

CONVERGENCE ANALYSIS ON FOREIGN TRADE INTEGRATION OF FOOD SECTORS IN EU CONTEXT

Mirela-Adriana RUSALI

Institute of Agricultural Economics, 13 Calea 13 Septembrie, District 5, Bucharest, Romania

Corresponding author email: m.rusali@yahoo.com

Abstract

The paper is part of the efforts to meet the strategic objectives of the National Plan for the adoption of the Euro and addresses the analysis of convergence on the integration of foreign trade in Romania in the EU context, aiming to help substantiate the specific measures and actions required by the agri-food sector. The method approached a two fold, analysis, by estimating the coefficients of variation and the unit value index of the foreign trade flows calculated for each subsector of food industry. The results point on products in sectors with major market imbalances / recovery, convergent / divergent developments in unit export prices at country level, deviation from average unit export price and differences in the average annual growth rate of unit export prices, in Romania compared to the EU average.

Key words: convergence analysis, Euro zone, food sectors, Romania, trade.

INTRODUCTION

Searching to gain a deeper understanding of how the EU integration process affects patterns of industrial specialization, geographical location and grouping in Europe and the component regions involves specific methodologies for defining and evaluating key terms and data collection by time periods, Member States, regions and sectors, formulation and construction of relevant indicators, as well as evaluation of their evolution in the Single Market context.

In the economic theory, growth of economic integration in the EU, as it is expressed by the four freedoms (movement of persons, capital, goods and services) and supported by the harmonization of regulations and mutual recognition of qualifications and standards, introduction of a common currency and of such similar measures, should lead both at the level of Member States and their regions to better economic specialization, either because of the inherent and inherited comparative advantages or because of the growing profits associated with the magnifying effects of production.

The new Economic Geography, continuous modelling, assert that the effects of increasing profitability lead and are increased by the concentration and geographical agglomeration of economic activity and localized industrial

interdependencies. However, more recent theoretical developments state that not only technological changes contributed to such interdependencies become geographically dispersed (relocated) - such as supply chains and intra-industrial trade - but also to that countries and regions become specialized in functions and tasks, rather than in certain industrial activities (Gardiner et al., 2020).

Assessing the extent to which EU integration has progressed over the last two decades highlights the effects of integration (on specialization, concentration, clustering) would most likely be observed in areas, such as Member States, sectors etc., where integration has strengthened the most. This is particularly the case where other developments, such as the increasing globalization of supply chains and the financial crisis and the ensuing great recession, coincide with this period and have created their own impacts and dynamics that could obscure any integration effects. Special integration-related events taking place during this period included the accession of many Eastern European countries, Euro launch and several initiatives (such as the Services Directive and the Single Market Act I and II) aimed at deepening integration into areas of the economy less affected by the previous directives which tended to focus more on tradable goods.

Romania's current efforts in the process of monetary integration take place in the context of the global efforts in which European economies are recovering from the economic crisis generated by covidemia and other conjectural challenges such as energy crisis - related prices blow-up. In European Union, economic downturns tend to polarize emerging/developing and developed countries, and sometimes a process of divergence rather than economic convergence. Among the main objectives of the necessary measures and actions for Romania, within the National Plan for Euro adoption, are highlighted "Correction of macroeconomic imbalances and reduction of the real and structural convergence gap and" Fulfilment of structural conditions ", with emphasis on increasing the competitiveness of the economy through a better production structure, high value-added type. In order to achieve the strategic objectives, it is necessary to pursue the operational objectives, which include correcting economic imbalances, improving competitiveness and developing in particular the areas essential for the sustainability of economic growth. These objectives are in line with the European context of improving national sectoral performance and reducing gaps between states in order to meet their obligations to achieve Economic and Monetary Union under the Treaty on the Functioning of the EU and with a view to enlarging Euro zone.

The preliminary stage that Romania, as an EU member state, must go through to join the Euro zone includes, beyond the economic criteria included in the Maastricht Treaty, acceptance in the ERM II Exchange Rate Mechanism and compliance with the restrictions that challenge it as currency to fluctuate over a two-year period in the range of plus-minus 15% against the common currency Euro.

