

COMPARATIVE ANALYSIS OF AGRICULTURAL TRADE BALANCE IN ROMANIA AND UZBEKISTAN BETWEEN 2015 AND 2020

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Abstract: *The aim of the study is to analyze available data from the 2015 to 2020, on agricultural trade balances of Romania and Uzbekistan, specifically for agricultural goods, to determine if the trade balance of the aforementioned countries is positive (exports exceed imports), negative (exports are lower than imports) or balanced (exports and imports are equal). The main conclusions refer to the fact that neither Romania nor Uzbekistan are able to cover the demand of agricultural goods and food products from domestic production. Even if each country has some categories of agricultural goods where exports exceed imports, the trade balance of the agricultural sector is following a negative trend.*

Key words: *trade balance, import, export, GDP, agricultural goods*

INTRODUCTION

The trade balance is an economic-statistical tool, systematically registering and comparing the total value, or by groups of goods, of a country's imports and exports. Using the trade balance, countries can follow the way they participate in international trade, capitalizing the results of national activity on the foreign market [1,4,11].

The authors of the present paper focus their attention towards the agricultural trade balance of Romania and Uzbekistan, between the years 2015 and 2020. The agricultural trade balance is strongly correlated with the capacity of a nation to ensure the coverage of food consumption from its own production, shortly the ability or inability of a country to be self-sufficient in terms of food production [5,8]. Furthermore, self sufficiency is a key element in the context of acquiring food security within national borders, as it determines the capacity of a country to meet the food requirements of its population, from domestic production.

Given the current era of globalization, self-sufficiency is no longer a goal for nations, as it can sometimes degenerate in isolation and lack of engagement in activities related to international trade. Today, most countries, regardless of the domestic agricultural production levels, engage in international transaction of foods, as it can be more profitable to import certain goods than to produce them internally. Trading food products, and especially imports, can compensate in the groups of goods where self sufficiency can not be achieved, contributing together to the food security of a country [2,10].

The aim of the present study is to analyze available data from the 2015 to 2020, on agricultural trade balances of Romania and Uzbekistan, specifically for agricultural goods, to determine if the trade balance of the aforementioned countries is positive (exports exceed imports), negative (exports are lower than imports) or balanced (exports and imports are equal).

MATERIALS AND METHODS

In order to assess the situation of Romania and Uzbekistan regarding international trade of agricultural goods between 2015 and 2020, a thorough analysis of data available on National Institute of Statistics of both countries was performed [14,15].

To evaluate the degree of self sufficiency of Romania and Uzbekistan in terms of international trade, we used the coverage rate of imports by exports (Equation 1). This indicator reveals the extent to which the value of imported products is covered by exports of domestic products.

$$\text{Coverage ratio of imports by exports} = \frac{\text{Export}}{\text{Import}} \times 100 \quad (1)$$

Using this indicator we further determine if the trade balance is positive (the value of the indicator is higher than 100%), negative (the value is lower than 100%) or if it is balanced (the volume of exports and imports are equal, in which case the ratio is 100%) [8].

RESEARCH RESULTS

Developing countries, such as Romania and Uzbekistan, often experience a gradual change in consumers' behavior. This change is related to growing living standards, determined by an increase in productivity and income, dietary diversification being one of the most common change in behavior. Usually, dietary diversification means an increase share in daily food intake of foods with higher nutritional value, such as meat and meat products, milk and dairy, fish and fish products, and fresh fruits and vegetables [5,6].

Most often, the domestic production can not meet the new consumption patterns of the population, countries resorting therefore to international trade, more specifically imports, to ensure proper coverage of demand.

Romania

Romania is an East-European country, with a very diversified relief, allowing for exploitation of both vegetable farming and zootechnics. With a total area of 238,397 km², 14.7 million hectares of agricultural land, of which around 10 million hectares are arable land, and a population of 19.29 billion people, Romania has a great potential as a producing country. Nevertheless, this potential is insufficiently exploited, due to poor development and absorption of modern technologies and great fragmentation of agricultural property. 94.6% of the farms in Romania are subsistence farms, with a total production of less than 8000€ per year, their owners often having a second job to ensure the necessary income for the families [3,7].

