

COMPETITIVENESS OF FOREIGN TRADE IN CEREALS AT COUNTY LEVEL (NUTS 3) IN ROMANIA

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ABSTRACT

In this paper we wanted to determine the export and cereal value potential for Romania at the level of the 41 counties together with the Municipality of Bucharest. For this purpose, data from national databases, namely the National Institute of Statistics, were used for the cereals product group, analysing exports and imports, and also calculating the trade balance. These data will be plotted both graphically and to determine the trade balance values, i.e. to determine the surplus or deficit for each county. In the end, both counties with surpluses will be determined, but especially potential counties with grain trade deficits, given certain agriculturally unproductive areas.

KEYWORDS: *cereals, county level, foreign trade, NUTS 3, Romania.*

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1. INTRODUCTION

Cereal production is a particularly important component of the Romanian agricultural sector and is a traditional activity for Romanian farmers. Cereals are the most widely grown crop in agriculture, being used both for human and animal feed and as a raw material in industry. (Dracea, 2020; Cristu et al., 2016)

Globally, grain trading is dynamic and accounts for more than 10% of world trade in agricultural products. Among the world's biggest cereal consumers are the European Union, Egypt, Iran, Mexico and Brazil. (Gimbășanu & Tudor, 2019)

Europe produces about 20% of the world's cereal production and is a net exporter of approx. 15% of this production. Romania ranks among the top EU countries in terms of agricultural potential. The cereals market is an important part of the Romanian agri-food sector, which is constantly developing, especially after Romania's accession to the European Union. Cereal production is essential primarily to increase available food resources and improve nutrition. Romania is part of the Black Sea Region, it is also a member of the European Union, representing two major grain players in the world, given this context it can be appreciated that Romania is one of the largest grain producers in Europe. Cereals are the main arable crop, being grown on 67.8% of Romania's arable land, due to tradition on the one hand and favourable fertile soil conditions in the southern, south-western and south-eastern parts of the country on the other. (Burgehelea et al., 2014; Voicilaș, 2020; Soare et al., 2020).

The main cereal crop grown in Romania is maize, which accounts for more than half of national cereal production. Of the remainder, about 40% is accounted for by wheat and barley, and the last part includes cereals grown in smaller quantities, such as oats, rye and rice. (Dracea, 2020; Nastase, 2011)

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Currently, the foreign trade of cereals in Romania consists mainly in exporting raw materials and importing finished products, thus practicing an uncompetitive and unproductive export, selling either raw products or products with a rudimentary level of processing (Pătărlăgeanu et al., 2020; Constantin, 2016).

Although Romania ranks first among the 27 Member States in terms of cereal production, and given the fact that consumption is constantly at a much lower level than production capacity, this product category, namely cereals, is the main category for which Romania records the highest exports, but the research question that arises from this situation is whether the trade balance for cereals is excellent in each of Romania's counties. The hypothesis of the research on the previous question is based on the fact that not all regions of Romania have soil and climatic conditions for growing cereals, so it is considered that cereal production in these areas will be low, thus recording a deficit in these poor agricultural areas.

2. MATERIAL AND METHOD

The paper analyses the evolution of Romania's cereals trade flows in value terms. For this purpose, the dynamics of cereal exports and imports at national and county level for the period 2011-2021 were analysed, with data provided by the National Institute of Statistics.

The research methods used in conducting the research were: systematic and comparative analysis and complex approach to the topic through the study of previous research. The statistical research process cost in going through the following stages: data collection and recording, data processing, analysis and interpretation of the results.

3. RESULTS AND DISCUSSIONS

In order to determine Romania's potential for the production and exploitation on the cereals market, an analysis of exports, imports and the trade balance was carried out at national and county level for the second section of the Combined Nomenclature, i.e.: 10. Cereals.

3.1 Export

Romania's total cereal exports ranged from €1.095 billion in 2011 to €3.626 billion in 2021. The average annual value of this indicator over the period 2011-2021 was €2.095 billion.

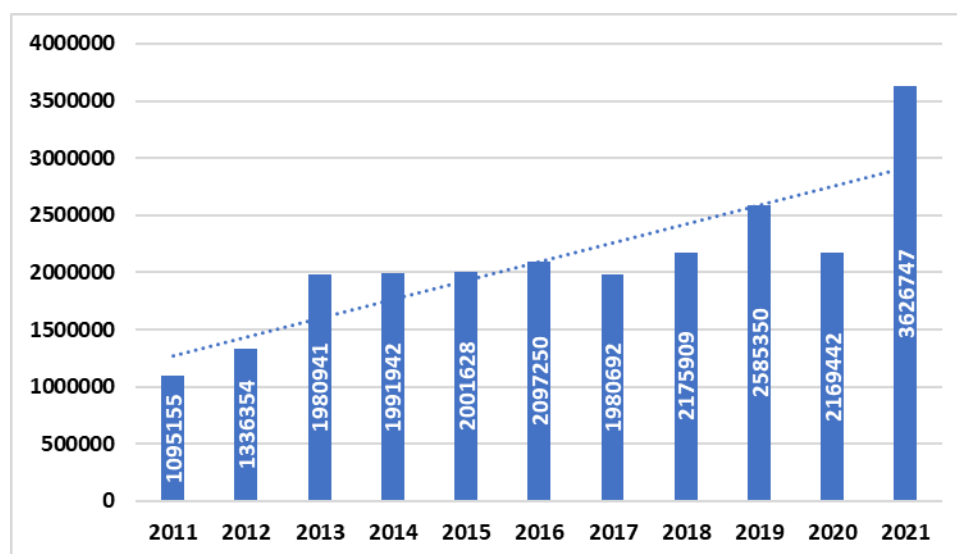


Figure 1. Dynamics of total cereals exports, 2011-2021 (thousands euros)

Source: adapted from NIS data

As can be seen from the previous figure, the dynamics of total exports is increasing, given Romania's very high production potential, competing with other EU Member States for the first place in terms of production. Although the annual average of exports was previously established, during this period there is a standard deviation from this average of 650 million euro, which results in a variation of $\pm 31\%$. Returning to the trend, the graph shows an upward trend, which is also validated by the average annual growth rate of only 12.7%.

