



UDC 637.1.3(477)

## The Efficiency of the Economic Mechanism of Interaction of Dairy Market Participants and Functioning of Dairy Processing Enterprises

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► **Abstract.** In the current conditions, the production of dairy products occupies a leading place in the agro-industrial complex of Ukraine. Ukraine has a high economic, climatic and labour potential for the development of the dairy industry. The purpose of the study – a comprehensive analysis of the efficiency of the economic mechanism of relations between the participants of the dairy market, and indicators of the functioning of dairy processing enterprises with the justification of the areas of its improvement. In the course of the study, several methods were used: abstract-logical – for developing conclusions; comparative analysis – for comparing the performance indicators of dairy processing enterprises and identifying trends in their changes; tabular – for visualising the results of the study; coordinate matrix – in determining the aggregate integral indicator of the efficiency of dairy processing enterprises; calculation and constructive – to calculate indicators of economic efficiency, liquidity and solvency, financial stability and business activity of enterprises; monographic – in detailing current trends in the functioning of dairy processing enterprises; factor analysis – to determine the factors influencing the net financial result of enterprises. The modern transformations occurring in the market of milk and dairy products in Ukraine are considered, and the scale of the decrease in supply and demand indicators is established. The current state of the raw material base of milk processing enterprises of Ukraine (dynamics of purchase prices for milk, quality monitoring, a retrospective of milk purchases by dairies) is analysed. The efficiency of functioning of milk processing enterprises of the group of companies “Milk Alliance” was monitored. The element structuring of analysis of the efficiency of functioning of milk processing enterprises is proposed and tested. The aggregate integrated indicator of the efficiency of milk processing enterprises is calculated based on the structuring of a set of priority indicators of economic efficiency, liquidity and solvency, financial stability and business activity. The main areas of improving the efficiency of milk processing enterprises are proposed. Methodological and practical aspects of a comprehensive study of the efficiency of the economic mechanism of functioning of milk processing enterprises of Ukraine and substantiation of areas for its improvement were further developed. The identified approaches and results of the study can be used by state and sectoral authorities in the organisation of monitoring and development of priority measures to improve the efficiency of domestic dairy enterprises

► **Keywords:** milk, dairy products, costs, efficiency, profitability, financial stability, profit

► **Suggested Citation:** Zainchkovskyi, A., & Kryvun, M. (2021). The efficiency of the economic mechanism of interaction of dairy market participants and functioning of dairy processing enterprises. *Ekonomika APK*, 28(10), 30-42.

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## ► Introduction

Ukraine as a state is increasingly entering the market environment is considered one of the most important factors influencing the provision of the population with vital food and food independence of the country. The nature of the economic mechanism is based on incentives and interests, the totality of which constitutes the driving force of development, and the essence of this mechanism is manifested in the functions arising from its objectives. Among them, a prominent place is devoted to the harmonisation and realisation of social and personal interests, and the establishment of conditions for the effective implementation of the economic growth potential [1].

The economic mechanism is a system, the structure of which includes organisational and economic subsystems, in which organisational and economic mechanisms with levers that ensure the vital activity of business entities are established. The levers of the organisational mechanism include market self-regulation, information space, state regulation, institutional, innovative, investment and management environment. The levers of the economic mechanism are costs/resources, production of goods/services and income of various types. There is growing interest in considering the economic mechanism through the prism of ensuring optimal interaction of market participants.

## ► Analysis of recent studies and publications

Considerable attention to the theoretical aspects of the economic mechanism in the late twentieth and early twenty-first centuries was devoted by L. Abalkin [2]; I. Lukinov, O. Onishchenko, B. Paskhaver, A. Chukhno [3] etc, to applied problems related to self-supporting relations – P. Sabluk, M. Malik, V. Oliynyk; financial – M. Demianenko [4]; P. Stetsyuk, V. Aleksyichuk, S. Navrotsky. The organisational and economic mechanism of agro-industrial production development is substantiated by Yu. Luzan [5]. The levers and tools of the organisational and economic mechanism are defined by V. Rossokha [6]. The economic mechanism that defines a set of choices of economic entities, each of which is defined by a particular result, was investigated by L. Hurwicz [1].

The components of the economic mechanism of the efficient functioning of the dairy industry are established by N. Shyian [7].