Between 2015 and 2020, in Romania, the demand was greater than domestic production in all food products, with some exception: live animals, cereals, fat and oils, tobacco and tobacco products. It is not unusual for developing countries, such as Romania, to export raw goods (live animals, cereals) and to import processed food products, mostly because poor development of domestic processing facilities that can add value to raw materials. Lack of entrepreneurial knowledge and initiative among the population is another reason for exporting raw materials and importing processed goods [9,12].

In the last 5 years (2015-2020), the values of export of food products from Romania are presented in Table 1.

The highest values of export are registered in all studied years for cereals, oil seeds and live animals, while the lowest values are registered for products of vegetable origin.

When analyzing the import data, it is observable that some the highest values of imports are registered in meat and edible offal, cereals, animal feed and edible fruits.

Table 1.
Exports of food and agricultural products of Romania between 2015-2020
-in € thousand -

Categories of food and agricultural products	Year					
	2015	2016	2017	2018	2019	2020
ANIMAL PRODUCTS						
Live animals	319,467	373,203	424,290	375,832	437,134	405,622
Meat and edible offal	247,646	238,586	281,216	263,617	238,232	195,178
Fish and crustaceans, molluscs and other aquatic invertebrates	18,224	18,799	18,869	20,923	20,438	20,733
Milk and dairy products; poultry eggs; natural honey; edible products of animal origin	167,055	155,825	189,041	198,844	199,789	198,858
Other products of animal origin, not specified or included elsewhere	29,292	27,555	32,844	36,008	32,474	24,778
VEGETABLE PRODUCTS						
Live plants and floricultural products	3,770	2,821	3,230	2,846	2,445	2,416
Vegetables, plants, roots and tubers, for food	90,255	86,408	139,662	97,062	95,631	93,612
Edible fruits; citrus peels or melons	78,151	52,518	62,433	64,229	60,135	78,351
Coffee, tea, mate and spices	17,399	24,928	26,075	24,045	28,354	29,536
Cereals	2,001,629	2,097,251	1,980,693	2,175,910	2,585,350	2,169,441
Products of the milling industry; malt; starch; inulin; wheat gluten	21,213	26,867	17,451	12,684	16,963	18,685
Oil seeds; miscellaneous seeds and fruits; industrial or medicinal plants; straw and fodder	855,639	1,141,696	1,267,075	1,210,099	1,083,266	955,997
Gums, resins and other vegetable saps and extracts	1,499	1,027	1,057	1,057	1,434	953
Weaving materials and other products of vegetable origin	1,344	2,458	1,417	941	1,363	1,157
FATS AND OILS						
Animal or vegetable fats and oils; products of their dissociation; processed edible fats; animal or vegetable waxes	223,676	194,055	211,078	224,210	224,491	194,979
FOOD PRODUCTS, BEVERAGES, TOBACCO						
Products from meat, fish or crustaceans, molluscs	121,443	137,418	146,147	169,786	182,504	195,264
Sugars and sugar products	62,475	63,602	57,124	47,223	40,611	42,148
Cocoa and cocoa products	57,462	76,587	84,316	83,074	116,348	106,838
Products from cereal, flour, starch, milk; pastry	129,383	154,262	172,458	187,816	217,454	221,890
Products from vegetables, fruits or other parts of plants	48,640	55,071	67,063	66,443	67,603	73,143
Miscellaneous food preparations	129,508	167,302	181,694	172,167	183,287	196,463
Beverages, alcoholic liquids and vinegar	124,394	118,439	133,497	152,036	164,617	156,964
Residues and waste from the food industries; prepared animal feed	224,176	181,296	175,198	220,430	236,578	234,039
Tobacco and processed tobacco substitutes	940,687	769,738	729,706	692,197	947,307	1,375,940
TOTAL EXPORTS	5,914,427	6,167,712	6,403,634	6,499,479	7,183,808	6,992,985

Source: Authors' processing of data based on NIS [14]

Based on the data presented in the previous tables (Table 1 and Table 2), the authors calculated the commercial balance of agricultural trade, for all the five years taken into account, resulting a negative value for all the years.

