

## Structure of exports and imports of milk and dairy products from Serbia

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**Abstract:** The structure of the milk supply market depends on processing capacities in Serbia, which are more oriented to the production of dairy products pasteurized and sterilized milk and fermented dairy products (yoghurt, cream, sour milk, etc.), while the production of solid dairy products (cheeses, cream, spreads, butter, powdered milk, etc.) is significantly lower. Taking into consideration the current situation in Serbia regarding the primary production, purchase and processing of milk, an overview is given of the foreign trade balance of milk and dairy products and their participation in exports and imports. The analysis of the foreign trade of milk and dairy products for the period 2007–2017 highlights products that are exported and have stable export tendencies, as well as scarce products which are imported and have a markedly negative balance sheet in the observed period. We also analyzed major export-import destinations of Serbia for the trade exchange of milk and dairy products, which primarily refers to the CEFTA countries, the European Union and the Russian Federation.

**Keywords:** milk and dairy products, foreign trade, positive and negative balances.

### Introduction

Serbia produced about 1467 million liters of milk in 2016, of which 820 million liters were purchased, which was about 56% compared to the milk

produced. Compared to 2011, the quantities of purchased milk increased by 7% (Official Statistics of Serbia – SORS database). Increased purchase of milk continued in the following period, but not in favor of pasteurized and sterilized milk, but in favor of increased production of fermented products from cream cheese and other dairy products. In order to achieve better business results, dairies are focused on better utilization of processing capacities, which on average use 60-80%, as well as to on increasing the production of final dairy products at higher processing levels and a higher selling price.

Because of the uneven raw milk market in Serbia, especially in terms of quality, quantity and marked seasonal character (June–December), some dairies are forced to import raw milk to maintain the volume of processing, which in some periods was not cost-effective due to the higher price of imported milk.

Low purchase prices of milk affected farmers, who were not motivated to offer cheap milk to dairies, but processed it at home in their own cottage industry, and reduced their own production as well as the number of dairy cows. On the other hand, dairies had a choice to import the missing milk as a raw material, or to negotiate a higher purchase price with farmers and to provide the quantity and adequate quality of raw milk. Also, the fact to consider is that, regardless of the tendency of liberalization of the milk market in the world and Europe, developed countries have not given up subsidies in this production, which significantly helps them to be competitive in selling and exporting dairy products. Milk producers having large processing capacity in Serbia are mainly oriented to the procurement of milk from a small number of farms which have a high number of cows and can offer adequate quantities of milk and satisfy quality standards (Popović, 2009).

According to the report of the Commission for the Protection of Competition (2013) in Serbia, 14 major dairies process on average more than 80% of the amount of milk purchased, and the remaining 20% is processed by 200 small dairies. The purchased and processed milk market is dominated by larger producers, and the leading IMLEK is owned by the Mid Europe Fund, Dairy Šabac, and Dairy Dukat from Sombor is owned by Lactalis Group. The dairies are the largest purchasers of fresh raw milk and are also the largest producers of final products which have the highest market share.

Considering the large number of small dairies, further restructuring in the milk production sector causes small-scale producers to remain outside organized purchase because they are not able to satisfy hygienic conditions and quality standards and are, therefore, reoriented to craft production of traditional dairy products (different types of cheese, kajmak, peppers in cream etc.) (Popović and Grujić, 2014) (Veljković and Ševarlić 2010).

Based on the sector analysis of the Commission for the Protection of Competition (2012, 2013), the production of milk and dairy products is stable and there is no major oscillation in terms of changing installed processing

capacities which would result in the reorientation of dairies to a different product range although there are some changes.

Milk and milk products account for 3.2–4% on average of total exports and imports from Serbia within the Food Group. In the foreign trade exchange of dairy products in the period 2007–2016, according to the nomenclature SITC code 02-Milk products and bird eggs, Serbia exported on average 80.1 million USD, which was 59.2% more than imports, and achieved a positive balance of 32.7 million USD. Significant export tendencies in dairy products include cheese, which is increasingly being exported to the Russian Federation, which accounts for 42% of the total export of cheese from Serbia (Vlahović *et al.*, 2014). The leading import products in Serbia are butter, whey and powdered milk, which are also raw materials for the confectionery and bakery industries. The import of these products can also be explained by the fact that domestic processing capacities are not adapted for the production of milk powder and butter and that production is not profitable (Veljković *et al.*, 2015).