Developments over the last decade have shown, especially after crises starting with that in 2008 and the border rescue of Greece, that nominal macroeconomic parameters are insufficient for accession to the Euro-zone. Economists more and more assert that the adoption of the euro must be achieved when a real degree of real convergence has been reached, including valuable research studies investigating these aspects related to Romania (ex.: Iancu, 2020;

Andrei et al., 2020; Chivu et al., 2019; Isărescu, 2015; Albu, 2012).

Meeting the criteria for nominal and real convergence are the main objectives of the Member States in the process of accession to Economic and Monetary Union. In order to adopt the Euro, countries that currently have a non Euro membership status, including Romania, need to close the gap with Member States belonging to Euro zone, and first of all it is necessary to harmonize the area on structural convergence and intra-sectoral efficiency.

MATERIALS AND METHODS

Based on Eurostat data, convergence on integration in foreign trade has been analyzed by using: (a) coefficients of variation defined as the standard deviation of price level indices in a group of countries as a percentage of their average index; (b) the unit value index (IVU) of the foreign trade flows calculated for each subsector of food industry, by 3-digit level of NACE Rev. 2 codes, respectively C101-C109, for Romania and EU-28, with the formula: $IVU = (\text{Export Value}/\text{Export Quantity})/(\text{Import Value}/\text{Import Quantity})$, using trade statistics of CN codes 01-24 at 4-digits (Rusali, 2021).

RESULTS AND DISCUSSIONS

1. Developments of trade with processed agri-food products in the last decade

Trade in processed food and agricultural products has evolved differently from Romania's total trade in the last 20 years in terms of steadily increasing export and import trade flows (Table 1). The top values for the period were recorded in 2020, with imports of processed agri-food products amounting to 4.8 billion Euros and exports of 3.1 billion Euro. The deepest trade deficit in processed food and agricultural products recorded in 2019, of -1.9 billion Euro, 3.7 times higher than in 2001, and decreased to -1.6 billion Euros in 2020.

The balance of trade in processed agri-food products showed a chronic deficit throughout the period, with a sharp imbalance between 2001-2006, when deficit deepened from -521 million Euro to -1.16 billion Euro.

The trade deficit continued to contract in the period after EU accession reaching -732

million Euro in 2014, the decrease being induced by the increase of exports with an average annual rate of 19.4%, higher than the growth rate of imports, of 7.2%.

It should be noted that, in the period 2019-2020, in the context of triggering the covidemia health emergency, while in the national economy, Romania's trade suffered decreases, respectively, of -9.8% for exports and -6.6% for imports, for processed food and agricultural products, there were increases of 16% in exports and 4% in imports, resulting in a reduction of -12.6% of the trade deficit for this category of products. Another positive aspect was indicated by the increasing trend of the coverage rate of imports through exports, respectively, from 24.6% in the period 2001-2006, to 48.5% between 2007-2013, reaching 63% in the period 2014-2020.

Table 1. Trade in processed food and agricultural products vs. Romania's total trade - Developments in the period 2001-2020

Specification	UM	Export: Total	Export: Food and processed products	Import: Total	Import: Food and processed products	Balance: Total	Balance: Food and processed products
2001	Mil. Euro	12698	169	17346	690	-4647	-521
2007	Mil. Euro	29374	475	51028	1642	-21654	-1166
2014	Mil. Euro	52570	1893	58596	2626	-6027	-732
2019	Mil. Euro	69048	2679	86328	4607	-17281	-1928
2020	Mil. Euro	62247	3106	80654	4790	-18408	-1685
Growth rate 2001-2006	%	12.5	9.2	15.3	11.1	21.5	11.7
Growth rate 2007-2013	%	7.8	19.4	1.2	7.2	-17.4	-1.8
Growth rate 2014-2020	%	2.4	7.3	4.7	9	17.3	12.6
Variation* 2020-2019	%	-9.8	15.9	-6.6	4	6.5	-12.6
Share in total trade	Average 2001-2006	100	1.2	100	3.4	100	1.2
	Average 2007-2013	100	2.8	100	4.4	100	2.8
	Average 2014-2020	100	3.8	100	5.1	100	3.8

* (Value C 2020 - Value C 2019) / Value C 2019
Source: Eurostat (Sept. 2021).

