Cumulatively, they represent over 70% of the total value of Romanian agri-food exports. This very high concentration of exports on a narrow group of products is disadvantageous, due to the vulnerability to fluctuations in international markets.

Out of 24 groups of agri-food products, Romania registers trade deficits in 18 groups, compared to only 8 groups in Hungary, 9 groups in Poland, 10 groups in Bulgaria, and 13 groups in the case of the Czech Republic.

Table 1

Agri-food balance by product groups (2020) – Comparison Romania – Bulgaria, Czech Republic, Hungary, Poland (EUR million)

HS Code	Product group	Bulgaria	Czech Rep.	Hungary	Poland	Romania
01	Live animals	-66.07	277.74	219.55	-488.42	303.45
02	Meat	120.18	-915.96	549.05	3842.35	-737.75
03	Fish	-418.87	-97.47	-42.88	-536.20	-221.75
04	Dairy products	210.13	143.25	46.15	1388.44	-527.56
05	Other animal products	15.43	-46.49	43.42	83.97	-36.92
06	Live plants	-281.65	-210.06	6.25	-239.86	-196.66
07	Vegetables	67.83	-466.38	-36.82	172.15	-423.01
08	Fruit	-9.34	-660.32	-207.91	-788.07	-666.76
09	Coffee and tea	-189.06	-129.80	-87.84	-237.81	-268.71
10	Cereals	1443.52	575.94	1331.08	1449.51	2944.97
11	Milling products	-103.24	41.63	107.14	32.49	-105.59
12	Oilseeds	572.54	-19.92	164.98	-274.02	996.66
13	Lacs and resins	-356.48	10.99	-27.50	-101.28	-30.33
14	Other vegetal products	-173.48	1.85	2.27	-26.81	0.12
15	Oils and fats	421.34	21.65	437.96	-793.26	85.45
16	Meat preparations	74.66	-53.44	54.74	1796.28	-112.84
17	Sugar	-282.47	111.89	33.97	358.43	-298.65
18	Cocoa	157.13	-158.93	-95.13	606.69	-252.09
19	Cereal products	4.67	13.93	-184.31	2071.05	-393.37
20	Vegetable and fruit products	143.24	-244.27	268.06	626.37	-333.94
21	Miscellaneous food preparations	120.71	-7.59	214.07	1132.53	-443.85
22	Beverages	-8.98	-83.29	478.69	99.97	-477.38
23	Animal feed	133.00	124.25	494.83	-606.39	-398.25
24	Tobacco	33.56	68.12	-192.74	3084.43	1003.32
	Total agri-food products	1628.29	-1702.69	3577.08	12652.54	-591.00

Source: calculations based on Eurostat data

For Romania, the larger deficits appear in meat (HS-02) (over EUR 737 million), fruits (HS-08) (over EUR 667 million), dairy products (EUR 527 million), beverages (HS22) (EUR 477 million), food preparations (HS-21) (EUR 443 million), vegetables (HS07) (EUR 423 million). Important deficits (over 200 million euros) are observed in most processed products.

4.2. COMPETITIVENESS INDICES

The RCA index (Revealed Comparative Advantage index, also known as Balassa index)

By analysing the export flow relative to the import flow, the index measures (“reveals”) those groups of products that are “strong” from a commercial point of view.

As showed above, if the value of the index is between 0 and 1, the respective group of products does not have a comparative advantage. If the value of the index is greater than 1, then there is a comparative advantage. Of course, the higher the value above 1, the higher the advantage.

Romania’s international agri-food trade was analysed. The indices were calculated at the level of each year from 2000–2021, by the 24 product groups of the Combined Nomenclature. By using average values for the pre-accession years (2000–2006), for the post-accession years respectively (2007–2013 and 2014–2021), Table 2 illustrates the changes in the comparative advantage of the 24 groups, by total agri-food trade and the two main destinations: intra- and extra-Community.