The market of milk and milk products is also heavily influenced by consumption, which depends on the standard of living and the economic development of the country. The drinking milk market is characterized by low elasticity of demand while the consumption of dairy products depends on the standard of living of consumers and their purchasing power. Annual milk consumption per capita is 90 liters in the world and over 200 liters in Europe: around 350 liters in the leading European countries Finland and Sweden, whereas the average consumption in Serbia is 130 liters per capita, which is less than the European average (Vlahović, 2015).

### **Material and method**

The database of the Foreign Trade Statistics of the Statistical Office of the Republic of Serbia uses the Standard International Trade Classification – SITC. In this economic classification of products participating in trade, the sector 0 Food and live animal includes the subsector Dairy products and birds eggs 02, further classified according to commodity groups for dairy products as: 022 – Milk and cream and milk products other than butter or cheese; 023 – Butter and other fats and oils derived from milk; 024 – Cheese and curd. This International Classification is further classified into products and product groups monitored by the established nomenclature. The foreign trade analysis of milk and dairy products for Serbia included commodity groups 022, 023, and 024. For the survey, the official statistical database of the Statistical Office of Serbia for the period 2007–2017 was used. The data were calculated by the author and the results are shown by tables and graphs. The intensity of changes was quantified by calculating the annual rates of change, and the stability of exports and imports was given through the calculated coefficients of variation. Also, the average

export import balance by SITC4 commodity groups for milk and dairy products is given.

### Results and discussion

Based on the statistics on foreign trade in milk and dairy products, groups of products that Serbia exports with a positive balance and groups of imported products having a negative balance were analyzed. Exports and imports of milk products are given for the period 2007–2017 according to the official data from the Statistical Office of Serbia. For the whole group 022, Serbia had a positive average foreign trade balance of about 18.2 million USD. Group 022 consists of 15 subgroups and the structure analysis of the more exported dairy products was selected in 6 subgroups for the product codes given in Table 1.

Table 1. Foreign trade balance of milk and dairy products that are mainly exported from Serbia

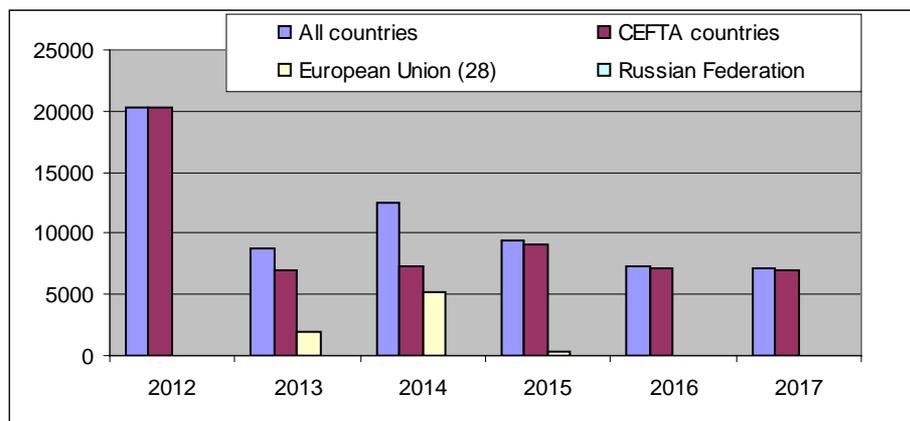
Products SITC4 period 2007–2017	Average in tonnes	Average in 000 USD	CV in %	Annual rate of change %	Average balance	Balance in 2016*
					in 000 USD	
<b>022 - Milk and cream and other milk products than butter or cheese</b>						
Export	43745.55	47015.53	14.28	0.50	18192.12	13572.5
Import	24580.06	28823.41	33.34	9.42		
<b>02233 - Ice-cream and other edible ice, whether or not containing cocoa</b>						
Export	5337.63	16062.45	28.49	8.6	13421.46	14610.4
Import	858.65	2640.99	60.44	18.05		
<b>02212 - Milk and cream (fat 1%-6%)</b>						
Export	24776.83	16937.79	49	-12.56	10038.13	255.1
Import	12655.13	6899.66	44.61	14.66		
<b>022311 - Yogurt, buttermilk, curdled, fermented or acidified milk</b>						
Export	9295.81	7948.94	29.41	8.19	7779.08	8278.4
Import	190.74	169.86	95	169.86		
<b>02232 - Buttermilk, curdled milk and cream, kephir and other</b>						
Export	1561.15	2501.68	28.5	3.64	1951.31	1738.6
Import	414.45	550.37	44.44	9.49		
<b>02211 - Milk of a fat content, by weight, not &gt; 1%</b>						
Export	1074.72	703.02	53.37	-15.23	439.02	-219.8
Import	981.43	264	105.85	77.14		
<b>022314 - Yogurt, flavored containing added fruit, others</b>						
Export	600.09	890.53	51.22	13.4	203.19	1298.8
Import	490.02	687.34	63.51	-22.34		

