EVALUATION OF THE LEVEL OF SELF-SUFFICIENCY IN DAIRY PRODUCTS OF SOME COUNTRIES

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Self-sufficiency and food availability are main indicators of food security, which in turn is one of the most important components of the country's economic security. Within the framework of this article, the analysis of the level of self-sufficiency in dairy products of some countries is carried out based on the calculation of the self-sufficiency coefficient and the share of imports in consumption. Countries with a shortage of a particular type of dairy products on the domestic market, as well as countries where the consumption of dairy products is largely driven by imports, are identified. Conclusions about possible directions of diversification of dairy exports, as well as about promising sales markets from the point of view of food security of countries are made.

Key words: dairy production; self-sufficiency; food security; cheese; butter; dry milk.

ОЦЕНКА УРОВНЯ САМООБЕСПЕЧЕННОСТИ МОЛОЧНОЙ ПРОДУКЦИЕЙ ОТДЕЛЬНЫХ ГОСУДАРСТВ

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Самообеспеченность продуктами питания и доступность продовольствия являются важнейшими показателями продовольственной безопасности, которая, в свою очередь, является одним из важнейших компонентов экономической безопасности страны. В рамках данной статьи проведен анализ уровня самообеспеченности молочной продукцией некоторых стран на основе расчета коэффициента самообеспеченности и доли импорта в потреблении. Выявлены страны с нехваткой определенного вида молочной продукции на внутреннем рынке, а также страны, в которых потребление молочных продуктов в значительной степени обеспечивается импортом. Сделаны выводы о возможных направлениях диверсификации экспорта молочной продукции, как и о перспективных рынках сбыта с точки зрения продовольственной безопасности.

Ключевые слова: молочная продукция; самообеспеченность; продовольственная безопасность; сыр; сливочное масло; сухое молоко.

Introduction. Food security of any country is largely achieved due to external factors such as the volume of food imports and exports, geographical diversification of imported food supplies, the level of protection of the domestic market from foreign supplies.

The production, export and import of dairy products is largely determined by climatic conditions and other natural and geographic factors. In this connection, the participation of many countries in international trade is explained by their inability or economic inefficiency to produce one or another product themselves, which encourages them to actively participate in the processes of international exchange of dairy products.

Geographical diversification of exports is one of the priorities of any state and is especially relevant for the Republic of Belarus as a state with a small open economy focused on inclusion in international trade and the system of international economic relations.

The dairy industry, in turn, is one of the key export-oriented sectors of the Belarusian economy. In this regard, it seems relevant and rational to develop a set of practical recommendations for the geographical diversification of dairy exports.

Literature review. In order to develop practical recommendations for improving the geographical diversification of exports and the search for new markets for the surplus of dairy products, evaluation of the level of self-sufficiency in dairy products of some countries was made.

The performed analysis was carried out based on the statistical data from the Food and Agriculture Organization of the United Nations (FAO), the United States Department of Agriculture (USDA). World Bank database “World Integrated Trade Solution” was also used.

In particular, the annual statistical and analytical reviews of the FAO “Dairy Market Review” [1] and the FAO global reports "Food outlook: Biannual report on global food market" [2], published twice a year were used. Significant part of necessary statistical data was found in the USDA reports "Dairy: World markets and trade" [3], which are also published twice a year. The data obtained from the World Bank database [4] was summarized and analyzed using the Microsoft Excel program.

Research methodology. In economic theory there are different criteria and indicators of food security. Among them the most widely used are physical availability of food products, economic availability of food products, food quality and safety, sustainability of the food system.

In this article the analysis of the level of availability of dairy products and the state of food security was carried out on the basis of calculating the coefficient of self-sufficiency in dairy productsand the share of imports in consumption. The self-sufficiency coefficient is the ratio of production volumes to consumption volumes while the share of import in consumption is calculated as the ratio of dairy productsimport volume to dairy productsconsumption volume.

Analysis. Obtained results made it possible to define countries where there is a shortage of a certain type of dairy product on the domestic market, as well as countries where the consumption of dairy products depends mainly on import (table).

Level of self-sufficiency in dairy products of some countries

Product/ Country/ Year	Volume of production, thousand tons	Volume of consumption, thousand tons	Importvolume, thousandtons	Self-sufficiency coefficient	Share of imports in consumption
Cheese					
EU					
2017	9796	8727	191	1,12	2,2 %
2021	10350	9135	195	1,13	2,2 %
USA					
2017	5733	5494	138	1,04	2,5 %
2021	6206	5956	187	1,04	3,1 %
Russia					
2017	951	1141	226	0,83	19,8 %
2021	1075	1367	335	0,79	24,5 %
China					
2017	249	357	108	0,7	30,3 %
2021	300	430	170	0,7	39,5 %
Japan					
2017	46	324	273	0,14	84,3 %
2021	47	342	295	0,14	86,3 %
Mexico					
2017	396	511	122	0,77	23,9 %
2021	448	511	130	0,88	25,4 %
Butter					
India					
2017	5400	5387	6	1,01	0,1 %
2021	6300	6275	1	1,01	0 %
EU					
2017	2031	1862	62	1,09	3,3 %
2021	2134	1939	55	1,10	2,8 %
USA					
2017	838	849	41	0,99	4,8 %
2021	948	985	73	0,96	7,4 %
China					
2017	99	195	98	0,51	50,3 %
2021	109	252	145	0,43	57,5 %
Russia					
2017	270	357	99	0,76	27,7 %
2021	270	396	125	0,68	31,6 %
Mexico					
2017	223	264	49	0,84	18,6 %
2021	235	257	23	0,91	8,9 %