Analyzing by counties, according to the statistics, the county with the highest export was Bucharest, in 2021, with a value of cereal export of 2.38 billion euros. In the analyzed period, Constanta County was the second county with the highest value of cereal export. At the opposite pole, according to cereal exports, is Mehedinți county with values ranging from 16 to 91 thousand euro annually.

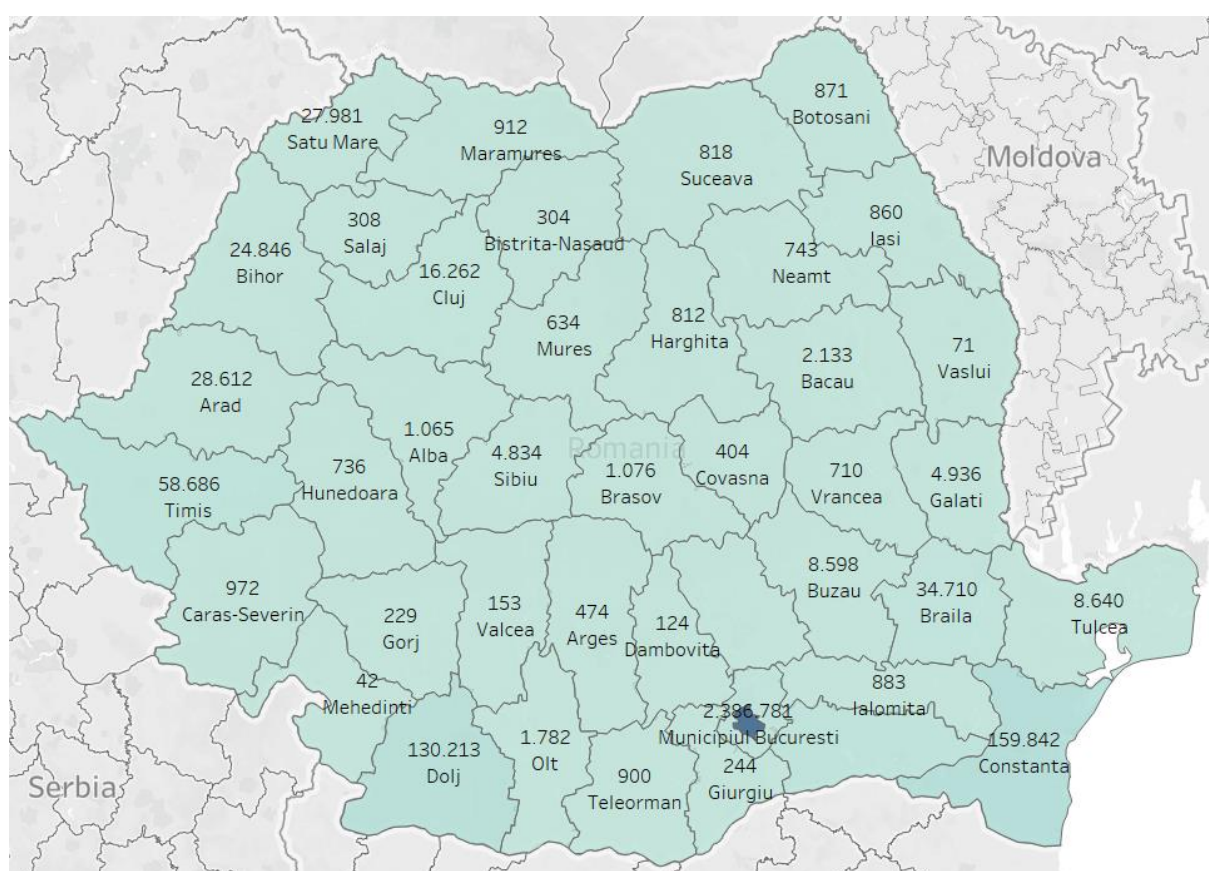


Figure 2. Value of cereal exports in 2021 (thousand euros)

Source: Adaptation using Tableau, based on NIS data

In 2021, as mentioned above, the first county, according to the value of grain exports was Mun. Bucharest with about 2.38 billion euro, followed by Constanța (159,8 million euro), Dolj (130,2 million euro), Călărași (60.1 million euro) and Timiș (58.68 million euro).

Gorj (229 thousand euro), Vâlcea (153 thousand euro), Dâmbovița (124 thousand euro), Vaslui (71 thousand euro) and Mehedinți (42 thousand euro) were in the last five places.