Particular components of the economic mechanism for improving the efficiency of dairy production were devoted to their scientific works N. Babiak, A. Paskalova [8]; V. Dzhedzhula, I. Epifanova [9]; I. Zhalinska [10]; T. Keranchuk [11]; O. Kozak [12]; O. Mykhailenko [13]; O. Ralko [14]; V. Rossokha, O. Petrychenko [15]; S. Tyvonchuk [16]; O. Usykova [17]; I. Fedulova [18]; O. Shpychak [19]. Therewith, consideration of the economic mechanism of interaction between participants in the dairy industry and its efficiency based on the performance of dairy processing enterprises remains outside the scope of the study.

*The purpose of the study* – a comprehensive analysis of the efficiency of the economic mechanism of relations between the participants of the dairy market, and indicators of the functioning of dairy processing enterprises with the justification of the areas of its improvement.

*Research methodology.* In the course of the study, several methods were used: abstract-logical – to develop conclusions; comparative analysis – to compare the indicators of raw milk supply, the efficiency of dairy processing enterprises and identify trends in their change; tabular – for visual display of the results of the study; coordinate matrix – in determining the aggregate integral indicator of the efficiency of the economic mechanism of dairy processing enterprises; calculation and constructive – to calculate indicators of economic efficiency, liquidity and solvency, financial stability and business activity of enterprises; monographic – in detailing the current trends in the functioning of dairy processing enterprises; factor analysis – to determine the factors influencing the net financial result of enterprises.

## ► Results and Discussion

The market of milk and dairy products is a distinct system of commodity-money relations between economically separate producers of food raw materials, processing enterprises and consumers of final products. It covers the entire social reproductive process, including production, distribution, exchange, and consumption to provide the population with the

most important food products and to obtain the expected income of all market operators [18].

The instability of the dairy market, a steady tendency to curtail milk production in households resulted in a decrease in the production of milk and dairy products. In 2020, milk production decreased by 17.6% compared to 2010, and the volume of its supply to dairy processing enterprises decreased by 26.7%. However, the ratio of products produced by dairy processing enterprises to milk supplied by agricultural producers increased by 15 p.p. It is explained by the increase in the level of processing of raw materials and the increase in the physical volume of milk and cream imports by 3.5 times.

During the period 2012-2020, the total supply of milk and dairy products decreased by 10.8% (from 12.2 to 10.9 million tons), and the total demand decreased by 16.4% (from 11.7 to 9.8 million tons), due to a decrease in consumption by 14% and a significant (46.3%) reduction in exports of milk and dairy products.

The realities of the functioning of the dairy industry in rather long crisis conditions contributed to the development and establishment of integration ties between dairy producers. Consolidation between milk producers and processors is performed mostly on a contractual basis. When uniting producers into pools and establishing dairy cooperatives for the wholesale of milk, dairies provide them with milk coolers and assume the costs of arranging milk collection points. Such a mechanism of cooperation allows for the purposeful development and supply of significant volumes of dairy raw materials for processing [15].

The profitability of milk production depends on such main factors as the level of purchase prices, the scale of production, livestock productivity and

labour productivity, and the cost of production. Purchase prices for raw milk fluctuate both in dynamics and by regions of the country. During 2010-2020, the average purchase price of milk by processing enterprises tripled (from 2605 to 7899 UAH/t) with variations by regions of the country. Purchase prices for milk in enterprises exceeded the prices of households by 1.3 times.

The priority factor affecting the price of milk is its quality. On January 1, 2020, new quality standards for "homemade milk" came into force, the provisions of which are set out in DSTU 3662-97 "Whole Cow's Milk. Requirements for procurement". According to this document, there are three grades of milk in Ukraine: extra, higher and first. The updated DSTU applies to whole raw cow's milk during procurement. It cancels the second grade of milk (raw or "home milk") for acceptance at processing plants. During the period 2010-2020, the volume of milk purchases from agricultural enterprises by dairy plants increased from 1794 to 2348 thousand tons or 1.3 times. In addition, the quality of milk has a steady upward trend. The purchase of extra milk increased 10 times, and its share in the total volume increased from 4.4% in 2010 to 34.6% in 2020. In 2020, 47.6% more premium milk was purchased than in 2010, and its share increased by 2.9%. The volume of purchases of second-class milk decreased by 98%, from 779.5 thousand tons in 2010 to 15.8 thousand tons in 2020. According to European standards in 2020, dairies purchased 1759.5 thousand tons of milk, which is 68.8% of the total volume, compared to 35.7% (675.2 thousand tons) in 2010. The purchase of raw milk by processors from households decreased by 3.5 times (Table 1).