The analysis of the flows of imports and exports of Romanian agri-food products (CN codes 01-24 at 4-digits) by products and product categories, registered in 2020,

indicated the first 5 groups of exported products, being: maize, 15.4% and wheat & meslin, 11.9%, followed by cigarettes, 10%, tobacco products, 9.6%, sunflower seeds, 8.8%, which accounted for 59% of exports Romania's agri-food sector and had the largest contribution to the sector's trade surplus. At the same time, the main groups of imported products were: pork, 6.7%, bakery, pastry and biscuits, 4.3% and food, chocolate, cheese, feed and corn, each 3.6% each, accumulating 29% of Romania's agri-food imports in 2020.

Processed agri-food products registered, in 2020, 9% of the foreign trade deficit, 5% of the value of Romania's exports, and 6% of imports. Of the 367 exported processed agri-food products listed in the 6-digit CN code list, 10 products accounted for 16% of the country's total exports, accounting for 70% of the trade deficit in this category in 2020.

According to the negative value of Romania's foreign trade balance, in 2020, the products with the largest deficits were: Food for certain household products, for retail sale, 11.6%; Food preparations, 10.8%; Cheese (excluding fresh cheese), 7.6%; Cake and other solid residues, 9.8%; Preparations of a kind used in animal feeding (excluding dog or cat food) for retail sale, 6.5%; "Un-ripened cheese", including cheese of whey and curd, 6%; Cane or beet sugar and sucrose, 6%; Chocolate and other preparations containing 5% cocoa in containers; Bread, pastries, cakes, biscuits, 4.8%; Chocolate and other preparations containing cocoa in blocks, 4.8%.

Among Romania's agri-food products exported in 2020, which achieved over 1% share in Romania's agri-food exports, there are 15 products that accumulated 75% of the exports of processed agri-food products and 30% in the deficit of foreign trade with processed products. The first 2 products exported, respectively, of the group *Cigarettes and processed tobacco & substitutes*, accounted for 44% of exports of processed agri-food products in 2020.

The main 10 destination countries contributed 71.3% to Romania's exports in 2020 of processed agri-food products and were generally the relations that developed in the period 2014-2020 (Table 2). The first 5 world markets that had the largest shares in Romania's exports in 2020 from the group of

processed agri-food products (CN codes at 6-digit level) were Italy, 16.9%, respectively, 526 million Euros, Bulgaria, 9%, Japan, 8.3%, Germany, 6.7% and Poland, 6.4%, which accumulated 50.3% of the total group. The next destinations with importance for agri-food products processed in Romania were Great Britain, 5.7%, Hungary, 5.1%, Greece, 4.3% and France and the Netherlands with 3% each. Spain and Rep. Moldova is one of Romania's historical partners. It is pointed out that Japan has started to become a destination of interest for Romania, especially since 2017, and in 2020 it absorbed 8.3% more of the value of exports of processed agri-food products.

Table 2. The main destination markets of Romania's exports of processed agri-food products

Country	Export 2014	Export 2018	Export 2019	Export 2020	Share in Total, 2019	Share in Total, 2020	Variation 2020-2019
	mil. €	mil. €	mil. €	mil. €	%	%	pp
Total	1893	2290	2679	3106	100.0	100.0	0.0
Italy	611	476	510	526	19.0	16.9	-2.1
Bulgaria	217	251	297	279	11.1	9.0	-2.1
Japan	3	71	62	259	2.3	8.3	6.0
Germany	120	158	198	210	7.4	6.7	-0.7
Poland	45	50	112	199	4.2	6.4	2.3
UK	56	117	133	176	5.0	5.7	0.7
Hungary	107	126	129	159	4.8	5.1	0.3
Greece	96	130	145	133	5.4	4.3	-1.1
France	47	70	87	93	3.3	3.0	-0.3
Netherlands	45	94	93	91	3.5	2.9	-0.5
Spain	77	131	103	88	3.9	2.8	-1.0
Rep. Moldova	31	48	61	75	2.3	2.4	0.1

Source: Eurostat (Sept. 2021).