Table 2

RCA by product group and export destinations, pre- and post-accession averages

HS code	Total			EU			extra-EU		
	2000–2006	2007–2013	2014–2021	2000–2006	2007–2013	2014–2021	2000–2006	2007–2013	2014–2021
01	5.40	3.07	2.78	22.29	2.17	1.34	57.68	4016.87	7935.74
02	0.06	0.32	0.41	0.25	0.41	0.43	0.02	1.00	3.87
03	0.10	0.11	0.14	0.29	0.16	0.14	0.01	0.04	0.16
04	0.95	0.47	0.50	2.07	0.47	0.54	0.47	8.50	4.29
05	0.63	0.53	0.68	1.53	1.20	1.04	0.15	0.05	0.13
06	0.12	0.04	0.03	0.12	0.05	0.03	0.12	0.05	0.18
07	1.23	0.46	0.33	3.80	0.77	0.47	0.11	0.04	0.10
08	0.45	0.33	0.17	1.22	0.45	0.22	0.18	0.17	0.08
09	0.05	0.09	0.13	0.03	0.13	0.16	0.04	0.05	0.09
10	1.69	3.96	6.29	0.16	2.10	2.95	0.82	21.43	43.52
11	0.05	0.17	0.22	0.00	0.17	0.17	0.15	1.79	1.84
12	2.03	3.10	3.74	7.32	3.85	6.54	0.66	1.81	1.11
13	0.05	0.03	0.05	0.02	0.02	0.03	0.06	0.06	0.09
14	5.11	2.13	1.37	32.73	2.25	2.08	0.43	0.07	0.35
15	0.91	0.94	1.51	0.23	1.34	1.63	0.88	0.21	1.45
16	0.99	1.01	1.02	5.44	1.41	1.27	0.12	0.13	0.44
17	0.06	0.28	0.26	0.17	0.72	0.51	0.02	0.04	0.06

Table 2 (continued)

18	0.08	0.26	0.37	0.05	0.24	0.39	0.08	1.14	0.78
19	0.49	0.40	0.49	0.73	0.41	0.54	0.42	0.62	0.51
20	0.34	0.25	0.26	1.25	0.35	0.32	0.09	0.10	0.13
21	0.07	0.31	0.47	0.01	0.37	0.50	0.05	0.29	0.51
22	1.06	0.55	0.47	0.76	0.56	0.47	1.37	1.03	0.72
23	0.32	0.37	0.57	0.38	0.65	0.59	0.25	0.13	0.46
24	0.06	2.01	3.47	0.13	4.05	5.61	0.02	0.24	0.88

Note: see note for Figure 5

Source: calculations based on Eurostat data

During the entire analysed period, only one group of products had comparative advantage, on both destinations, with very high RCA values (4016–7935), in the case of the post-accession period on extra-EU destinations. Romania managed to enter the market of live animals destined for Arab countries, which prefer to import live animals (mainly sheep) to the detriment of carcasses or processed meat. On the other hand, there are countries (especially in the EU) that accept very limited trade in live animals, due to concerns about animal welfare during transport. Including Romania, a rule has appeared that prohibits the export of live animals intended for fattening or slaughtering to destinations located at distances that require a transport time longer than one day, starting from January 01, 2025. The ban also applies to third countries if they do not comply with EU legislation regarding the transport and slaughter of animals.

Even if the legislator's intention was to redirect the flow of livestock to the country's processing industry, this will create a problem for farmers raising livestock for export, adding to problems from previous periods when cattle and sheep exports were temporarily banned by some destination countries, due to blue tongue disease.

Before accession, Romanian vegetables had a slight comparative advantage on the EU market, which disappeared after accession, due to massive imports of fresh vegetables from third countries (Turkey).

Cereals have almost always shown a comparative advantage, which increased in the post-accession period both on the EU destinations (index > 2) and on extra-EU destinations, where the RCA index exceeded values of 20 units. Similarly, oilseeds almost always had a comparative advantage, even if the values did not exceed 8 units.

