

Lesia Voliak✉, Nadiia Sergiychuk

National University of Life and Environmental Science of Ukraine

The modern state and trends of development of milk market in Ukraine

Summary. The article deals with the current state of the enterprises of the dairy industry of Ukraine. Analyzed the main indicators of the industry, the dynamics of milk prices and the main types of dairy products for the latter time, prices, import, and export. The main factors influencing the activity of the dairy industry of Ukraine are investigated. The urgent measures necessary to increase the level of development of the dairy industry and the output have been proposed Ukrainian enterprises to the European market.

Key words: milk, production, dairy products, consumption, export, import

Introduction

Meeting the needs of the population in high-quality and safe food is one of the most important socio-economic tasks of our time. Milk and dairy products are irreplaceable in the diet of people, due to their nutritional value. They are traditionally the main ones in the diet, therefore the main task of the dairy industry is the guaranteed provision of the population of the country with safe and high-quality dairy products in accordance with rational consumption standards. That is why the development and functioning of the dairy industry are particularly topical issues of the present.

In the works of scientists, various aspects of the development of the dairy industry are considered, in addition to the above, analyzed the problems of pricing in the absence of state regulation, rational placement of milk production in order to maximize the utilization of production capacities of enterprises and the complex use of natural and economic potential of the regions. But in connection with the changing external environment, there is a constant need for analysis and finding of acceptable ways of development of a strategically important branch of Ukraine.

The purpose of the article is to study, analyze and distinguish the trends that take place on the milk market of Ukraine, as well as to identify the ways of development of enterprises in this sector.

✉ voliaklr@gmail.com

Research methods

In the course of the research, the following methods were used: analysis and synthesis to determine the level of supply of basic food products, volumes of manufactured dairy products in the context of providing scientifically substantiated norms and export supplies. Econometric modeling is used to substantiate the main trends of milk production, pricing policy, import and export in the dynamics of different time periods. The grouping of the profitability of milk production provided the determination of the influence of its production and consumption on the efficiency of activities of enterprises in this sector.

Research results

The importance of milk and dairy products production is manifested in the decision of the subjects of the management of the food supply industry with these products. At present, Ukraine is fully provided with dairy products by a self-sufficiency rate of 107.7% in 2017 (Fig. 1).

Rational nutrition provides an optimal ratio of nutrients and biologically active substances. In recent years, the quality of food in the population has deteriorated significantly, and this trend continues. According to the CMU Decree No 1379 of 5 December

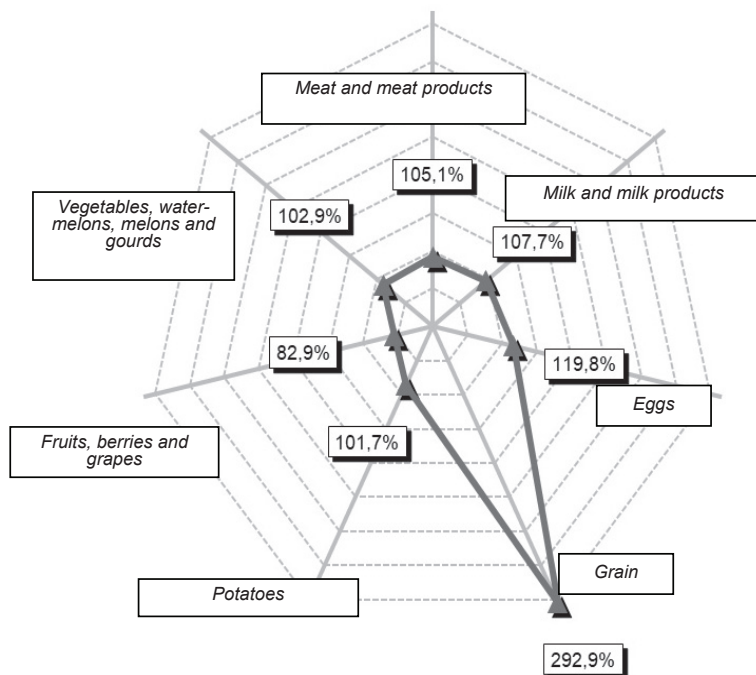


Figure 1. Self-sufficiency by main food-stuffs of 2017 (output to domestic use in Ukraine)

Source: calculated on the basis of: State Statistics Service of Ukraine, www.ukrstat.gov.ua (access: 10.10.2018).