Canada					
2017	109	121	22	0,9	18,2 %
2021	122	147	28	0,83	19 %
Skimmed milk powder					
China					
2017	100	276	247	0,36	89,5 %
2021	150	461	440	0,33	95,4 %
India					
2017	570	576	1	0,99	0,2 %
2021	680	668	1	1,02	1,5 %
Mexico					
2017	49	351	331	0,14	94,3 %
2021	57	379	335	0,15	88,4 %
Indonesia					
2017	80	146	147	0,55	100,7 %
2021	95	199	200	0,48	100,5 %
USA					
2017	1073	425	1	2,52	0,2 %
2021	1179	309	1	3,82	0,3 %
EU					
2017	1555	854	55	1,82	6,4 %
2021	1550	755	25	2,05	3,3 %
Whole milk powder					
Brazil					
2017	596	664	73	0,90	11,0 %
2021	594	641	53	0,93	8,3 %
China					
2017	1080	1598	470	0,68	29,4 %
2021	950	1803	880	0,53	48,8 %
Indonesia					
2017	76	128	47	0,59	36,7 %
2021	96	156	66	0,62	42,3 %
USA					
2017	56	42	21	1,33	50 %
2021	63	37	9	1,7	24,3 %
EU					
2017	733	363	6	2,02	1,7 %
2021	630	330	1	1,91	0,3 %

Compiled on the basis of [1—4].

Japan with extremely low self-sufficiency ratio (0.14) and a high share of imports in consumption (more than 80 %) is the most perspective market taking into account the good "cheese". Low meanings of self-sufficiency coefficient are typical for Mexico and Russia, but these two countries also have relatively low share of imports in consumption. The European Union and the USA produce more than they consume (the self-sufficiency coefficient is more than one) and practically do not import cheeses.

The situation for the commodity item "butter" is largely similar. India, the European Union and the USA are fully provided with butter and practically do not import it — countries is economically impractical. But China, Russia and Mexico are priority markets, because they are insufficiently provided with this dairy product and import it from abroad.

China and Indonesia should be considered as the target market for the export of skimmed and whole milk powder, where consumption is more than twice the production, and the consumption of skimmed milk powder is almost 100 % covered by imports. A critical situation is observed in Mexico, which is only 15 % provided with skimmed milk powder and imports more than 90 % of its consumption.

In general, the analysis of table 1 data allowed to conclude that the insufficient level of self-sufficiency in dairy products is typical mainly for the countries of Southeast Asia and North Africa, while the USA, India and the countries of the European Union are less in need of importing dairy products. In addition, the East Asian and North African regions are currently the leaders in terms of imports of dairy products, and there has been a steady growth in demand for dairy products, which are not covered by domestic production.

It should be noted, that any modeling of dairy products should take into account the vertical structure of the industry, which includes the stage of raw milk supply, its further processing and the demand for the final processed products. Moreover, according to empirical data, the international dairy market is not absolutely competitive, that is, there are firms with market power. Foreign trade of countries with each other takes place in conditions of oligopoly/oligopsony [5].

American scientist P. Vitaliano in his article "Global dairy trade: where are we, how did we get here and where are we going?" identifies three main factors contributing to the food security and the development of international trade in dairy products at the beginning of the XXI century: the growing demand for dairy products from the rapidly growing population of Southeast Asia; the liberalization of foreign trade policy of countries as a result of the Uruguay Round of WTO negotiations; the growth of world prices for dairy products [6].

Conclusion. Conducted in this article evaluation of the level of self-sufficiency in dairy products has showed, that for many countries of the world, the expansion of participation in international trade in dairy products is an integral element of the national foreign trade strategy. It should be understood that the reasons for active inclusion in the system of international economic relations can be different. Exporters are interested mainly in selling the part

of unrealized products on export markets while importers actively included in foreign trade in order to guarantee food security.

Without any shadow of doubt, the deficit of food products is only one precondition for increasing export volumes. It is necessary to take into account existing foreign trade barriers and the level of competitiveness. Besides this, it is important to identify other factors which can influence foreign trade and foreign economic policy such as weighted average level of the applied and bound customs duties, existing non-tariff restrictions, especially technical restrictions and many others.

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