\*Data are presented on the annual balance sheet for 2016, as the data for 2017 are estimated according to the SORS database

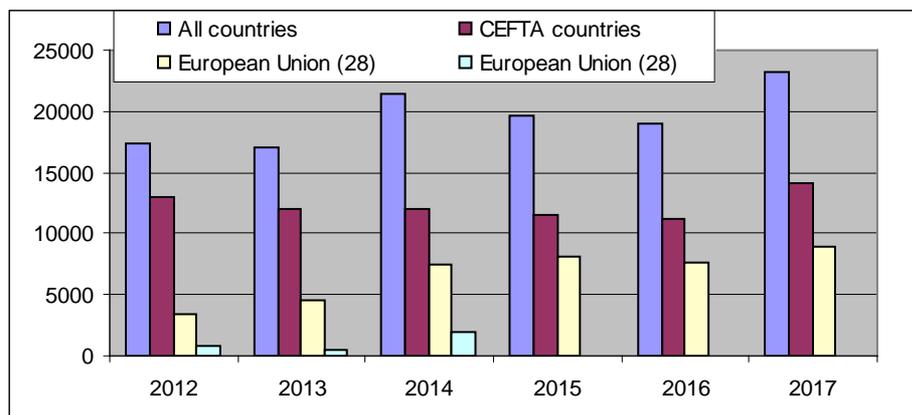
In the export of dairy products, the highest average value was realized by Ice Cream (02233) of 16 million USD with a positive balance of 13 million USD, a positive rate of change and export that was 6 times higher than imports. The more exported milk and cream (1–6% fat) quantities were on average 24.7 thousand tons, i.e. 16.9 million USD with an average balance of 10 million USD. With this product group, exports declined at an annual rate of 12.56, and imports increased at a rate of 14.66. In 2017, the balance had a negative value (-1.5 million USD), which means that these products were increasingly imported in Serbia. Yogurt, both flavored and non-flavored (022311 and 022314), also belongs to dairy products exported from Serbia, with the value of 7.9 million USD and the achieved average balance of 7.7 million USD. A positive average export balance and a positive annual rate were observed for buttermilk sour cream and kefir (02232). Milk with a fat content of up to 1% (02211) was increasingly imported, showing a negative annual rate and a negative export balance in 2016 (Table 1).

For the analysis, data on exports of dairy products from Serbia and main export destinations were obtained from the Statistical Office of Serbia, which since 2012 have followed data from the country group CEFTA and EU, with whom Serbia realized the largest foreign trade exchange. Graphs 1, 2 and 3 show data for Milk and cream of 1–6% fat, Ice creams and yoghurt. Milk and yogurt are mostly exported to CEFTA countries, which belong to the former Yugoslav republics (BiH, Montenegro, Macedonia). Ice creams were mostly exported to CEFTA countries, and partly to EU countries, while smaller quantities were exported to Russia in the period 2013–2014.