Table 2.
Imports of food and agricultural products of Romania between 2015-2020
-in € thousand -

Categories of food and agricultural products	Year					
	2015	2016	2017	2018	2019	2020
ANIMAL PRODUCTS						
Live animals	160,176	165,128	179,024	180,031	184,781	183,945
Meat and edible offal	571,893	645,828	760,266	820,597	940,883	910,481
Fish and crustaceans, molluscs and other aquatic invertebrates	151,780	174,145	195,502	207,138	207,505	196,528
Milk and dairy products; poultry eggs; natural honey; edible products of animal origin	322,569	401,736	497,253	501,505	576,786	640,641
Other products of animal origin, not specified or included elsewhere	47,509	53,577	56,373	64,130	69,433	63,367
VEGETABLE PRODUCTS						
Live plants and floricultural products	96,894	115,000	129,113	133,086	153,320	151,242
Vegetables, plants, roots and tubers, for food	274,705	365,038	410,291	424,054	517,166	484,695
Edible fruits; citrus peels or melons	477,055	563,740	638,723	639,208	653,460	704,892
Coffee, tea, mate and spices	210,028	243,095	248,234	241,740	253,425	271,061
Cereals	539,391	592,126	467,768	324,849	397,555	703,190
Products of the milling industry; malt; starch; inulin; wheat gluten	102,851	105,246	102,255	100,989	113,657	112,523
Oil seeds; miscellaneous seeds and fruits; industrial or medicinal plants; straw and fodder	309,194	315,696	368,008	429,077	397,423	461,404
Gums, resins and other vegetable saps and extracts	25,838	27,858	29,646	22,486	28,293	31,254
Weaving materials and other products of vegetable origin	1,325	1,588	1,410	1,125	1,843	1,538
FATS AND OILS						
Animal or vegetable fats and oils; products of their dissociation	183,985	189,371	191,963	172,244	173,687	202,038
FOOD PRODUCTS, BEVERAGES TOBACCO						
Products from meat, fish or crustaceans, molluscs or other aquatic invertebrates	137,713	149,902	189,718	212,313	249,326	272,087
Sugars and sugar products	258,070	280,959	288,299	264,660	302,793	270,064
Cocoa and cocoa products	219,202	267,063	276,622	294,579	350,114	333,604
Products from cereal, flour, starch, milk; pastry	339,934	404,462	452,899	490,206	546,304	566,941
Products from vegetables, fruits or other parts of plants	234,786	279,826	297,732	332,001	374,265	385,015
Miscellaneous food preparations	345,791	407,388	451,984	498,021	547,390	555,812
Beverages, alcoholic liquids and vinegar	273,797	323,234	359,616	396,825	494,455	498,385
Residues and waste from the food industries; prepared animal feed	420,441	394,516	458,486	506,088	532,567	575,988
Tobacco and processed tobacco substitutes	350,056	322,200	371,748	377,697	364,417	355,128
TOTAL IMPORTS	6,054,983	6,788,722	7,422,933	7,634,649	8,430,848	8,931,823

Source: Authors' processing of data based on NIS [14]

Table 3.
Commercial balance of agricultural trade in Romania between 2015-2020
-in € thousand -

Year	2015	2016	2017	2018	2019	2020
Total exports	5,914,427	6,167,712	6,403,634	6,499,479	7,183,808	6,992,985
Total imports	6,054,983	6,788,722	7,422,933	7,634,649	8,430,848	8,931,823
Commercial balance	-140,556	-621,010	-1,019,299	-1,135,170	-1,247,040	-1,938,838

Source: Authors' processing of data based on NIS [14]

The coverage ratio of imports over exports was calculated using the equation aforementioned (Equation 1). The results are presented in Table 4 and Figure 1.

Table 4.
Coverage ratio of Romania's imports over exports

Year	2015	2016	2017	2018	2019	2020
Total exports	5,914,427	6,167,712	6,403,634	6,499,479	7,183,808	6,992,985
Total imports	6,054,983	6,788,722	7,422,933	7,634,649	8,430,848	8,931,823
Coverage rate (%)	97.68	90.85	86.27	85.13	85.21	78.29

Source: Authors' processing of data based on NIS [14]

In a graphic representation, it is easily visible that the coverage ratio of Romania's imports over exports in all the studied years follows a negative trend, with an insignificant increase in 2019. The last year in which the coverage ratio was above the balance point (100%) was 2014, following a descending trend since then.