Figure 3. Main counties by value of cereal exports in 2021 (thousands euros)
 Source: Adaptation using Tableau, based on NIS data

In 2021, as can be seen, the largest share was held by Mun. Bucharest, with a contribution to total grain exports of 65.8%, followed by Constanța (4.4%), Dolj (3.6%), Călărași (1.7%) and Timiș with (1.6%).

3.2 Import

Romania's total cereal imports ranged from €297.26 million in 2014 to around €703.18 million in 2021. The average annual value of this indicator over the period 2011-2021 was €454.1 million.

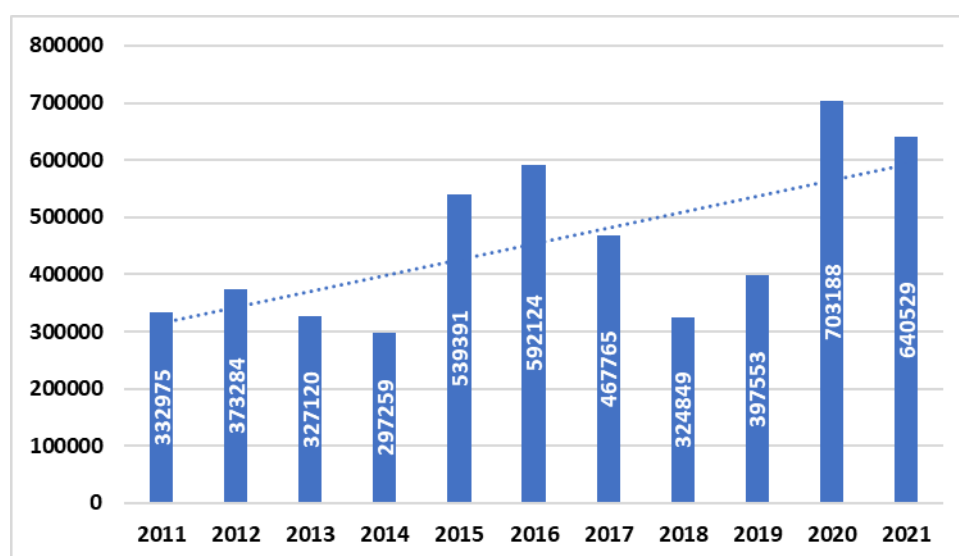


Figure 4. Dynamics of total cereal imports, 2011-2021 (€ thousand)
 Source: adapted from NIS data

As can be seen from the figure above, the dynamics of total imports are increasing, depending on the needs and stocks created. Compared to the previously established average, i.e. the annual average of imports, there is a standard deviation from this average of 143.2 million euro during the period under review, which results in a variation of $\pm 31.5\%$. Returning to the trend, the graph shows a strictly upward trend in imports, which is also validated by the average annual growth rate of 6.76%.

Analyzing by counties, according to the data in the nomenclature, the county that recorded the highest imports was Bucharest in 2011, importing 121.3 million euros, but then, in the last year, it reached an import value of 512.8 million euros, with an increase of 4.22 times. At the opposite pole, in terms of meat imports, Caras-Severin county ranked last, these being between 19 and 323 thousand euros annually.