Among the processed agri-food products imported into Romania in 2020, according to the highest values and weights in this category (CN codes at 6-digit level), the first 10 products cumulated 34.2%, i.e: Food preparations, 6.3 %; Bakery, pastry, cakes, biscuits and other baker's wares, 4.3%; Food for dogs or cats, for retail sale, 4.3%; Oilseeds and other solid residues, 3.8%; Cheese (excluding fresh cheese), 3.5%; Chocolate and other preparations containing cocoa, in containers or packing, 3.2%; Cane or beet sugar and sucrose (excluding cane and beet sugar), 2.6%; Preparations used in animal nutrition (excluding dog or cat food for retail sale), 2.5%; Fresh cheese "unripe or unripe cheese", including whey and curd cheese, 2.4%;

Chocolate and other preparations containing cocoa, in blocks, 2.1%. These products were responsible for the largest shares in Romania's trade deficit, totalling 68.2%.

Romania imports processed agri-food products from 186 countries, but the top 10 countries accumulated 74.5% in 2020, of which the largest shares were: Germany, 18.9%, Poland, 13.5% and Hungary, 11.9% (Table 3).

The next sources of imports into Romania of processed agri-food products were Italy, 6.8%, Bulgaria, 5.3% and the Netherlands, 4.4%, other sources with weights between 3.9% and 2.8% being Ireland, France, Belgium and Austria. One partner that accounted for 19% of food imports in 2001 was Brazil, but values fell sharply and fluctuated to an average of 3.3% between 2014 and 2020.

Table 3. The main sources of Romania's imports of processed agri-food products

Country	Import 2014	Import 2018	Import 2019	Import 2020	Share in Total, 2019	Share in Total, 2020	Variation 2020-2019
	mil. €	mil. €	mil. €	mil. €	%	%	pp
Total	2626	4193	4607	4790	100	100	0.0
Germany	428	716	846	904	18.4	18.9	0.5
Poland	303	554	615	649	13.3	13.5	0.2
Hungary	366	518	562	569	12.2	11.9	-0.3
Italy	145	304	320	328	7.0	6.8	-0.1
Bulgaria	152	210	227	253	4.9	5.3	0.4
Netherlands	144	204	216	211	4.7	4.4	-0.3
Ireland	45	163	191	187	4.1	3.9	-0.2
France	99	148	166	175	3.6	3.7	0.1
Belgium	61	131	140	158	3.0	3.3	0.3
Austria	75	109	117	133	2.5	2.8	0.2
Brazil	101	163	163	125	3.5	2.6	-0.9
Czech Rep.	78	137	124	125	2.7	2.6	-0.1

Source: Eurostat (Sept. 2021).

The 10 main supplying countries of imports in Romania were also responsible for the most substantial trade deficit, in the proportion of 88.3% in the negative value of the trade balance with processed agri-food products amounting to -2.6 bill. Euros in 2020. Among them, in relation with Germany, Romania's trade deficit in processed agri-food products had the largest share in the trade balance for this category of products in 2020, in proportion of 26.3%, amounting to -694 mill. Euro, followed by Poland, 17% and Hungary, 15.5%, noting that only trade with these three countries accounted for 59% of the deficit.

2. Analysis of convergence in trade with manufacturing agri-food products

Convergence analysis on integration in foreign trade provided the following results:

a) Assessment of the relative dispersion of unit export prices

It was estimated the relative dispersion of unit export prices compared to the EU-28 average by applying the following calculation steps:

- The unit price difference for each country and subsector of the food industry and the EU-28 average price has been calculated, resulting in the annual deviation from the average;
- The coefficients of price variation at subsector level with the statistical function Standard deviation were determined;
- The relative dispersion was determined by the difference between the dispersion value and the average unit price at EU-28 level.

This method facilitates highlighting of existing market imbalances at the subsector level, but also the performance potential of a country by unit export price.

Convergence analysis on export integration was revealed at the level of food industry product groups by the dispersion index values. Similarly, the greater the variation, the greater divergence in the group of products analyzed.

The evolution in dynamics of food exports from Romania can be followed and compared to the EU average, and the level of unit prices that facilitated or not the performance.