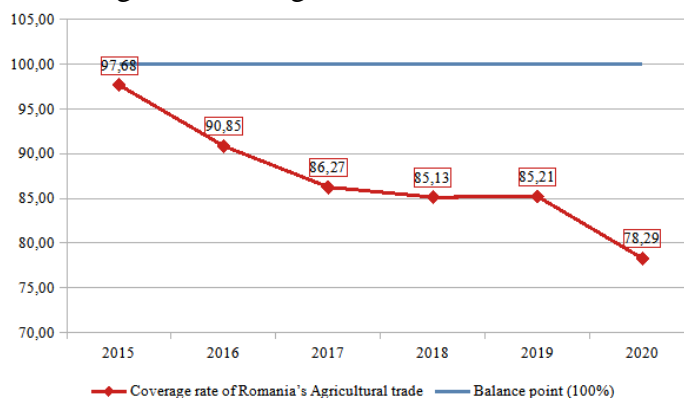


Figure 1. Coverage ratio of Romania's imports over exports

Source: Authors' processing of data based on NIS [14]

Uzbekistan

Uzbekistan is a country in Central Asia, with an area of 447,400 km², only 58.09% of it being agricultural land, and only 9.22% being arable land. The climate of the country is mostly arid, with low vegetation and shrubs. Total population of Uzbekistan is 35,011,180 the greatest share of population (28.9%) being under the age of 15 years old [6,15].

Uzbekistan is one of the world's leading cotton producers. It is known for its orchards and vineyards and is also important for raising Karakul sheep and silkworms. Ample sunlight exposure, mild winters with short duration, fertile irrigated soil, and good pastures also make Uzbekistan suitable for cattle raising, but sheep are still the principal livestock.

The major import sources for Uzbekistan are China, with share of 23.9% of total imports, followed by Russia, with 22.7% of total imports. Uzbekistan is the second largest

exporter of cotton, and the main export countries are Russia, Turkey, China and Kazakhstan.

Table 5.
Exports of food and agricultural products of Uzbekistan between 2015-2020
-in € millions -

Categories of food and agricultural products	Year					
	2015	2016	2017	2018	2019	2020
ANIMAL PRODUCTS						
Live animals	2,292,170	1,494,519	2,045,054	2,307,700	2,056,809	4,693,352
Meat and edible offal	894,146	183,110	877	35,483	190,046	39,351
Fish and crustaceans, molluscs and other aquatic invertebrates	3,967	743,986	1,268,105	565,731	451,313	527,225
Milk and dairy products; poultry eggs; natural honey; edible products of animal origin	996,198	1,793,187	14,881,170	10,209,916	7,765,853	6,869,546
Other products of animal origin, not specified or included elsewhere	3,459,930	4,111,322	4,556,437	5,248,006	5,352,39	10,900,117
VEGETABLE PRODUCTS						
Live plants and floricultural products	2,301,368	3,592,727	1,684,433	4,006,216	42,433,483	56,862,750
Vegetables, plants, roots and tubers, for food	424,863,129	162,697,284	192,949,047	272,728,534	419,121,887	354,889,769
Edible fruits; citrus peels or melons	599,304,745	320,410,207	369,798,618	482,092,685	570,480,690	512,113,592
Coffee, tea, mate and spices	4,629,211	5,734,278	6,126,785	10,177,746	72,907,744	13,102,997
Cereals	37,986,953	35,592,366	46,991,347	18,231,288	23,886,245	13,472,781
Products of the milling industry; malt; starch; inulin; wheat gluten	1,000,587	4,898,408	41,119,663	62,140,065	92,965,096	194,536,209
Oil seeds; miscellaneous seeds and fruits; industrial or medicinal plants; straw and fodder	40,719,024	20,807,785	15,380,148	28,196,921	24,281,339	27,172,057
Gums, resins and other vegetable saps and extracts	14,377,790	19,992,908	20,218,925	20,989,123	29,983,582	31,124,431
Weaving materials and other products of vegetable origin, not specified or included elsewhere	2,326,392	10,244,213	2,196,451	382,983	365,236	276,971
FATS AND OILS						
Animal or vegetable fats and oils; products of their dissociation	424,915	312,597	525,738	1,700,783	14,266,288	27,351,349
FOOD PRODUCTS, BEVERAGES, TOBACCO						
Products from meat, fish or crustaceans, molluscs	217,152	223,349	24,418	11,947	173,819	261,073
Sugars and sugar products	1,069,871	1,838,164	4,816,281	4,249,273	4,233,551	4,961,658
Cocoa and cocoa products	520,663	2,074,343	4,744,738	5,479,219	6,261,465	4,348,010
Products from cereal, flour, starch, milk; pastry	1,596,503	2,017,496	4,366,822	4,323,070	5,642,284	7,230,469
Products from vegetables, fruits or other parts of plants	14,137,992	17,267,031	25,885,449	27,233,983	42,473,047	31,325,921
Miscellaneous food preparations	118,016	140,675	401,013	677,450	1,715,404	2,362,767
Beverages, alcoholic liquids and vinegar	11,025,768	10,002,415	16,190,394	11,746,394	11,393,287	15,650,274
Residues and waste from the food industries; prepared animal feed	2,077,767	2,147,821	3,253,124	4,170,437	12,599,260	22,830,713
Tobacco and processed tobacco substitutes	10,769,054	6,850,278	7,356,884	8,018,475	15,193,576	9,363,234
TOTAL EXPORTS	1,177,113,323	634,947,353	786,781,934	984,923,440	1,406,193,714	1,352,266,628