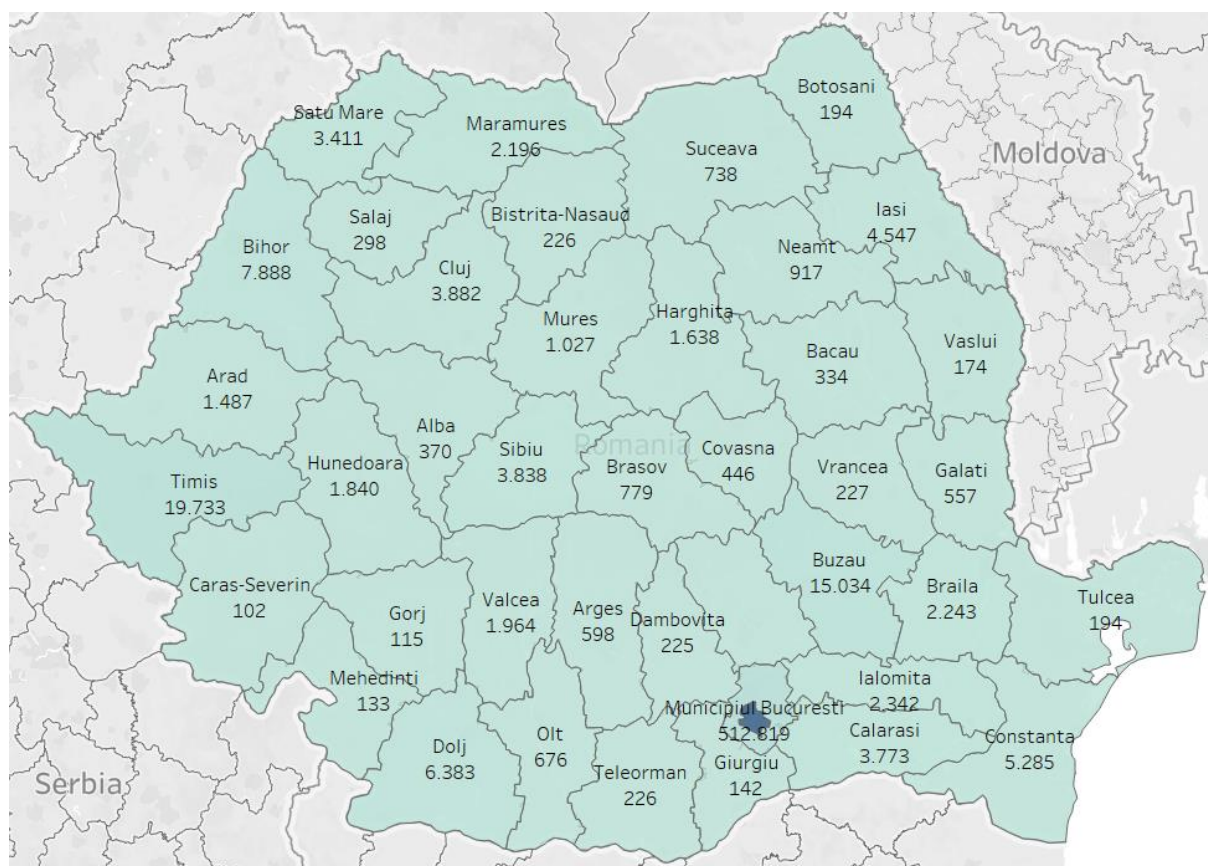


Figure 5. Value of cereal imports in 2021 (thousands of euros)

Source: Adaptation using Tableau, based on NIS data

In 2021, as mentioned above, the first county, according to the value of cereal imports, was Bucharest with about 512.8 million euros, followed by Ilfov (22.1 million euros), Timis (19.7 million euros), Buzau (15 million euros) and Bihor (7.8 million euros).

In the last five places were the counties: Vaslui (174 thousand euro), Giurgiu (142 thousand euro), Mehedinți (133 thousand euro), Gorj (115 thousand euro) and Caras-Severin (102 thousand euro).



Figure 6. Main counties by value of cereal imports in 2021 (thousands of euros)

Source: Adaptation using Tableau, based on NSI data

In 2021, as can be seen, the largest share was held by the Municipality of Bucharest, with a contribution to total cereal imports of 80.1%, followed by Ilfov County (3.5%), Timis (3.1%), Buzau (2.3%) and Bihor (1.2%).

3.3 Trade balance

In order to identify the counties whose potential can be exploited; it is necessary to determine the trade balance for each county during the period studied. Thus, by making the difference between the value of exports and imports, the value of the trade balance for the Cereals category is determined.

Table 1. Cereals trade balance, 2011-2021 (thousands of euros)

Region	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Alba	-37	97	830	418	666	472	1062	-178	1658	808	695
Arad	17557	43995	18456	20006	15078	11862	17852	20962	18252	7521	27125
Arges	-17	104	439	164	-73	899	926	-296	265	52	-124
Bacau	3454	63	185	-635	-1302	1494	777	8857	5762	2052	1799
Bihor	-9281	1472	1459	2445	-586	-3838	908	14473	9532	3240	16958
Bistrita-Nasaud	-655	39	28	149	161	89	66	-3	170	102	78
Botosani	114	57	-142	358	192	119	282	142	284	438	677
Brasov	106	268	1056	352	1325	312	733	-89	564	421	297
Braila	8907	4865	6484	7090	1546	244	-1206	9073	18569	22842	32467
Buzau	47250	36818	68625	61092	30409	22728	16530	684	-275	-8894	-6436
Caras-Severin	-5	420	4848	649	1160	333	372	1582	893	75	870
Calarasi	12014	4	73093	107255	97654	61005	89641	61791	63854	45917	25852
Cluj	-933	321	1222	276	864	1079	436	3275	12009	1925	12380

Constanta	53322	12087 2	274064	282244	229698	228387	251755	315282	297178	149694	154557
Covasna	-278	-313	353	326	196	131	78	-8	84	27	-42
Dambovita	-3	385	79	85	51	-64	-56	0	60	-87	-101
Dolj	3490	10687	53020	62438	87326	137037	91153	86224	60860	58396	123830
Galati	9694	9393	22166	20071	11654	11805	38051	18640	37191	7452	4379
Giurgiu	1078	104	128	-40	28	-62	78	139	96	61	102
Gorj	-27	76	176	100	103	154	87	9	58	55	114
Harghita	980	-294	105	-312	-182	-330	-447	-1839	-313	-896	-826
Hunedoara	927	-1622	-1668	-1520	-1629	-1606	-1603	-2040	-1854	-2214	-1104
Ialomita	289	370	4240	8727	6117	754	5177	2010	1793	463	-1459
Iasi	120	-971	1697	-2119	-7045	-5809	-6674	-4224	-2772	-709	-3687
Ilfov	46638	10513 4	131731	132864	85758	108226	68163	54288	25404	-8475	8633
Maramures	9	269	1096	191	536	300	-1194	-1960	-1310	-1642	-1284
Mehedinti	-25	-6	7	-33	29	12	-29	-2	2	-27	-91
Mures	-218	-96	304	-159	-210	-927	-570	-427	1229	-754	-393
Neamt	1244	8269	584	22	302	698	-222	-1462	-583	-283	-174
Olt	-261	-19	511	1	35	295	48	9	535	375	1106
Prahova	-577	383	987	326	345	628	4	-184	-75	-97	-705
Satu Mare	12976	-5977	-1994	5412	-2946	-5542	2762	14130	10785	378	24570
Salaj	-6138	-145	-1120	173	555	334	2410	2249	297	4	10
Sibiu	-1493	-800	6	589	4100	7790	9738	-1203	3083	2876	996
Suceava	-330	34	317	-16	129	-157	38	11	523	158	80
Teleorman	-2480	212	1581	-119	252	114	495	419	195	1125	674
Timis	32601	34982	31008	31719	21034	18320	27341	46700	47474	17865	38953
Tulcea	17032	22679	16815	22051	22390	34403	37456	30929	18682	13282	8446
Vaslui	-1440	-833	74	15	-526	-578	-58	-83	9	-28	-103
Valcea	-2370	-1804	-1192	-1242	-1314	-708	-719	-562	-433	-947	-1811
Vrancea	-1	74	142	156	-461	-1619	-428	237	216	63	483
Bucharest	39553 4	44347 1	820017	860186	797750	756043	830599	100127 2	133942 2	870795	187396 2
Total	76218 0	96307 0	165382 1	169468 3	146223 7	150512 6	151292 7	185106 0	218779 7	146625 4	298621 8