The estimates highlighted the following main results (Table 4 - Annex):

- Major market imbalances/recovery

There have been imbalances in the export market at sector level in the EU28 in the *Meat Products* and *Fruit and Vegetable Products* groups, in 2017 and 2018 only in *Fruit and Vegetable Products*, and in 2019 these markets were recovered. Although the relative dispersion index did not indicate sectoral imbalances in the other product groups of the food industry in the region, there were still decreases in the indices in 2019, more significant being in groups C101 - *Meat products* and C102 - *Fish products*, and in a smaller measure C104 - *Oils and fats* and C105 - *Dairy products*. Decreasing the negative value of the relative dispersion index may signal

trends towards divergence indicated due to the increase in the coefficients of variation.

- Convergent/divergent developments in unit export prices at country level:

Romania ranked 13th among the EU-28, in 2019, in the export of products from group C101 - *Meat and meat products* and 16th place in C104 - *Oils and fats* and C107 - *Bakery products*, these being the best performances from 2019, in the other groups being on lower ranks, 20-21, and in C105 - *Dairy products* on the 25th place.

- Deviation from average unit export price:

Positive values between differences in unit export price indicate a higher price performance disadvantage than the EU average. In the case of Romania, performance deficiencies are indicated for the products in the groups: C102 - *Fish products* and C109 - *Animal feed* and, to a lesser extent, C103 - *Fruit and vegetable preparations* and C107 - *Bakery products*, differences in price being lower.

- Differences in the average annual growth rate of unit export prices, in Romania compared to the EU average:

Negative results regarding the performance potential of the Romanian products indicated by higher price increases than in EU, in 2019, were identified for product groups as follows: C105 - *Dairy products*; C104 - *Oils and fats*; C106 - *Milling products*; C102 - *Fish products*.

b) Estimates of unit value index (IVU) of export and import flows from food industry sectors in Romania and EU28 (Tables 5 and 6).

Table 5. Unit value index in the food industry sectors, Romania

NACE Code	2017	2018	2019	Annual average growth (%)
C101 - Meat products	1.12	1.15	0.96	-5.0
C102 - Fish products	2.04	1.93	1.80	-4.1
C103 - Fruit and vegetable preparations	2.00	1.49	1.83	-2.9
C104 - Oils and fats	0.77	0.74	0.84	2.6
C105 - Dairy products	0.76	0.76	0.79	1.1
C106 - Milling products	1.12	1.18	1.07	-1.5
C107 - Bakery products	1.02	1.05	1.07	1.6
C108 - Sugar, cocoa and other products	0.91	1.09	1.48	17.6
C109 - Food for animal feed	3.34	2.80	2.27	-12.1
Food industry – RO	0.85	0.79	0.80	-2.1

Source: Author's calculation.

In the period 2017-2019 IVU at the level of the Romanian food industry had mainly subunit values, positive IVU values were estimated only for products in the groups *Animal feed*, *Fish and Fruit* and *Vegetable Products*. Moreover, deficient foreign trade activity was identified for some groups of products from the food industry sectors in Romania, the imports being more expensive than the exports in the activities producing of *Meat products*, but also of *Oils and fats* and *Dairy products*, where the deficiencies trained during the record period. As well, a marked volatility in most products was indicated by the negative average annual rate, -2.1% in the period 2017-2019, based on assessments resulting negative trends indicated by decrease in IVU in the groups: *Animal feed* (-12.1%); *Meat products* (-5%); *Fish products* (-4.1%); *Fruit and vegetable preparations* (-2.9%); *Milling products* (-1.5%).

Table 6. Unit value index in food industry sectors, EU

NACE Code	2017	2018	2019	Annual average growth (%)
C101 - Meat products	0.89	0.87	0.89	0.0
C102 - Fish products	0.91	0.90	0.93	0.8
C103 - Fruit and vegetable preparations	0.90	0.90	0.92	0.7
C104 - Oils and fats	1.41	1.38	1.40	-0.3
C105 - Dairy products	1.14	1.11	1.10	-1.2
C106 - Milling products	1.06	1.07	1.05	-0.3
C107 - Bakery products	1.02	1.03	1.01	-0.1
C108 - Sugar, cocoa and other products	1.24	1.21	1.28	1.2
C109 - Food for animal feed	1.09	1.07	1.05	-1.3
Food industry – EU	1.15	1.13	1.15	0.1

Source: Author's calculation.