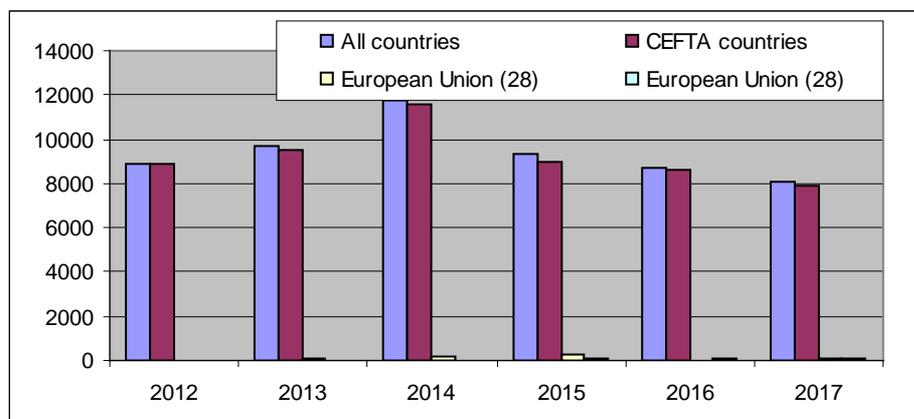
Graphic 1. Export from Serbia, Group 02212 – Milk and cream



Graphic 2. Export from Serbia, Group 02233 Ice-cream



Graphic 3. Export from Serbia, Group 022311 Yogurt



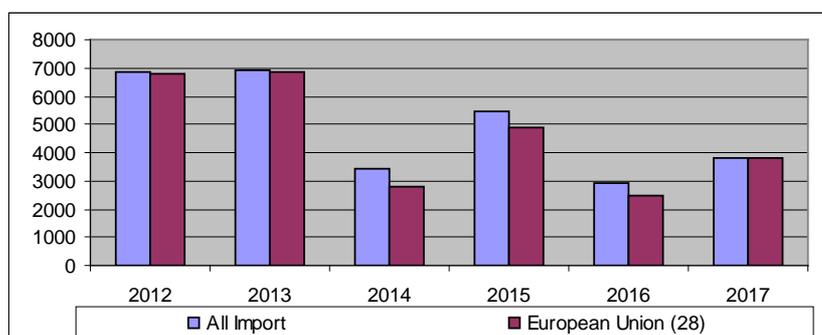
Products within Group 022 Milk and dairy products have an import character because their imports were higher than exports, as shown in Table 2 for groups of products and codes SITC4. Negative average balance sheets and the annual balance for 2016 were determined for all mentioned product groups. Milk in solid form with 1.5% fat (02222) was 8 times more imported than exported and the average balance was negative, amounting to -3.7 million USD. Also, negative average balances were found for Milk and cream in solid form with more than 1.5% fat (02221), with the balance of -3.5 million USD and for Whey and modified whey (02241), with a balance sheet of -3.8 million USD, and imports of these products were up to 20 times higher than exports.

Table 2. Foreign trade balance of milk and dairy products that are mainly imported from Serbia