2007, “Some Issues of Food Safety”¹, the limit (threshold) criterion of daily caloric content of a diet is 2,500 kcal per day, while 55% of the daily ration should be provided at the expense of consumption of products of animal origin. However, milk consumption has tended to decline in recent years (Fig. 2).

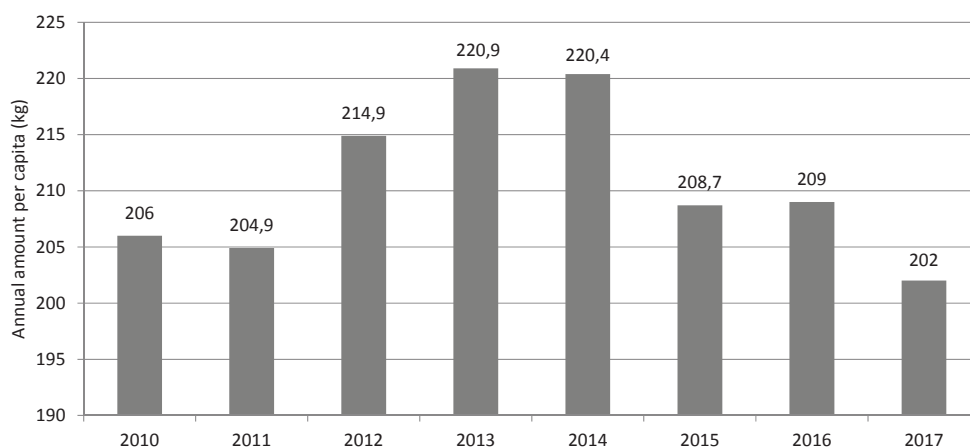


Figure 2. Dynamics of consumption of milk and dairy products

Source: calculated on the basis of State Statistics Service of Ukraine, www.ukrstat.gov.ua (access: 10.10.2018).

According to the State Statistics Service, 2017 was the year of record-breaking consumption of dairy products per capita – 202.0 kg and these figures continue to fall². Such low consumption of milk and dairy products can be explained by rising prices and low solvency of the population.

The market for milk and dairy products is an integral part of livestock, the agrarian sector and the economy as a whole. Identification of special trends in the development of this production should be combined with the elucidation of the manifestation of general branches of development. In general, these trends can be traced to the dynamics of milk production, the level of prices and the state of export and import (Table 1).

On the basis of the analysis, a decrease in the production of milk was found, due to a number of factors. The first is the decline in cattle population and the insufficient growth in demand in existing markets due to a decline in purchasing power of the population. Also, an important problem at the enterprises is the obsolete and physically worn out equipment, which does not allow full production capacity utilization. The reduction of the supply of milk on the market was affected by the abolition of the special VAT regime and the introduction of direct subsidies, which led to the need to adapt producers

¹V.I. Aranchiy, L.O. Drogan-Pysarenko, A.I. Rudich: Analytical appraisal and extrapolation of dairy market function, *Economic Analysis* 2014, No 20, pp. 14–22 [in Ukrainian].

²State Statistics Service of Ukraine, www.ukrstat.gov.ua (access: 10.10.2018).