Comparatively, a smaller variation was identified in the unit value index for products in the food industry sectors in the EU-28, which at the sector level had an average annual rate of 0.1% in the period 2017-2019.

Small decreases in the average annual IVU rate were estimated in the groups: *Animal feed* (-1.3%); *Dairy products* (-1.2%); *Oils and Fats* and *Milling Products* (each, -0.3%).

Positive IVU values were estimated for most products in the EU food industry, with the index being supra-unitary at sectoral level, while *Prepared fruit and vegetables*, *Fish products* and *Meat Products*, which had subunit IVU values, but close to unity, so that resulted a value of 1.15 of IVU in the sector.

CONCLUSIONS

The health crisis and emergency measures triggered in 2020 have added another burden to food systems, already facing three challenges of ensuring global food security and nutrition, providing livelihoods for farmers and businesses in the food chain, and using resources in a sustainable way.

This research signals relative structural imbalances and substantial gaps in productivity and external performance indicating problems of intra-sectoral efficiency, which are pre-existing vulnerabilities to the outbreak of the pandemic crisis. Given the recent lessons, strengthening economic resilience in the agri-food system is implied within a vision of increasing long-term sustainability, putting responsible motivation before economic motivation.

The results of the study draw attention to the need for agri-food and trade policies and national CAP plans to address the key aspects of performance that will allow the development of resilience and sustainability of the agri-food system. The goal of achieving a sustainable and sustainable standard of living in the European Union can only be achieved by applying an economic model based on increasing investment and competitiveness, which will place the Romanian economy on a sustainable path towards reducing gaps and real convergence with the living standards of more developed Member States.

Justifications:

a) Index of unit value (export / import) per unit in the food industry sectors: Meat and meat products; Animal or vegetable oils and fats; Dairy products. In these groups of products, Romania imports more expensive than it exports, it creates a competitive disadvantage due to the inefficiency of the exercise of international trade.

b) The food processing sector in Romania has a chronic self-sufficiency deficit (71% in 2019).

c) Subsectors with the deepest deficit, according to the share in the total food deficit of Romania (2019) are: *Meat and meat products* (21%); *Sugar, sugar products, cocoa* (15%); *Dairy products* (11%); *Miscellaneous food preparations* (11%); *Cereal preparations* (10%); *Beverages, alcohol and vinegar* (10%);

Vegetable and fruit preparations (9%); Residues from the food and beverage industry animal feed (9%).

Recommendations:

Regarding the evolution of the agri-food sector as an integral part of the Romanian economy in convergence with the EU, it is necessary:

- ◆ Restructuring and development of the agri-food industry with prevalence based on the potential of local and regional resources and capitalization of local raw materials;
 - ◆ Creating, repairing and streamlining the value chains of local supply by shortening the links from the producer to the final consumer;
 - ◆ Responsible trade policies that favour imports for the greater benefit of society in terms of health, nutrition and quality of life of the population;
 - ◆ Correlating public support priorities with the need to restore the balance of food trade; specification of deficient sectors by:
 - Investment support for the processing and marketing of agricultural products in order to obtain high value agri-food products,
 - Correlation with the needs of the priority sectors and the creation or rebuilding of the links in the food value chain / local supply chain,
 - Extensive support for economic activities of agricultural processing and processing into agri-food products, with a view to the real development of the rural economy.
- Comments and proposals on policy measures to support the generation of high value-added in the agri-food chain and to counterbalance the imbalance in foreign trade:
- The intervention sheets must not limit the access to support of small and medium-sized enterprises that predominate in Romania's agri-food economy.
 - It is necessary to undertake a comprehensive assessment of the capacity of Romanian

enterprises processing agricultural products, in order to highlight the technical and economic potential and the economic deficiencies vital for integration in the agri-food chain.