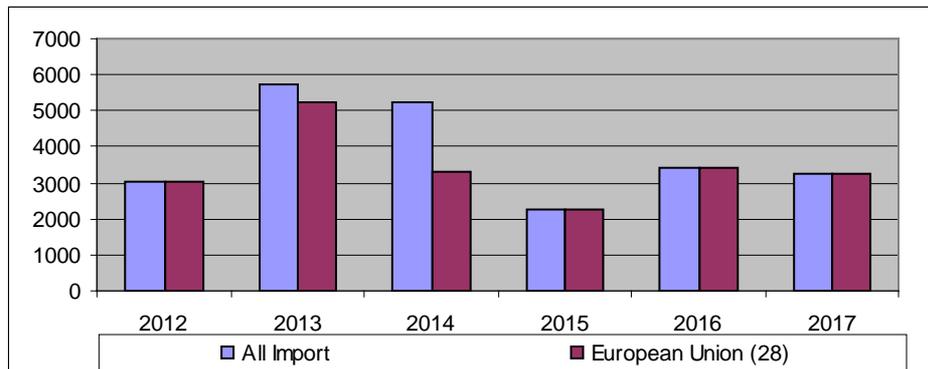
Products SITC4 period 2007– 2017	Average in tonnes	Average in 000 USD	CV in %	Annual rate of change %	Average balance	Balance in 2016*
					in 000 USD	
<b>02221 - Milk in solid form of a fat content, by weight, exceeding 1.5%</b>						
Export	217.57	517.67	95.92	12.27	-3725.13	-1695.5
Import	1406.33	4242.8	46.33	7.24		
<b>02222 - Milk, concentrated/sweetened, in solid form, of a fat content, by weight, not &gt; 1.5%</b>						
Export	66.37	192.54	172.21	3.99	-3589.36	-2257.8
Import	1134.91	3781.9	43.12	3.26		
<b>02241 - Whey and modified whey</b>						
Export	228.65	191.79	82.92	15.13	-3889.62	-2809.8
Import	3652.96	4081.41	40.18	6.37		
<b>02213 - Cream, not concentrated, of a fat content, by weight, exceeding 6%</b>						
Export	361.79	674.25	53.33	6.05	-1950.16	-3391.1
Import	1204.18	2624.41	70.36	25.97		
<b>02249 - Products consisting of natural milk constituents, n.e.s</b>						
Export	42.09	92	145.29	89.52	-1692.75	-838.2
Import	546.73	1784.75	55.04	-0.25		

The products listed in Table 2 were mostly imported from EU countries, as shown in Graphs 4, 5 and 6. For solid milk with 1.5% fat and for milk and cream in solid form with >1.5% fat, for the period 2012–2017, in some years, total imports were equal to those from the EU, so all were imported from EU countries. The same was for whey and modified whey (Graph 6), with all quantities imported from the EU countries 99.8%.

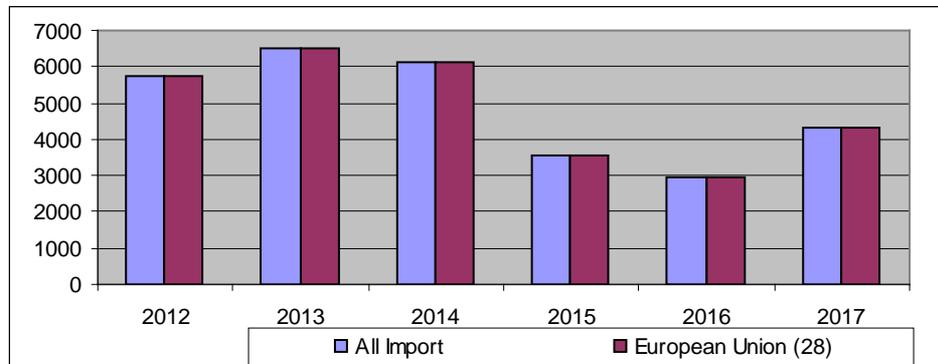
Graphic 4. Import to Serbia, Group 02221 Milk 1.5% fat



Graphic 5. Import to Serbia, Group 02222 Milk &lt;1.5% fat



Graphic 6. Import to Serbia, Group 02241 Whey



According to the SITC4 methodology, all products in the Group 024 Cheese and curd except blue cheese were analyzed, and they were mainly imported from EU countries in the amount of 0.64 million USD on average and other cheese for processing, which had a very low balance of exports and imports. Serbia mostly exported fresh cheese and other cheeses not for processing and these products achieved a positive balance (Table 3).

