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Problems of Developing the Export Potential of Ukrainian Milk Processing Products

Abstract. *The production and industrial processing of milk is an important part of the economies of Eastern European countries, in particular Ukraine, which is one of the leading exporters of dairy products. The author analyses the dynamics of raw milk production in Ukraine from the perspective of enterprises and households and conducts a comparative assessment of the main kinds of industrial production of dairy products. Another aspect explored in the article is how the structure of Ukrainian exports of dairy products has changed in terms of commodities and geographical location. The author identifies the main problems of the export capacity of dairy processing enterprises taking into account the availability of raw milk.*

Keywords: *raw milk production, industrial processing, dairy products, regions, export, import*

1. Formulation of the problem

The production of milk and dairy products is a crucial part of national food industry, which makes 14%. Milk and dairy products, which in big quantity contain unique micronutrients (first of all proteins), are both important components of healthy diet and at the same time irreplaceable ingredients when producing a great deal of food industry products. However, unfortunately, Ukraine partly lost its capacity of milk producing due to inconsistent reforming of agriculture “early nineties,” in particular in a way of elimination of big agribusinesses. During 2014-2019 the capacity of raw milk decreased by 15.68%. As a result, during this period Ukraine fell five places to the 19th position in 2019 in the world ranking among milk producers.

Owing to the milk capacity reduction dairy products export drawdown was possible, in particular butter (by 40% in 2019) and caseins (by 28%), according to export capacity Ukraine ranks in top 5 at the world market. These negative tendencies continued in 2020 – which means that total dairy products export in Ukraine reduced by 26%.

2. Literature review

Taking in account high social milk production and process importance, it is an object of wide-range researches in particular key tendencies of functioning of the Intra-European Union trade of milk and dairy products are shown in [Bórawski, Dunn, Harper & Pawlewicz 2019]. Problems of an agricultural potential in Central and Eastern Europe, in Poland in particular are explored [Kowalczyk & Sobiecki 2019]. The survey of current state and perspectives of dairy products development in Ukraine [Keranchuk 2015: 408-413], and today's problems of dairy business functioning are carried out in [Stepanchuk & Jefisjko 2017: 9-10]. On the other hand, questions of complex assessment of raw milk and its industrial processing need to be solved.

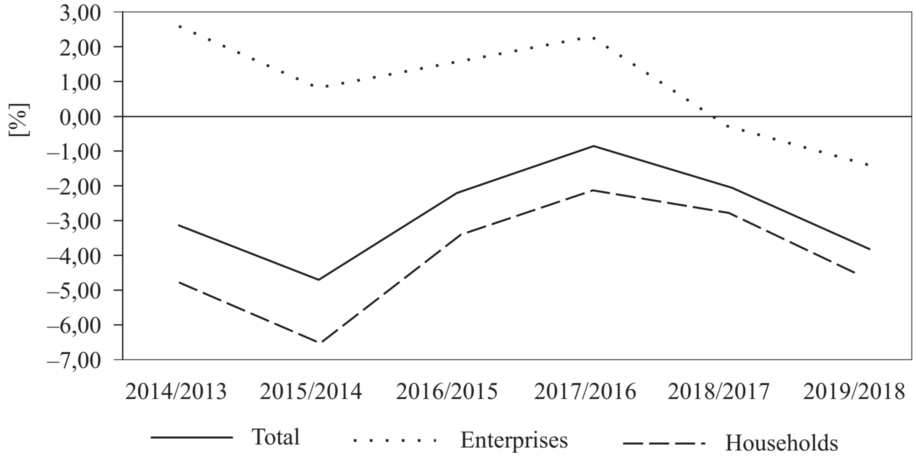
All things considered, the aim of this article is defining the problems connected with the increasing milk export capacity in Ukraine.

3. Main results of the study

The negative trend of collecting raw milk in Ukraine is connected with the domination of households with 71.94% (in comparison with 77.53% in 2013), which have reduced their production by 21.76% for the last six years. At the same time, agricultural enterprises, which increased their milk production capacity (in total by 5.23%) since 2018 they show the decreasing of this rate (Chart 1).

One of the key reasons which caused negative dynamics of milk production in Ukraine is fewer livestock during the analyzed period by 26.05% (by 5.88% in 2019), in particular by 21.77% (6.31%) – at enterprises and by 27.33% (5.75%) – at the household level. As we can see, despite more intensive reducing of livestock at the enterprises in 2019, pace of decline in milk production was by 3.26% smaller than at the household level. The reason for this situation is much higher (with a tendency to further increase) level of efficiency functioning of agricultural enterprises, as evidenced by predominance of milk yields in this sector, compared with households, 1.36 times in 2018 (against 1.12 times in 1990). However, in the raw milk production structure in Ukraine (according to household types) enterprises prevail (with proportion > 50%) only in three regions: Kyiv, Poltava and Cherkasy.