Source: calculations based on NSI data

As can be seen from Table 1, the cereals trade balance shows a surplus in each year analysed, ranging from €762.1 million in 2011 to €2.986 billion in 2021. The average annual value of this indicator over the period 2011-2021 was +1.64 billion euro.

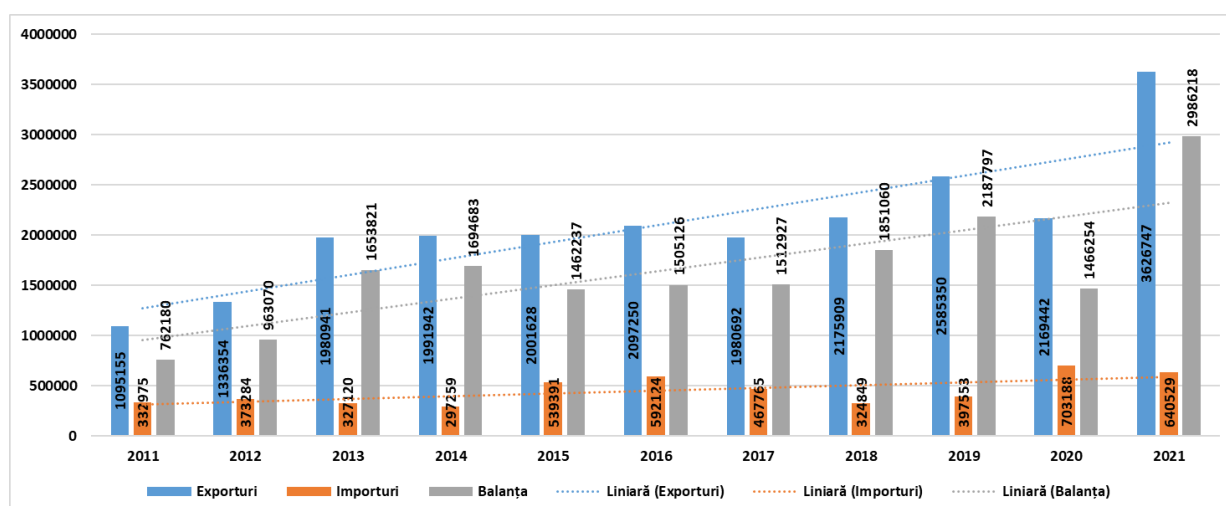


Figure 7. Romania's trade balance for cereals (thousands of euros)

Source: adapted from NIS data

As previously established, the value of exports has shown an upward trend, as well as the dynamics of the value of imports, but at a much lower level and at a slower pace, thus a trade balance surplus can be established from the outset. Analysing the annual growth rates, for exports there is an annual rate of 12.72% and for imports a rate of 6.76%, but the level of imports being much lower than that of exports, thus, the average value of exports being about 4.6 times higher than the average of imports, one can observe an increasingly surplus trade balance.

While in 2011 the balance of payments was +€762.1 million, last year it was about 3.91 times higher, reaching a surplus of €2.986 billion, an average annual rate of 14.6%.

Analysing by counties, according to Table 3, it can be seen that there are counties where there is a trade balance deficit, existing in 15 of the 42 counties analysed for at least one time. As for the counties with the largest deficit, the situation is surprising to say the least, given that in 2021 the largest deficit for cereals per county is recorded in Buzău, of 6.43 million euros, but in this county the balance was in surplus until 2018. Iasi county is still in second last place, with the second highest deficit of 3.68 million euro, being in deficit most of the time, and Valcea county has the third highest deficit for cereals, being in this situation each time, with 1.811 million euro. At the other end of the scale, the Municipality of Bucharest ranked first, recording the largest surplus in each year of the eleven analysed, this surplus ranging from €395.5 million (in 2011) to €1.873 billion (in 2021).

It should also be noted that there are counties with a tradition for this product, which recorded positive trade balance values throughout the period analyzed, or in most of the years analyzed, namely: Constanta, Dolj, Calarasi, Timis, Arad with a surplus every year.