Table 1. Dynamics of indicators of dairy industry in Ukraine in 2008–2017

Year	Production volume (kg)	Average sales price (UAH/kg)	Import (kg)	Export (kg)
2008	11 762	2 065.1	1 000	16 000
2009	11 610	1 888.8	1 000	18 000
2010	11 249	2 938.7	1 000	16 000
2011	11 085	3 041.6	3 000	11 000
2012	11 378	2 662.2	4 000	6 000
2013	11 488	3 364	6 000	8 000
2014	11 426	3 588.4	2 000	7 000
2015	10 864	4 347.3	1 500	9 000
2016	10 625	5 461.8	1 000	11 000
2017	10 560	7 234	1 000	12 000

Source: calculated on the basis of: State Statistics Service of Ukraine, www.ukrstat.gov.ua (access: 10.10.2018).

of raw materials to new rules of the game³. In fact, after 2014, the production of dairy products is in a state of stagnation.

We feed with the expert opinion that one of the main factors hindering the production and processing of dairy products is the price. The dynamics of price change is unstable, with a clear tendency to increase during 2012–2017. The positive dynamics of the growth of prices for milk and dairy products is due not to the total development of the industry, this situation is due to the general economic trends in the country: the crisis in the economy and the imperfection of legislation. Negative factor is also exchange rate fluctuations.

One of the reasons for price fluctuations is the seasonality of the character of milk production with constant demand for dairy products. The largest volumes of production traditionally occur in the spring–summer period, when the dairy event reaches 1.2 million t, while in the winter it is almost twice less – about 590–600 thousand t⁴. The second is the problem of pricing for dairy products among farmers, suppliers of raw materials and their processors. Accordingly, effective negotiations are needed between raw material producers and processors, a pricing scheme that would satisfy all parties and make cooperation more predictable⁵.

³T.M. Gamma: Providing of food security at dairy market [in Ukrainian], www.dspace.oneu.edu.ua/jspui/handle/123456789/376 (access: 12.10.2018).

⁴D.K. Semenda, O.V. Semenda: The consumption of milk and dairy products in the context of food security in the region [in Ukrainian], www.lib.udau.edu.ua (access: 12.10.2018).

⁵V.V. Rossokha, O.M. Sharapa: Formation of marketing policy for agrarian enterprises, NNTs “IAE”, Kyiv 2013 [in Ukrainian].

Import and export of milk and dairy products are characterized by significant fluctuations. The largest amount was imported in 2008, at the moment the import level has fallen again to this level. The main product that imports raw and dairy products (Fig. 3).

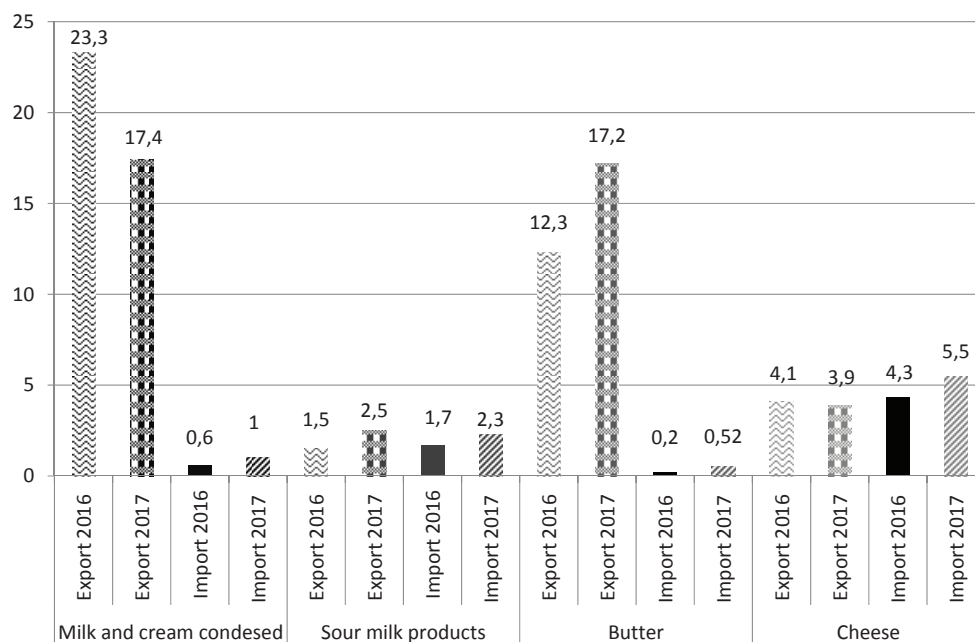


Figure 3. Dynamics of imports and exports by major categories of goods in 2016–2017

Source: calculated on the basis of: State Statistics Service of Ukraine, www.ukrstat.gov.ua (access: 10.10.2018).