Group 15 (oils and fats) shifted from disadvantage to relative advantage after accession, the same as group 24 (tobacco and tobacco products).

The GL Index (Gruber – Lloyd index of intra-industry trade)

It measures the intra-industry trade of a particular group of products, taking into consideration both exports and imports of the same product group. As shown in the methodology section, GL Index value can range between 0 – 1. If GL index = 0, it means that the country only exports the respective group of products, and if GL index = 1, the respective product group is imported only, there are no exports.

Romania's international agri-food trade was analysed. The indices were calculated at the level of each year from 2000–2021, by the 24 product groups of the Combined Nomenclature. By using average values for the pre-accession years (2000–2006), post-accession respectively (2007–2013 and 2014–2021), Table 3 illustrates the changes in the Grubel-Lloyd index of intra-industry trade, for all 24 groups, by total agri-food trade and by the two main destinations: intra- and extra-Community.

Table 3

Gruber-Lloyd Index by product group and main trading partners, pre- and post-accession averages

HS code	Total			EU			extra-EU		
	2000–2006	2007–2013	2014–2021	2000–2006	2007–2013	2014–2021	2000–2006	2007–2013	2014–2021
01	0.43	0.65	0.63	0.32	0.84	0.93	0.40	0.01	0.00
02	0.09	0.40	0.48	0.12	0.39	0.43	0.05	0.43	0.39
03	0.15	0.17	0.19	0.31	0.19	0.17	0.03	0.10	0.33
04	0.83	0.50	0.57	0.90	0.46	0.51	0.70	0.21	0.33
05	0.63	0.59	0.69	0.78	0.79	0.80	0.29	0.13	0.28
06	0.17	0.06	0.05	0.15	0.06	0.04	0.26	0.11	0.36
07	0.86	0.52	0.41	0.58	0.66	0.46	0.24	0.09	0.21
08	0.52	0.41	0.24	0.81	0.45	0.25	0.37	0.34	0.17
09	0.07	0.15	0.19	0.06	0.15	0.18	0.09	0.12	0.20
10	0.51	0.51	0.35	0.52	0.73	0.73	0.54	0.17	0.04
11	0.07	0.25	0.30	0.01	0.20	0.20	0.26	0.59	0.64
12	0.75	0.60	0.51	0.42	0.60	0.39	0.72	0.67	0.83
13	0.08	0.04	0.08	0.04	0.02	0.05	0.15	0.14	0.20
14	0.41	0.84	0.89	0.17	0.79	0.86	0.45	0.15	0.38
15	0.75	0.80	0.91	0.44	0.86	0.93	0.77	0.41	0.71
16	0.88	0.87	0.89	0.68	0.91	0.89	0.26	0.29	0.45
17	0.09	0.37	0.33	0.23	0.60	0.47	0.05	0.09	0.13
18	0.12	0.35	0.46	0.11	0.27	0.40	0.17	0.76	0.90
19	0.55	0.47	0.56	0.38	0.42	0.52	0.70	0.89	0.78
20	0.42	0.34	0.34	0.67	0.36	0.35	0.20	0.23	0.28
21	0.10	0.41	0.54	0.08	0.38	0.49	0.12	0.52	0.79
22	0.80	0.61	0.54	0.68	0.53	0.47	0.71	0.86	0.86
23	0.40	0.46	0.62	0.32	0.59	0.54	0.48	0.28	0.74
24	0.08	0.72	0.55	0.13	0.58	0.44	0.05	0.47	0.58

Note: see note for Figure 5

Source: calculations based on Eurostat data

In the trade with the EU, the intensity of trade in live animals is very high, significantly biased towards imports (over 0.8), while in the extra-EU relationship, there is an opposite situation: after 2011, the values fall below 0.01, approaching 0, which indicates the almost absolute prevalence of exports.