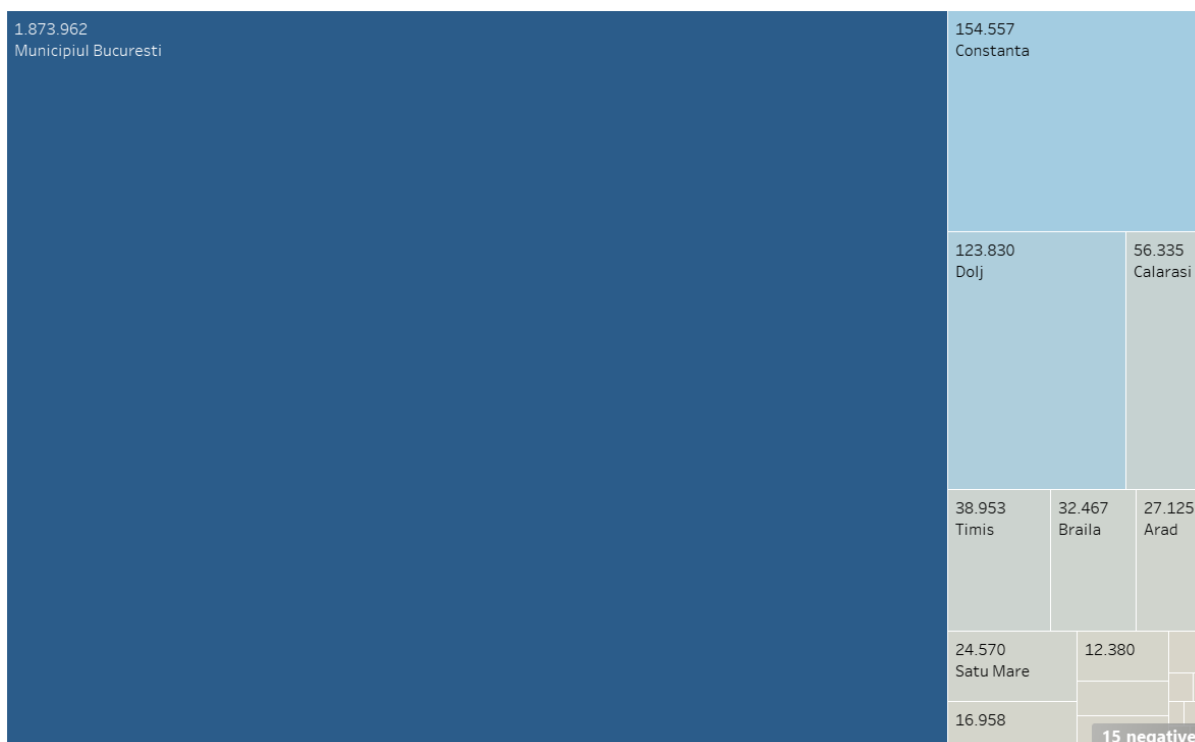


Figure 8. Main counties with trade balance surplus in 2021 (thousands of euros)

Source: Adaptation using Tableau, based on NIS data

In 2021, there were 27 counties that recorded a surplus in the trade balance for cereals, among which we mention: Mun. Bucharest (1.874 billion euros), Constanța (154.6 million euros), Dolj (123.8 million euros), Călărași (56.335 million euros), Timiș (38.953 million euros), Brăila (32.467 million euros), Arad (27.125 million euros), with 15 counties recording a deficit.

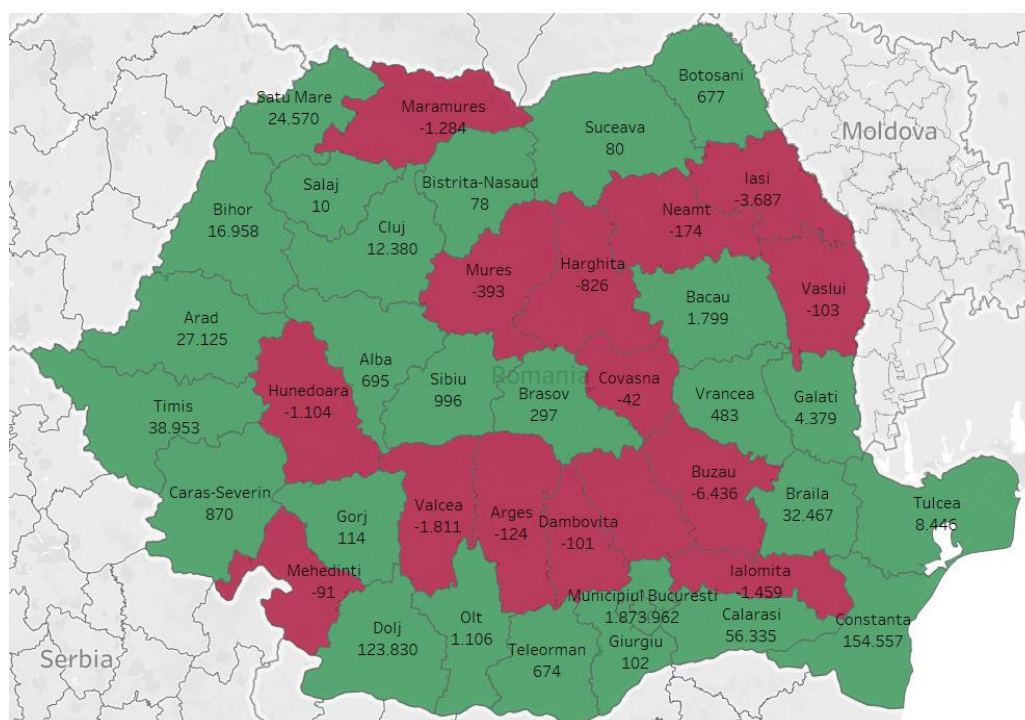


Figure 9. Territorial distribution of counties with cereals trade balance surplus in 2021

Source: Adaptation using Tableau, based on NIS data

As can be seen, the 27 counties with a surplus in the balance of trade in cereals are found in the eight development regions, respectively: South-East region (with Constanța, Brăila, Tulcea, Galați and Vrancea counties), North-West region (with Satu Mare, Bihor, Cluj, Bistrița-Năsăud and Sălaj counties), North-East region (with Bacău, Botoșani and Suceava counties), Centru region (with Sibiu counties, Alba, Brașov), the South region (with Călărași, Teleorman, Giurgiu counties), the South-West Oltenia region (with Dolj, Olt, Gorj counties), the West region (with Timiș, Arad, Caraș-Severin counties) and the Bucharest-Ilfov region with its two counties.