Chart 1. The growth rates of raw milk production in Ukraine



Source: based on data from SSSU 2019a, 2019b.

In Ukraine, a relatively small share of raw milk (18.42% in 2019 against 12.96% in 2016 and 16.32% in 2013) is subject to industrial processing. Low performance of this indicator is the result of prevailing of those enterprises in the structure production, which are unable to supply appropriate quality of raw milk. In most cases they produce second-class milk, where proportion in overall quality is constantly over 83%. Instead, the structure of raw milk production on enterprises is diversified: in 2019, "Extra" milk was occupied 27.2% (against 9.2% in 2014), the highest grade – 35.9%, and the first – 32.3%.

In contrast to the production of raw milk, the trends of its industrial processing since 2017 have shown a generally positive trend (Table 1). However, during 2018-2019 there was a decrease in butter production (a total of 17.35%), and in 2019 – also milk (various types) and cheese. Significantly production of other dairy products (yogurt, kefir, sour cream, casein, etc.) has increased.

Table 1. Industrial production growth rates of milk and dairy products in Ukraine (%)

Product	2014/2013	2015/2014	2016/2015	2017/2016	2018/2017	2019/2018	2019/2013
Milk	15,43	–8,89	–40,99	69,78	0,18	–4,00	1,33
Butter	20,34	–10,62	0,99	5,88	–3,20	–14,62	–4,94
Cheese	–17,66	–6,68	–4,44	3,61	4,61	–5,77	–25,01
Other dairy products	–9,05	–8,55	–1,14	–4,09	0,99	17,17	–6,69
Total	4,14	–8,67	–24,53	31,26	0,65	0,37	–4,82

Source: based on data SSSU 2019a, 2019b.

Table 2. Structure of industrial production of milk and dairy products in Ukraine (%)

Product	2013	2014	2015	2016	2017	2018	2019
Milk	52.54	58.23	58.09	45.42	58.75	58.47	55.93
Butter	5.01	5.79	5.66	7.58	6.11	5.88	5.00
Cheese	13.29	10.51	10.73	13.59	10.73	11.15	10.47
Other dairy products	29.17	25.47	25.51	33.41	24.41	24.50	28.60
Total	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Source: based on data SSSU 2019a, 2019b.

The structure of dairy production in Ukraine during the analyzed period remained stable – milk (different types) and other dairy products prevailed there (Table 2).

Milk processing belongs to export-oriented segments of Ukrainian food industry. Ukraine significantly strengthened its market position of dairy production, casein in particular, have taken the fifth place (in comparison with 8th place in 2011) ranking among countries-exporters of this production (according to their value), milk cream spread – the 13th (in comparison with the 37th). The key importers of Ukrainian dairy products in 2019 were China, Azerbaijan, Moldova, Armenia and Georgia (Table 3). The demand for some types of national milk processing products increased in the countries of EU (prevailing in the Netherlands), the Middle East (UAE, Saudi Arabi), Africa (Marocco and Egypt) and Asia (the Philippines).

In general, Ukraine has a positive balance of foreign trade in dairy products, however, since 2016 there has been a steady downward trend values of the coefficient of coverage of imports by exports for most items, and especially cheeses (Table 4). The volume of exports of the latter during 2014-2018 decreased by 91.50%, which was caused by the closure of the market by the Russian Federation (RF) for Ukrainian dairy products, the main of which were cheeses. During the mentioned period Ukraine also significantly reduced whey exports (by 50.38%) and condensed milk and cream (by 22.16%). At the same time butter exports increased 5.79 times, milk and non-condensed cream – 2.64 times, buttermilk, fermented milk and cream – 1.73 times.

The result of unstable dairy product export dynamic from Ukraine during 2014-2019 became crucial changes in its commodity structure. Thus, the proportion of cheese (the main national export product in diary production in 2013) decreased for this period by 38.8% (Table 5). In 2017-2018 butter was the main commodity among export dairy products, however, in 2019 its proportion reduced by 14.2% in an appropriate structure, but the proportion of condensed milk and cream increased by 12.51% instead (code 402).