Source: Authors' processing of data based on NIS [15]

As for food products, the highest value of exports is registered in the vegetable sector, for edible fruits; citrus peels or melons and also vegetables, plants, roots and tubers

for food. In the last 5 years (2015-2020), the values of export of food products from Uzbekistan are presented in Table 5.

The highest values for imports of agricultural and food products are registered for sugar, followed by import of cereals and fats and oils. In the five years studied, the values for imports are presented in Table 6.

Table 6.
Imports of food and agricultural products of Uzbekistan between 2015-2020
-in € millions -

Categories of food and agricultural products	Year					
	2015	2016	2017	2018	2019	2020
ANIMAL PRODUCTS						
Live animals	38,690,847	27,606,458	35,958,107	66,473,995	145,797,643	97,162,947
Meat and edible offal	56,509,471	25,524,929	11,694,245	16,521,899	35,316,266	86,191,352
Fish and crustaceans, molluscs and other aquatic invertebrates	7,196,459	3,492,577	2,963,966	5,185,354	8,405,034	7,206,720
Milk and dairy products; poultry eggs; natural honey; edible products of animal origin	25,850,290	19,284,137	14,836,982	17,569,751	29,009,632	38,169,706
Other products of animal origin	334,713	3,626,006	3,947,280	5,589,050	4,925,298	3,302,039
VEGETABLE PRODUCTS						
Live plants and floricultural products	9,396,501	13,232,850	26,851,612	32,887,991	27,504,594	24,794,034
Vegetables, plants, roots and tubers, for food	14,897,741	7,248,353	37,206,299	41,547,059	26,365,106	42,208,741
Edible fruits; citrus peels or melons	19,491,553	22,905,322	18,651,935	22,426,618	49,551,313	39,171,696
Coffee, tea, mate and spices	50,470,889	62,081,084	45,690,229	45,242,765	45,694,984	42,710,747
Cereals	258,317,503	208,749,850	169,897,089	270,850,241	364,557,202	525,034,059
Products of the milling industry; malt; starch; inulin	217,325,566	146,205,046	102,279,350	117,478,092	99,214,642	103,874,724
Oil seeds; miscellaneous seeds and fruits medicinal plants; straw and fodder	37,144,365	37,423,347	52,236,994	75,456,795	96,039,062	55,960,379
Gums, resins and other vegetable saps and extracts	2,416,342	2,126,572	1,806,301	2,035,948	2,917,089	2,511,849
Weaving materials and other products of vegetable origin, not specified or included elsewhere	50,448	70,806	43,140	44,784	98,379	215,059
FATS AND OILS						
Animal or vegetable fats and oils; products of their dissociation	224,850,216	221,420,507	165,764,021	211,132,083	277,606,878	294,608,343
FOOD PRODUCTS, BEVERAGES, TOBACCO						
Products from meat, fish or crustaceans, molluscs or other aquatic invertebrates	2,744,461	1,478,728	1,723,252	2,106,280	6,740,423	9,319,803
Sugars and sugar products	276,622,233	309,288,402	299,463,890	307,925,851	251,539,604	229,484,515
Cocoa and cocoa products	21,354,440	24,259,983	25,838,115	31,470,186	54,549,202	70,425,400
Products from cereal, flour, starch, milk; pastry	38,623,759	35,446,673	33,442,865	40,282,774	67,717,571	80,681,305
Products from vegetables, fruits or other parts of plants	6,588,179	10,365,453	8,599,522	13,105,324	24,886,590	26,827,391
Miscellaneous food preparations	29,153,786	29,107,570	29,832,792	42,561,930	75,426,671	85,496,349
Beverages, alcoholic liquids and vinegar	9,995,845	11,529,124	8,326,523	3,665,722	15,899,824	18,887,644
Residues and waste from the food industries; prepared animal feed	76,749,719	69,306,320	75,745,962	117,469,413	115,957,412	130,334,626
Tobacco and processed tobacco substitutes	28,714,119	28,784,412	23,070,916	17,733,964	23,295,263	24,997,169
TOTAL IMPORTS	1,453,489,455	1,320,564,520	1,195,871,399	1,506,763,881	1,849,015,694	2,039,576,609