The main products that are exported are milk and butter. With the introduction of close ties with the EU in Ukraine there are positive changes, since 10 January 2016, Ukraine began to export dairy products to Europe by 10 Ukrainian producers⁶.

According to individual positions of dairy products, Ukraine in 2017 increased exports by 25%. So, milk powder was exported by 37 thousand t more compared with 2016. According to the State Fiscal Service, in 2017 Ukraine imported milk worth USD 0.830 million. US exports amounted to USD 4.618 million⁷.

In order to calculate the forecast dynamics and determine the situation on the milk market in the coming years, it is necessary to analyze the situation that has developed in recent years. To do this, the method of economic-mathematical modeling was used – analytical alignment of dynamic series. In practice, such alignment is carried out by

⁶S.V. Tyvonhyk, O.Ya. Tyvonhyk, T.P. Pavlotska: Development of the milk production market in Ukraine in the context of European integration processes, *Ekonomika APK* 2017, No 4, pp. 25–31 [in Ukrainian].

⁷D.K. Semenda, O.V. Semenda, op. cit.

the least squares method, the essence of which is to find such a line, the ordinates of which points would be closest to the values of the actual dynamic series. In this case, the model will look like this:

$$y = a + bt$$

y – aligned levels of the dynamic times;

a – aligned averages in zero year (provided that $t = 0$);

b – average annual increment;

t – segments, or moments of time.

To improve the quality of the forecast, it is important to minimize the difference between the actual and projected levels of the predicted feature. Statistical estimation of the quality of the obtained equations with respect to their reliability and accuracy is carried out by calculating the mean square deviation (error), coefficient of variation, reliability indices.

Parameters of the equations obtained by the analytical alignment of the dynamic series of the investigated indicators are given in Table 2. Based on the assumption that the patterns reflected in the equations of analytical alignment will continue for a certain period of time in the future, then to obtain predictive values of the indicators for the next three years, we substitute in obtained equations of the value of time points outside the study series.

Table 2. Analytical equalization of dynamic series of indicators of dairy industry in Ukraine in 2018, 2019 and 2020

Indicator	Trend	CV (%)	R^2	Forecast		
				2018	2019	2020
Production volume (kg)	$Y = 11\,047.4 - 320.5t$	1.12	0.930	10 085.9	9 765.4	9 444.9
Average sales price (UAH/kg)	$Y = 4\,539.32 + 1\,221.12t$	27.09	0.982	8 202.68	9 423.8	10 644.92
Import (kg)	$Y = 71.42t^2 - 528.5x + 1\,800$	28.78	0.085	1 300	1 400	1 500
Export (kg)	$Y = 1\,428t^2 - 8\,971t + 22\,200$	27.09	0.655	9 800	9 400	9 000

Source: calculated on the basis of: State Statistics Service of Ukraine, www.ukrstat.gov.ua (access: 10.10.2018).

Having predicted, one can see that the next three years is expected to grow at the average price of milk sales and imports. Since all factors are interdependent, it can be said that the increase in prices with the growth of imports may be due to a protectionist policy: an increase in the cost of foreign milk to support a national producer, while a reduction in exports will lead to higher prices, so that milk producers can compensate for their costs and make a profit. Reducing milk production may be a deficit in both milk and derivative products, which does not include anything other than raising prices to cover production costs and obtaining the desired returns.

One can conclude that the reduction of milk production in the long run is obvious. The main reasons for this are the decline in production in households and low growth rates in large-scale enterprises, although the level of concentration and specialization is constantly increasing.