Table 3. Rating of countries-importers of milk and dairy products from Ukraine during the period of January-December 2019

No.	Milk and cream are not condensed (401)		Condensed milk and cream (402)		Buttermilk, fermented or fermented milk and cream (403)		Whey (404)		Butter (405)		Cheese (406)	
	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %	Country	Share of export amount %
1	Moldova	34.61	China	25.09	Kazakhstan	49.60	China	39.91	Azerbaijan	16.25	Kazakhstan	42.23
2	Georgia	19.40	Bangladesh	9.04	Moldova	24.73	Philippines	14.67	Moldova	14.07	Moldova	31.96
3	Libya	18.71	Armenia	7.44	Georgia	11.52	Pakistan	8.42	Georgia	9.78	Egypt	7.62
4	Philippines	11.45	Georgia	6.47	Poland	7.65	Malaysia	7.82	Israel	8.18	Kyrgyzstan	3.23
5	Poland	7.17	Israel	6.13	United Arabic	3.45	Vietnam	5.27	Netherlands	7.57	Azerbaijan	3.00
6	Cambodia	1.08	Moldova	4.95	Emirates	1.18	Nigeria	2.52	Armenia	6.36	Georgia	2.09
7	Guinea	0.98	Azerbaijan	3.97	Armenia	0.82	Uzbekistan	2.44	Morocco	4.95	Combined	1.86
8	Qatar	0.85	Kazakhstan	3.83	Azerbaijan	0.40	Egypt	1.87	Kazakhstan	4.92	Arabic	1.74
9	Armenia	0.68	Egypt	3.68	Qatar	0.11	Georgia	1.74	Turkey	3.72	Emirates	1.50
10	Nigeria	0.64	Philippines	3.29	Israel	0.07	Poland	1.72	Saudi Arabia	3.59	USA	0.88
	Total	95.57	Total	73.89	Total	99.55	Total	86.38	Total	79.37	Total	96.12

Source: based on data SSSU 2019a, 2019b.

Table 4. Coefficient of import coverage by export (%)

Classification code*	Product	2013	2014	2015	2016	2017	2018	2019 11 months
401	Milk and cream are not condensed	0.77	1.20	5.56	5.11	6.74	7.12	4.87
402	Condensed milk and cream	2.80	9.77	53.58	34.46	21.38	10.34	14.95
403	Buttermilk, fermented or fermented milk and cream	0.23	0.32	0.91	0.66	0.74	1.07	1.04
404	Whey	6.25	5.54	7.41	8.93	10.48	7.02	3.88
405	Butter	0.33	0.99	11.63	9.88	28.98	17.21	29.19
406	Cheese	3.26	1.78	1.49	0.81	0.69	0.46	0.25
Total		2.13	2.17	5.18	3.72	4.35	2.83	1.78

* Ukrainian classification of goods of foreign economic activity.

Source: based on data from SFSU 2019.

Table 5. Structure of Ukrainian dairy exports (%)

Classification code*	Product	2013	2014	2015	2016	2017	2018	2019 11 months
401	Milk and cream are not condensed	1.08	1.46	2.60	3.44	3.46	5.59	6.84
402	Condensed milk and cream	14.73	37.42	50.25	46.66	28.61	22.40	34.91
403	Buttermilk, fermented or fermented milk and cream	0.95	1.23	1.88	1.64	1.48	3.22	4.08
404	Whey	8.58	8.21	8.73	9.08	8.82	8.32	8.04
405	Butter	4.31	14.61	16.85	23.77	46.09	48.79	34.59
406	Cheese	70.34	37.07	19.70	15.40	11.54	11.68	11.54
Total		100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: based on data from SFSU 2019.

After a sharp decline due to the devaluation of the national currency in Ukraine in 2014-2015, there was a sharp dechine in dairy products import volume, however its increasity started in 2016, which totally made up 2.71 times more for three years. The import of condensed milk and cream inearesed the most (3.42 times more), butter (2.9 times more) and cheese (2.85 times more). However, despite its intensive dynamics of dairy products import into Ukraine, its volumes did not actieve the level of 2013, which was related either with the low demand for this production at domestic markets or with their national production development.

Following the dynamics, the structure of dairy products has been changed. During the period 2015-2019, the proportion of the main product – cheese – increased by 35.19% in it and reached 80,56%, at the same time the proportion of butter reduced by 30,05% and made only 2,11%. In retailing turnover of dairy products in Ukraine, the highest import dependence is observed in rennet cheese processed and fermented one – around 15%, in comparison with milk and dairy products – over 7%, and butter – maker approximately 4% in this segment.