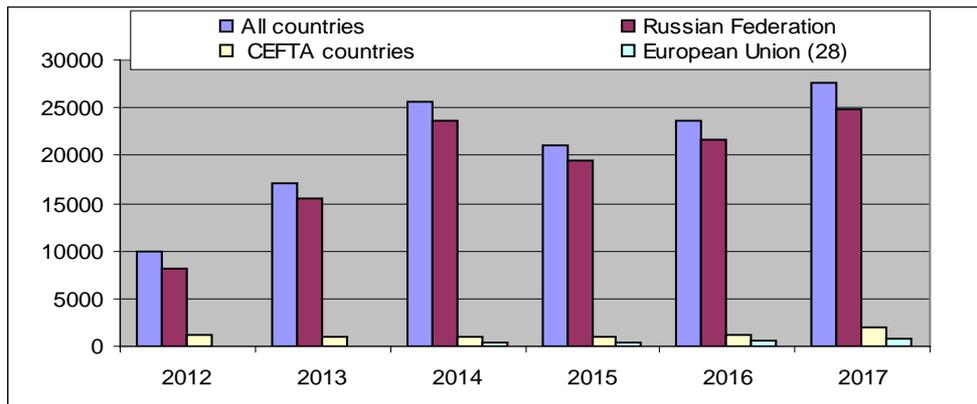
Table 3. Foreign trade balance for cheese and products to Serbia

Products SITC4 period 2007–2017	Average in tonnes	Average in 000 USD	CV in %	Annual rate of change %	Average balance	Balance in 2016
					in 000 USD	
<b>Group 024 – Cheese* and curd</b>						
Export	7342.82	27741.56	42.07	13.21	17017.26	23765.3
Import	2198.78	10724.3	37.34	12.28		
<b>02491 - Fresh cheese, including whey cheese and curd</b>						
Export	3356.50	11923.48	93.92	54.49	11256.12	22590.4
Import	143.55	667.36	56.52	19.29		
<b>02499 - Other cheese, curd</b>						
Export	3749.58	14791.83	19.72	0.26	8261.37	4152.4
Import	1435.26	6530.46	43.29	15.25		
<b>0242 - Processed cheese, not grated/powdered</b>						
Export	191.44	946.33	20.11	-5.45	-1200.03	-1184.6
Import	441.56	2146.36	27.45	4.79		
<b>0241 - Grated/powdered cheese, of all kinds</b>						
Export	32.78	45.57	66.08	25.7	-690.46	-1017.3
Import	88.76	736.03	41.46	13.53		

Source: Estimated by Authors according to the SORS external trade database 2018.; \*Since 2010. cheese it is exported to Russia

The biggest export of cheese and curd was in 2014 in the amount of 45.7 million USD, which was about 4 times the average exports for the period 2007–2017. In the same year, cheese was exported to the Russian Federation in the amount of USD 28.6 million, which was 62.6% of the total export in 2014. The analysis of cheese and curd exports from Serbia for the period 2012–2017 showed that average exports amounted to 36.8 mil. USD; these products were exported to Russia 63.1%, CEFTA countries 29.3% and the EU 4.2% (Graphs 7 and 8).

*Graphic 7. Export from Serbia Group 02491 Fresh cheese, including whey cheese and curd*