Today, milk production is concentrated in all regions of Ukraine. The leader is Vinnytsia region (about 653.2 thousand t in 2017). Three of the leaders include Lviv region (500.1 thousand t) and Ivano-Frankivsk region (445.0 thousand t).

By the level of consumption of milk and dairy products, the leaders are Kyiv region (956.5 thousand t), Donetsk region (682.8 thousand t) and Dnipropetrovsk region (647.2 thousand t). However, the most profitable is milk production in Volyn region (29%), Sumy region (26.8%) and Kharkiv region (24.7%).

The interdependence between the profitability of milk production and the level of its consumption is given in Table 3.

Table 3. Analytical grouping of profitability of milk and dairy products in 2017

Groups of regions for the profitability of milk (%)	Average profitability of milk in a group (%)	Average milk production in the group (thous. t)	Average milk consumption in the group (thous. t)	Number of groups	Regions
-1.3–4.76	0.45	203.70	364.65	2	Odessa, Lugansk
4.76–10.82	9.08	237.73	342.90	4	Kirovograd, Chernivetska, Transcarpathian, Donetsk
10.82–16.88	13.00	364.93	438.61	7	Rivne, Dnipropetrovsk, Zhytomyr, Vinnytsya, Kyivska, Zaporozhye, Ivano-Frankivsk
16.88–22.94	19.91	338.97	292.79	7	Kherson, Nikolaev, Poltava, Chernihiv, Lviv, Cherkasy, Khmelnytsky
22.94–29.00	25.93	307.30	318.80	4	Ternopil, Kharkiv, Sumy, Volyn

Source: calculated on the basis of State Statistics Service of Ukraine, www.ukrstat.gov.ua (access 10.10.2018).

From the analysis it was found that the level of profitability of milk and its production are interconnected except for the last group. However, the level of milk consumption does not affect the efficiency of enterprises.

Recapitulation

On the basis of the analysis, the following factors hindering the development of the dairy market can be distinguished: reduction of cows' livestock, deficiency of high-quality milk, inconsistency of raw materials with EU standards, decrease of demand for processing products due to low purchasing power of the population. In order to tackle the problem of cows' annual reduction in cows, investment in cow's keeping needs to be made, namely: the purchase or upgrading of equipment for optimal feeding of animals, the reconstruction of premises where they are, and the provision of high-quality feed and timely delivery of the stock. vaccination, create waste-free production with complex milk processing; integrate the dairy industry of Ukraine into the international community.

We believe that cooperation is one of the decisive areas for the development of dairy cattle breeding and the competitiveness of the industry. Creation of dairy associations and cooperatives will allow to accumulate funds and invest in modernization of production, provide high quality products and maximize the return on investment. The problem of dairy cattle breeding is multifaceted, which determines the need for further scientific research.

References

- Aranchiy V.I., Drogan-Pysarenko L.O., Rudich A.I.: Analytical appraisal and extrapolation of dairy market function, *Economic Analysis* 2014, No 20, pp. 14–22 [in Ukrainian].
- Gamma T.M.: Providing of food security at dairy market [in Ukrainian], www.dspace.oneu.edu.ua/jspui/handle/123456789/376 (access: 12.10.2018).
- Rossokha V.V., Sharapa O.M.: Formation of marketing policy for agrarian enterprises, NNTs "IAE", Kyiv 2013 [in Ukrainian].
- Semenda D.K., Semenda O.V.: The consumption of milk and dairy products in the context of food security in the region [in Ukrainian], www.lib.udau.edu.ua (access: 12.10.2018).
- fective Economics* 2017, No 11 [in Ukrainian], www.economy.nayka.com.ua/?op=1&z=5899.
- State Statistics Service of Ukraine, www.ukrstat.gov.ua (access: 10.10.2018).
- Tyvonyh S.V., Tyvonyh O.Ya., Pavlotska T.P.: Development of the milk production market in Ukraine in the context of European integration processes, *Ekonomika APK* 2017, No 4, pp. 25–31 [in Ukrainian].