However, in order to create an overall picture, it is considered appropriate to rank the counties according to the average trade balance surplus for the whole period analysed.

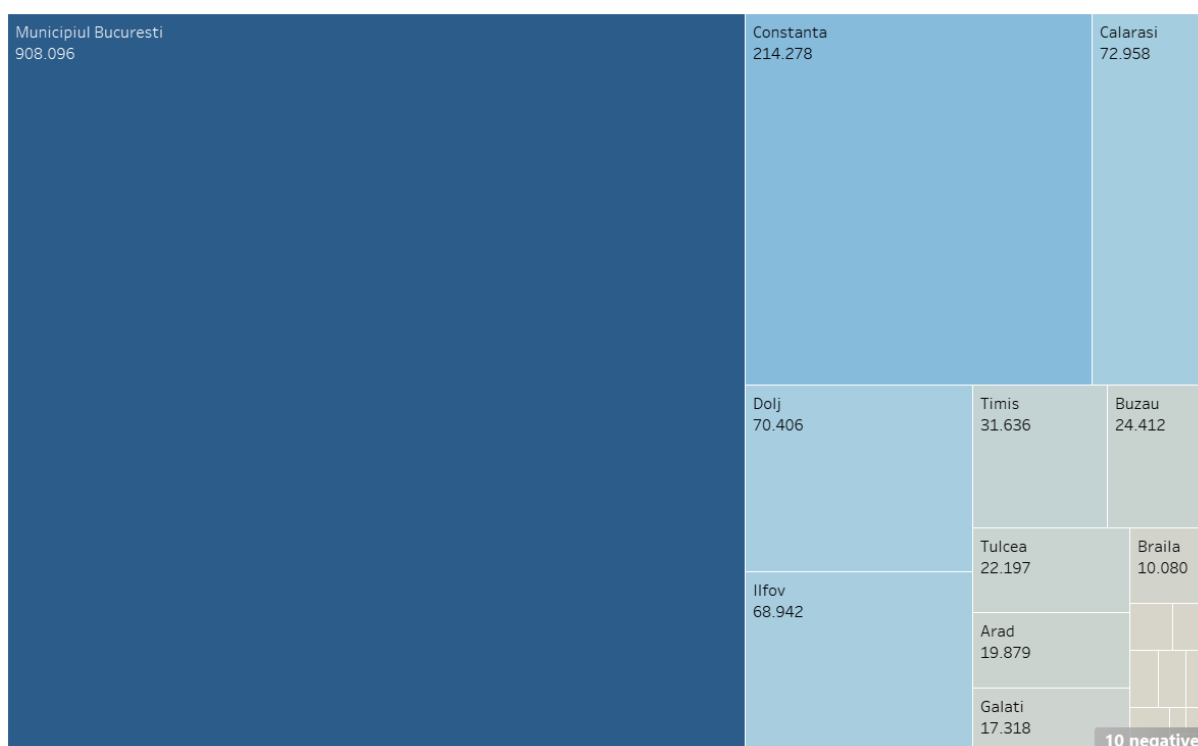


Figure 10. Main counties by average cereals trade balance surplus, 2011-2021 (thousand euros)

Source: Adaptation using Tableau, based on NSI data

On average, in the period 2011-2021, there were 32 counties that recorded a surplus in the trade balance for cereals, among which we mention: Mun. Bucharest (908 million euros), Constanța (214.3 million euros), Călărași (72.96 million euros), Dolj (70.4 million euros), Ilfov (68.9 million euros), Timiș (31.6 million euros), Buzău (24.4 million euros), Tulcea (22.2 million euros), Arad (19.88 million euros), Galați (17.3 million euros) and Brăila (10 million euros), with the remaining 10 counties recording a deficit.