4. Conclusion

Ukrainian agro-industrial complex (first of all milk segment) is in a stage of deep transformation from post-Soviet rules and standards of functioning to the world, first of all European. Many Ukrainian companies have already achieved this significant progress. The catalyst for these processes was the closure of the Russian market of dairy products and instead the opening of the EU market. However, despite unconditional progress in modernizing the technology of dairy production, improving its quality and expanding the range, in Ukraine there are still a number of unresolved interrelated problems that collectively slow down the development dynamics of milk production.

Insufficient potential and low quality of raw material base for industrial milk processing. Reducing the number of cows in Ukraine by over 26% during 2014-2019 led to a decrease in raw materials for the production of finished dairy products. In turn, lowering the value of this indicator in households is a direct consequence of the increase urbanization processes. However, it is a small-scale form of milk production, which has dominated in Ukraine since the 1990s and cause not only the shortages of raw milk for industrial processing, but also its low quality. Simultaneously achieving high quality milk requires high-tech milking and refrigeration equipment. In addition, milk quality and animal productivity depends on their breed and housing conditions, in particular, the forage base. Obtaining these conditions requires significant investment with a long payback period (6-8 years). Small and even medium-sized farms in Ukraine are not financially able to introduce new technologies of milk production. At the same time, in the EU all raw milk that comes for processing in one form or another, is subsidized (for example, Poland received from the EU 24 billion euros for modernization dairy sector). In this way, European countries stimulate milk producers to maintain and increase the number of highly productive cattle dairy breeds. Under these conditions, domestic producers will be a priori uncompetitive in the European dairy market.

The presence of a shadow segment and a high degree of adulteration in the domestic market of dairy products. The number of small dairy companies that operate without mandatory permits documents and even without state registration is actively growing in Ukraine. They collect low quality milk in households for cash at higher than market prices, produce from it dairy products with resale for cash (mainly on natural markets). Whereas no taxes are paid and none sanitary and hygienic standards of production are kept. The total volume of the shadow segment in the Ukrainian dairy market is estimated at 20-25%. Among counterfeit goods dominate cheeses of various kinds, butter, sour cream, in which substances of plant origin dominate, and the content of raw milk does not exceeds 26% (at best).

Limited Ukrainian dairy exports at growth of its imports. Due to the generally low quality of raw milk, and also non-compliance of milk production with norms, principles and EU regulations, a significant part of Ukrainian enterprises in this segment of food industry cannot be certified by the International Commission on Exports dairy products, and therefore has no access to European markets. Ukraine cannot fully compete with Western producers not only because of high resource intensity of its own dairy production and inconsistencies of the system of its qualitative assessment with the world level, but also with reasons for the stability of the structure and the stability of the segmentation of the European milk market. After the loss of the Russian market (the main importer of Ukrainian cheeses until 2014 year) Ukrainian cheesemakers have not yet been able to reorient their products to highly competitive EU markets, as consumers in these countries prefer cheese varieties in which Ukrainian enterprises have none production experience. At the same time, imports of cheese are growing in Ukraine, the volume of which since 2016 year exceed its exports. Also imports of other dairy products are increasing rapidly, including butter and milk and cream condensed, which are the main positions of domestic exports of dairy products.

Finding mechanisms to overcome the described problems to ensure further development of the dairy segment of the food industry in Ukraine will be the subject of further author's research.

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Problemy kształtowania potencjału eksportowego ukraińskich produktów do przetwórstwa mleka

Streszczenie. *Produkcja mleka i przetwórstwo przemysłowe to ważne segmenty gospodarki krajów Europy Wschodniej, zwłaszcza Ukrainy, która jest jednym z głównych eksporterów niektórych produktów mlecznych. W artykule przedstawiono dynamikę produkcji mleka surowego na Ukrainie według przedsiębiorstw i gospodarstw domowych oraz dokonano oceny porównawczej produkcji przemysłowej przetworów mlecznych według ich głównych rodzajów. Analizie poddano zmiany, jakie zaszły w ukraińskim eksporcie z Ukrainy produktów mleczarskich, biorąc pod uwagę kryterium towarów i położenia geograficznego. Zidentyfikowano główne problemy związane z kształtowaniem potencjału eksportowego ukraińskiego przemysłu mleczarskiego z uwagi na jego surowce.*

Słowa kluczowe: *produkcja mleka surowego, przetwórstwo przemysłowe, produkty mleczne, regiony, eksport, import*