*Graphic 8. Export from Serbia, Group 02499 Other cheese, curd*

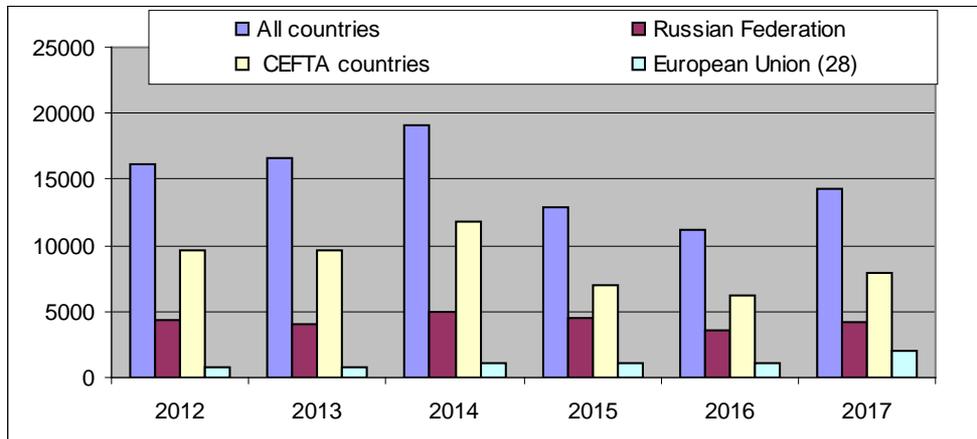


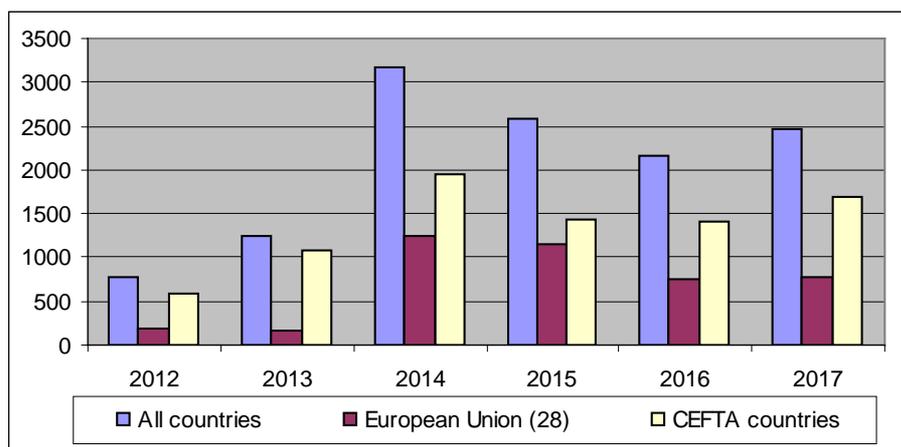
Table 4. Foreign trade balance for butter and products to Serbia

Products SITC4 period 2007–2017	Average in tonnes	Average in 000 USD	CV in %	Annual rate of change %	Average balance	Balance in 2016
					in 000 USD	
<b>Group 023 - Butter and other fats and oils derived from milk</b>						
Export	1123.04	4831.89	23.51	6.4	-93.97	-2577.2
Import	1053.23	4925.86	73.83	23.24		
<b>023001 - Butter</b>						
Export	148.48	839	24.42	3.71	-3699.35	-6540.5
Import	970.46	4538.35	77.03	26.46		
<b>02300 - Milk spreads</b>						
Export	714.62	2756.35	32.11	-1.59	2534.01	1932.1
Import	54.99	222.34	42.45	12.53		
<b>023009 - Other fats and oils derives from milk</b>						
Export	259.95	1236.56	93.11	43.24	1071.37	2031.3
Import	27.78	165.19	83.02	0.66		

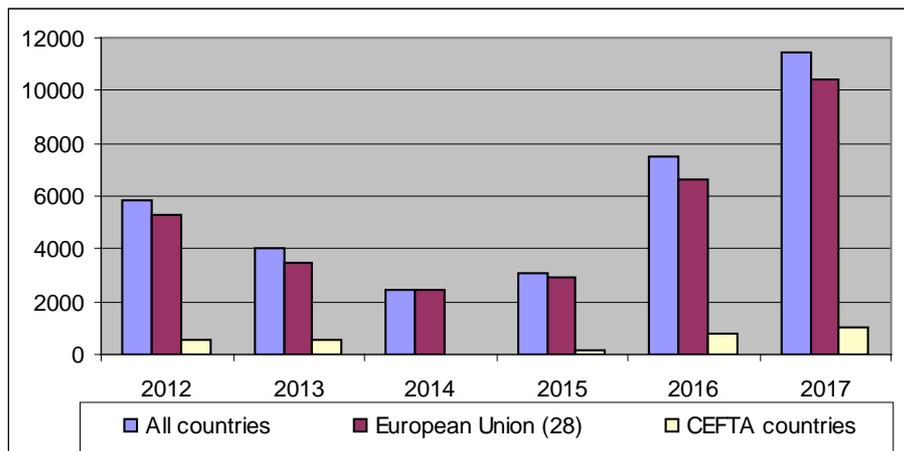
Source: Estimated by Authors according to the SORS external trade database 2018.