Source: Authors' processing of data based on NIS [15]

Further processing the data from Table 5 and Table 6, regarding exports and imports of Uzbekistan reveals that for the 5 years taken into account, the trade balance is negative, the biggest gap between imports and exports being in 2016 and 2020.

Table 7.
Commercial balance of agricultural trade in Uzbekistan between 2015-2020
-in € millions-

Year	2015	2016	2017	2018	2019	2020
Total exports	1,177,113,323	634,947,353	786,781,934	984,923,440	1,406,193,714	1,352,266,628
Total imports	1,453,489,455	1,320,564,520	1,195,871,399	1,506,763,881	1,849,015,694	2,039,576,609
Commercial balance	-276,376,132	-685,617,167	-409,089,464	-521,840,441	-442,821,979	-687,309,981

Source: Authors' processing of data based on NIS [15]

The coverage ratio of imports over exports, for Uzbekistan, between 2015-2020, was calculated using the equation aforementioned (Equation 1), and the results are presented in Table 8.

Table 8.
Coverage ratio of Uzbekistan's imports over exports

Year	2015	2016	2017	2018	2019	2020
Total exports	1,177,113,323	634,947,353	786,781,934	984,923,440	1,406,193,714	1,352,266,628
Total imports	1,453,489	1,320,564	1,195,871,399	1,506,763,881	1,849,015,694	2,039,576,609
Coverage rate	80.99%	48.08%	65.79%	65.37%	76.05%	66.30%

Source: Authors' processing of data based on NIS [15]

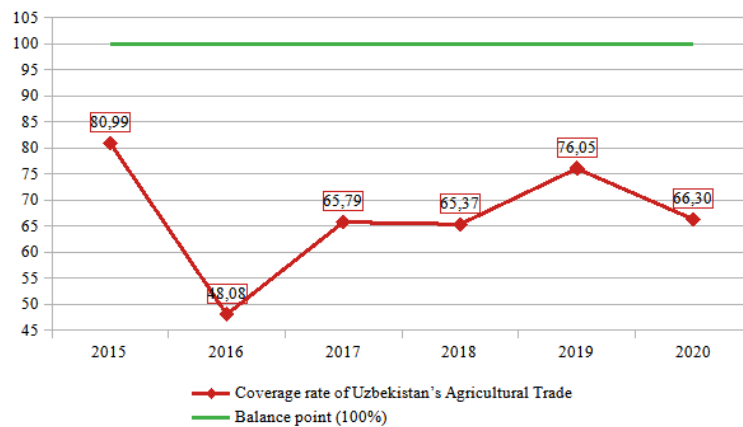


Figure 2. Coverage ratio of Uzbekistan's imports over exports

Source: Authors' processing of data based on NIS [15]

The visual representation of the coverage rate of exports by imports shows a very high degree of fluctuations registered in the years studied.

CONCLUSIONS

The main conclusions refer to the fact that neither Romania nor Uzbekistan are able to cover the demand of agricultural goods and food products from domestic production. Even if each country has some categories of agricultural goods where exports exceed imports, the trade balance of the agricultural sector is following a negative trend. Although Romania checked a supraunitary (>100%) in 2014, the rise couldn't be sustained for the following years.

As for Uzbekistan, although high levels of exports are registered for fruits and vegetables, the total trade balance is still negative for all the years studied. A swift fall of

the coverage rate was registered in 2016, followed by a struggled recovery in the following years.

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