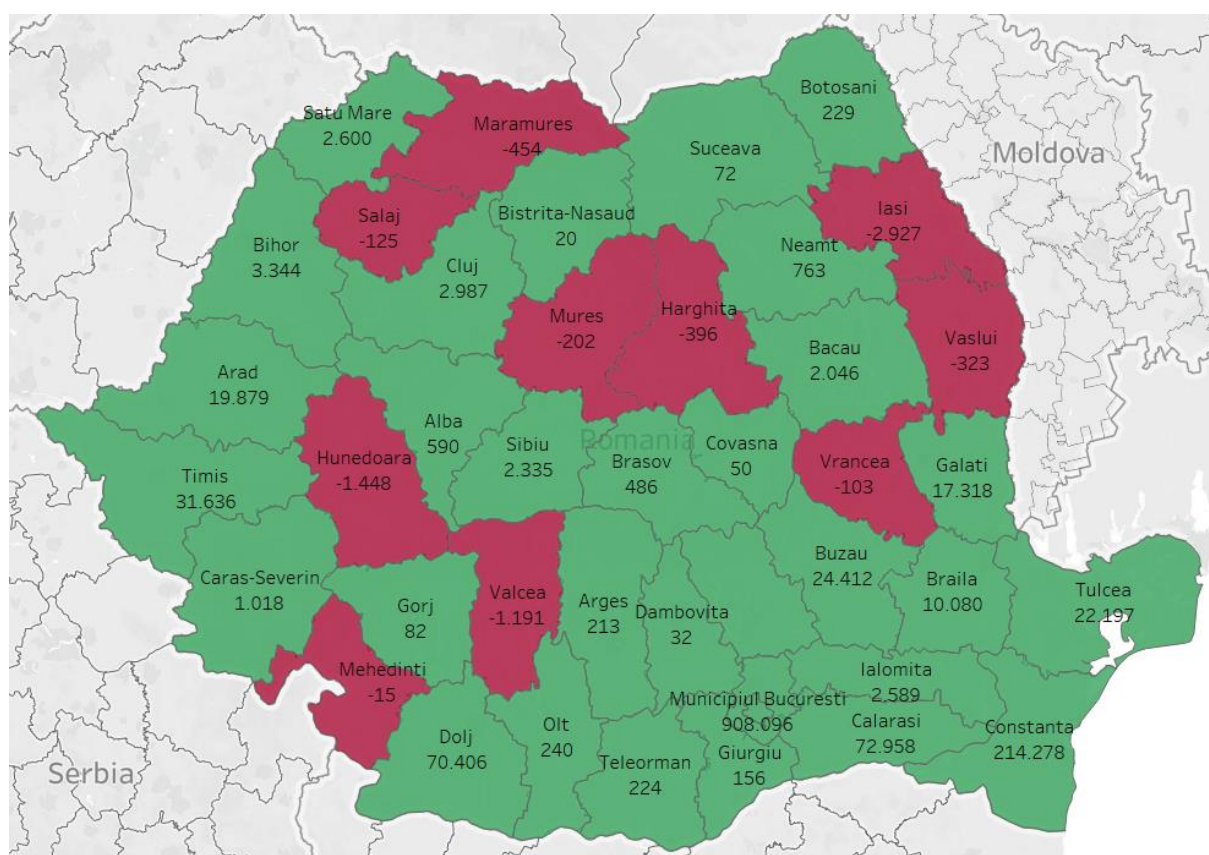


Figure 11. Territorial distribution of counties according to the average trade balance result for cereals in the period 2011-2021 (thousands of euros)

Source: Adaptation using Tableau, based on NIS data

As can be seen, the 32 counties that record a surplus in the trade balance for cereals trade are found in all eight development regions, while a deficit is recorded in only 10 counties in Romania: Mehedinți (-14 thousand euro), Vrancea (-103 thousand euro), Sălaj (-124.6 thousand euro), Mureș (-202 thousand euro), Vaslui (-322.8 thousand euro), Harghita (-395.8 thousand euro), Maramureș (-453.5 thousand euro), Vâlcea (-1.19 mil. euro), Hunedoara (-1,45 mil. euro) and Iași with - 2,93 mil. euro.

3. CONCLUSIONS

The aim of this paper was to determine the level of exports and imports of cereal products from Romania at county level (NUTS 3) in order to identify the potential of this country.

The first part analysed data on cereal exports over the period 2011-2021, showing an average increase in exports, especially in the last year, reaching €3.6 billion, with annual growth over this period of more than 12% per year. When the value of exports was broken down across Romania's 42 counties, there were quite large differences between counties, as is only natural given the zoning of crops and their growth potential in some areas and the lack of it in others. Of all the counties, Romania's capital has the highest export value for cereals, which is greatly contradicted by the lack of agricultural areas or their very small size. There is a possibility that the head office of the farms that grow and export cereals is located in the municipality, while the actual activity is carried out in another area, and another explanation for this phenomenon may be the intermediaries, who are based in Bucharest, and only intermediate the quantities of cereals between farmers and export companies.

Similarly analysing the value of cereal imports, although Romania is considered a net producer of cereals, imports during the period under review have increased significantly, but given that reference is made to the value of imports, it can be assumed that either the quantity imported has increased or the price of cereals has increased, but both situations can be fulfilled. The value of cereal imports recorded in the last year was just over €640 million and the average annual increase over the period was almost 7% per year. Similar to the export situation, the Municipality of Bucharest recorded the highest import value, for the same reasons mentioned above, but now, given that this county records the highest trade, it can be appreciated that there are intermediary firms with the help of which this trade is carried out.

In the last part of the paper, the trade balance with cereals was also determined, at the Romanian level, it was in surplus throughout the period analyzed, which implies that exports exceeded imports, on average this ratio was 4.6 to 1.

Given the growth rate of exports, higher than that of imports, and the level of exports which was on average 4 times higher than imports, there is an upward trend in the trade balance, i.e. an increasing surplus.

However, at county level there are areas of Romania, especially in the mountainous area, where there is a deficit in the balance of trade for that area, the largest deficit being in Buzău county, in the last year, of about 6.5 million euros. Performing a similar analysis, i.e. the determination of the balance of trade balance with cereals, at county level, but on average, in the period analyzed, 10 counties were identified for which there were deficits, the largest being in Iași, of almost 3 million euros.

Following these analyses it was possible to determine the level of Romania's and the counties' foreign trade in cereals during the period analysed and to determine the counties with a real potential for this trade.

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