Chapter 04 (milk, dairy products, eggs, honey) shows a very high intensity of imports in the pre-accession period; after accession, trade becomes bidirectional (with GL values around 0.5).

After 2014, in chapter 08 (fruits), we only find values below 0.2, which indicates the prevalence of imports, while exports are increasingly low.

For cereals, in the extra-EU trade, the values fall below 0.04 after 2010, indicating a distinct intensity of exports in the almost complete absence of imports.

Very high import intensities are found in the trade with EU after 2014, in chapters 15 (oils and fats) and 16 (meat and fish preparations), the value of the index rising to 0.9.

After 2014, in the trade with the EU, trade intensity increased in the chapters that include processed food products (19, 21, 22, 23), for which GL index values varies slightly around 0.5.

In the extra-EU trade, after 2014, we find a high intensity of trade, with the prevalence of imports (GL index higher than 0.7) in cocoa and cocoa products, bakery and pastry products, various food preparations, beverages and animal feed.

5. CONCLUSIONS

In the post-accession period, the New Member States (NMS-CEECs) from Central and Eastern Europe (Bulgaria, Czech Republic, Hungary and Poland) registered a significant growth of their agri-food trade; among all, Romania had the highest relative increase in the value of exports (11.2 times in 2021 compared to 2006 – the last year before accession). In the agri-food trade, Romania and the Czech Republic had negative trade balances, while Bulgaria, Hungary and Poland managed to maintain positive balances in the post-accession period.

Romania's exports are highly concentrated – a narrow range of products (4 product groups account for 70% of total exports), which causes a significant vulnerability to disruptions in international markets. Exports consist mainly of agricultural commodities (cereals, oilseeds, live animals). The range of imported agri-food products is much wider, a characteristic similar to other NMS-CEECs.

Romania has an unbalanced structure of the agri-food trade balance: only 5 out of 24 product groups have a positive balance, compared to at least 8 groups in the case of the other NMS-CEECs.

In the 15 years of EU membership, Romania's agri-food trade has grown significantly both in value and volume, for both EU and non-EU destinations. Total trade balances were mostly negative (with the exception of the years 2013 and 2014). Persistent trade deficits with EU countries have started to be partially offset by continued trade surpluses with non-EU countries since 2010.

Overall, Romania is a net importer of basic products: meat, dairy products, vegetables, fruits and processed products. Out of 24 groups of agri-food products, Romania has trade deficits in 18 groups, compared to only 8 groups in the case of Hungary, 9 groups in Poland, 10 groups in Bulgaria, and 13 groups in the Czech Republic. In the post-accession period, cereals and oilseeds remained competitive,

but live animals lost some competitiveness – they kept a positive trade balance, but export unit prices became higher than import prices. Importantly, milk and milk products have increased their competitiveness in the post-accession period, by shifting the trade balance from negative to positive, but their export unit prices are still higher than import prices.

The calculations for the Balassa index (RCA) and Gruber-Lloyd index just confirmed the trends described above. The RCA calculations showed consistent trade advantages in the post-accession period for live animals, cereals and oilseeds, for both EU and non-EU destinations.

After 2014, in the trade with the EU, although the balance remained negative, the exchanges intensified in the chapters that include processed food products (19, 21, 22, 23), for which GL index values varied slightly around 0.5, indicating that Romania started producing and exporting more processed products (two-way trade), but this is a work in progress until significant increases in export volumes and diminishing trade balance deficits for such products can be noticed.

The future targets of Romania's agri-food trade should be: diversification of exports; increasing volume and value of exports, reducing the share of processed products in imports and increasing the share of processed products in exports; promoting exports of high quality products (PDO – Protected Designation of Origin, PGI – Protected Geographical Indication, TSG – Traditional Speciality Guaranteed), organic products and quality wines; and – very important – reducing the imports of basic foods.

However, these targets cannot be achieved in the absence of a significant restructuring of the agricultural production sector and food industry sector.

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