- Trade policies must support integration of raw materials produced in Romania into short supply chains in the agri-food value chain.
- Extending statistical database from official sources to provide the information necessary for research studies to substantiate the strategy of the Romanian food industry with a view to developing a sustainable agri-food system.

REFERENCES

- Albu, L. L. - coord. (2012). *Creșterea contribuției comerțului exterior la realizarea convergenței reale*. Ed. Economică, București.
- Andrei, J. V., Popescu, G. H., Nica, E. & Chivu, L. (2020). The impact of agricultural performance on foreign trade concentration and competitiveness: empirical evidence from Romanian agriculture. *Journal of Business Economics and Management*, 21(2), 317-343.
- Chivu, L., Moagăr-Poladian, S., Franc V.-I., Pop, N., Albu, L. L. - coord. (2019). *Convergența economică și monetară a României cu Uniunea Europeană - Un demers necesar - etapa I, 2018*. Ed. CIDE București.
- Gardiner, B., Vu, A. and Martin, R. (2020). *Sectoral Analysis and Assessment of Geographical Concentration of EU Industries*. Publications Office of the European Union, Luxembourg.
- Iancu, A. - coord. (2020). *Noi exigențe privind aderarea și postaderarea la zona euro*. Studii Economice, INCE-CIDE, București.
- Isărescu, M. (2015). Convergența nominală versus convergența reală. Conferința, CE "Romania's Path towards Euro", 20 aprilie, București, bnro.ro/.
- Rusali, M.-A. (2021). *Analiza structurală a sectoarelor alimentare în contextul UE și evaluări asupra convergenței privind integrarea în comerțul exterior*. Tema 6.5.16, INCE - Academia Română (mimeo).

Table 4. Relative dispersion of export unit price, by food industry sector, in Romania and EU

Year	2017		2018		2019	
Specification/Indicator	Deviation against average	EUR/kg	Deviation against average	EUR/kg	Deviation against average	EUR/kg
– MEAT PRODUCTS						
Romania	-0.1	2.09	-0.01	2.11	-0.1	2.11
EU-28, Average	0.0	2.16	0.0	2.12	0.0	2.22
- Dispersion		3.03		1.02		1.55
– PRODUCTS OF FISH						
Romania	1.1	4.78	1.2	4.93	1.4	5.33
EU-28	0.0	3.71	0.0	3.69	0.0	3.95
- Dispersion		3.01		2.71		3.58
– FRUIT AND VEGETABLE PREPARATIONS						
Romania	0.7	2.24	0.3	1.81	0.6	2.09
EU-28, Average	0.0	1.50	0.0	1.46	0.0	1.44
- Dispersion		1.77		1.66		1.18
– OILS AND FATS						
Romania	-0.4	0.38	-0.4	0.36	-0.3	0.38
EU-28, Average	0.0	0.81	0.0	0.76	0.0	0.72
- Dispersion		0.52		0.46		0.51
– DAIRY PRODUCTS						
Romania	-0.8	1.02	-0.7	1.10	-0.6	1.29
EU-28, Average	0.0	1.85	0.0	1.85	0.0	1.90
- Dispersion		1.20		1.22		1.32
– MILLING PRODUCTS						
Romania	-0.2	0.49	0.0	0.62	-0.1	0.58
EU-28, Average	0.0	0.64	0.0	0.66	0.0	0.69
- Dispersion		-0.28		-0.31		-0.33
– BAKERY PRODUCTS						
Romania	-0.2	1.98	-0.1	2.12	0.0	2.24
EU-28, Average	0.0	2.17	0.0	2.20	0.0	2.21
- Dispersion		0.49		0.47		0.45
– SUGAR, COCOA AND OTHER PRODUCTS						
Romania	-1.0	1.12	-0.6	1.37	-0.4	1.76
EU-28, Average	0.0	2.14	0.0	1.97	0.0	2.19
- Dispersion		0.80		0.79		0.81
– FOOD FOR ANIMAL FEED						
Romania	2.3	3.82	2.0	3.44	1.4	2.96
EU-28, Average	0.0	1.48	0.0	1.48	0.0	1.55
- Dispersion		0.96		1.05		1.08

Source: Author's calculation and processing of data from Eurostat.