Products belonging to Group 023 Butter and other fats, oils derived from milk, and milk spreads had a negative average balance sheet and imports increased at an annual rate of change of 23.24 for the analyzed ten-year period.. In this group of dairy products, the highest imports were achieved for butter, as shown in Table 4, with a negative balance of imports and exports. Prospective dairy products in this group exhibiting increasing exports are: Milk spreads and the Other fats from oil and milk (including kajmak), which have an export tendency, as shown by positive balances (Table 4). Products Other milk fats were mainly exported to the former Yugoslav republics belonging to the CEFTA group, and since 2014 exports to the European Union have increased (Graph 9). According to data in 2016, 35% of these products were exported to the EU and 65% to the CEFTA countries.

Graph 9. Export from Serbia, Group 023009 Other fats and oils derives from milk



Graphic 10. Import to Serbia, Group 023001 Butter



Butter production was deficient in Serbia and butter was mainly imported from EU countries and some countries in the region (CEFTA) mainly from BiH. Imports of butter had an increasing tendency, as shown by the data in Table 4 and Graph 10. Total production of butter in 2014 was imported from the EU, and in 2016 butter imports were 89% from the EU and 11% from CEFTA countries.

### **Conclusion**

The analysis of each group of dairy products 022, 023 and 024 identified products that have significant export tendencies and can be leaders in foreign trade, as well deficit products that are mainly imported to Serbia.

In Group 022 Milk and products, Ice cream (02233), Milk and cream with 1-6% fat (02212) and Yogurt not flavored without fruit and sugar (022311) are mostly exported, and average positive balance sheets were calculated. In this group, imports are highest for Whey and modified whey (02241), milk and cream in solid form with 1.5% and more fat (02221 and 02222, respectively).

In Group 024 Cheese and curd, export products include Fresh cheese, including whey cheese and curd (02491) and Other cheese (02499), while groups of cheeses (0241) and (0242) are imported in smaller quantities.

In Group 023 Butter and other fats and oils derived from milk, Butter (023001) is deficient and is mainly imported. As promising export products, milk spreads and other fat from milk are labeled as (023009).

Within the CEFTA group, Serbia is the leading producer of milk and dairy products, which are mostly exported to Montenegro, Bosnia and Herzegovina and Macedonia. As quality products are being developed and produced, Serbia is becoming competitive and its exports are increasing to the Russian and European Union markets, with cheese, kajmak and ice cream as selected export-oriented products. .

### **Acknowledgments**

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## **STRUKTURA IZVOZA I UVOZA MLEKA I MLEČNIH PROIZVODA IZ SRBIJE**

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### **Rezime**

Struktura tržišne ponude mleka zavisi od preradnih kapaciteta u Srbiji, koji su više orijentisani na proizvodnju mlečnih proizvoda pasterizovanog i sterilizovanog mleka i fermentisanih mlečnih proizvoda (jogurt, pavlaka, kiselo mleko itd.) dok je proizvodnja čvrstih mlečnih proizvoda (sirevi, pavlake, namazi, maslac, mleko u prahu itd.) značajno manja. Uzimajući u obzir aktuelno stanje u Srbiji u primarnoj proizvodnji, otkupu i preradi mleka, dat je kratak osvrt na spoljnotrgovinski bilans mleka i mlečnih proizvoda i njihovo učešće u izvozu i uvozu. Analizom spoljnotrgovinske razmene mleka i proizvoda za posmatrani period 2007-2017. godine ukazano je na proizvode koji se izvoze i imaju stabilne izvozne tendencije, kao i na deficitarne proizvode koji se uvoze i imaju izražene negativne bilanse u posmatranom periodu. Analizirane su i najvažnije izvozno-uvozne destinacije sa kojima Srbija ostvaruje trgovinsku razmenu za mleko i mlečne proizvode, pri čemu se to prvenstveno odnosi na zemlje CEFTA grupe, Evropske unije i Rusku Federaciju.

**Ključne reči:** mleko i mlečni proizvodi, spoljnotrgovinska razmena, pozitivni i negativni bilansi.