**Table 1.** Purchase of milk by dairy plants by grades of DSTU 3662-97 in dynamics

Indicator	2010	2012	2014	2015	2016	2017	2018	2019	2020	2020, %, by 2012
<i>Agricultural enterprises</i>										
Total, thousand tons	1793.6	2159.8	2297.9	2286.9	2375.7	2533.1	2560.1	2428.1	2347.7	130.9
Including										
extra	82.8	120.5	223.2	247.6	366.4	441.1	586.2	710.3	885.2	10.7 times
highest quality	592.4	710.5	820.7	849.9	923.0	987.1	1036.2	937.9	874.3	147.6
I quality	1120.1	1311.4	1250.5	1196.9	1056.0	1018.1	894.6	844.4	776.1	69.3
II quality	779.5	127.9	128.7	113.0	160.2	234.7	193.8	97.1	15.8	2.0
non-variatal	17.1	7.4	5.2	5.3	6.3	7.4	9.0	20.6	4.7	27.5
cooled up to 10 °C	1283.6	1475.9	1648.2	1651.5	1760.1	1947.8	2173.4	1884.1	1855.3	144.5

Table 1, Continued

Indicator	2010	2012	2014	2015	2016	2017	2018	2019	2020	2020, %, by 2012
<i>Households of the population</i>										
Total, thousand tons	2477.3	1953.8	1699.1	1311.5	1161.4	1199.8	1054.2	822.2	708.2	28.6
Including										
extra	-	-	-	34	66	0.38	-	-	-	-
highest quality	2.5	4.4	1.7	1.0	0.61	1.6	2.3	0.9	1.6	64.0
I quality	290.4	340.8	205.2	119.2	107.8	110.4	135.5	101.9	585.8	201.7
II quality	1576.2	1507.7	1451.6	1162.9	1028.2	1081.0	903.6	707.9	134.8	8.6
non-varietal	172.1	154.3	78.6	63.0	61.1	45.9	47.1	40.5	10.8	6.3
cooled up to 10 °C	774.9	718.3	805.4	629.2	489.4	544.0	559.0	354.4	418.5	54.0

**Source:** Developed based on [20]

According to the data, the quality of milk in households and agricultural enterprises differs significantly. Extra milk was purchased by processors only during 2015-2017. The volume of premium milk supplied for processing by households decreased by 36.0%, first-grade milk doubled, and its share increased from 11.4% in 2010 to 79.9% in 2020. The purchase of non-grade milk by dairies decreased 9 times, with its share decreasing to 1.5%. The overall decrease in the purchase of milk cooled to 10°C is almost doubled by an increase in its share in the dynamics of the period under study by 27.9 p.p.

The decrease in the production of most types of dairy products over the past seven years could not but affect the dynamics of their sales. Thus, during the analysed period, natural sales of liquid milk decreased by 21.2%, milk and cream with a fat content of more than 6% – by 40.4%, milk powder – by 32.8%, and butter – by 26.4%. The growth of sales was registered only in the range of flavoured dairy products (1.2 times). Therewith, the sale of dairy products in monetary terms has a positive trend. The cost of liquid milk sold from 2014 to 2020 has doubled, milk and cream with a fat content of more than 6% – by 67%, processed cheese – by 2.5 times, fresh cheese – by 2 times, fermented milk products – by 1.9 times, flavoured fermented milk products – by 3.1 times, ice cream – by 3.4 times.

In the course of the study, the tendency of relative equivalence of exchange between industrial and agricultural products, milk processing and raw milk production was established. Thus, during 2014-2020, the selling price of milk increased from 3117 to 8036 UAH/t, which is 2.6 times. By categories of producers, agricultural enterprises increased the selling

price by 2.5 times (from 3588 to 8840 UAH/t), and households – by 2.8 times, from 2425 to 7006 UAH/t. Regarding the price dynamics of the range of dairy products, equivalent growth rates are observed. The price of liquid and fat milk has increased by 2.5 and 2.8 times respectively. Butter has become 2.6 times more expensive, fresh cheese – 2.4 times, rennet cheese – 2 times, and dairy products – 2.5 times.

System analysis convincingly demonstrates that for the development of milk production and processing it is essential to ensure the efficiency of the “production-processing-sales” chain. For this purpose, the orientation of production to the end consumer on the principles of marketing should define precise purposes and methods of their achievement by each participant of the integrated production.

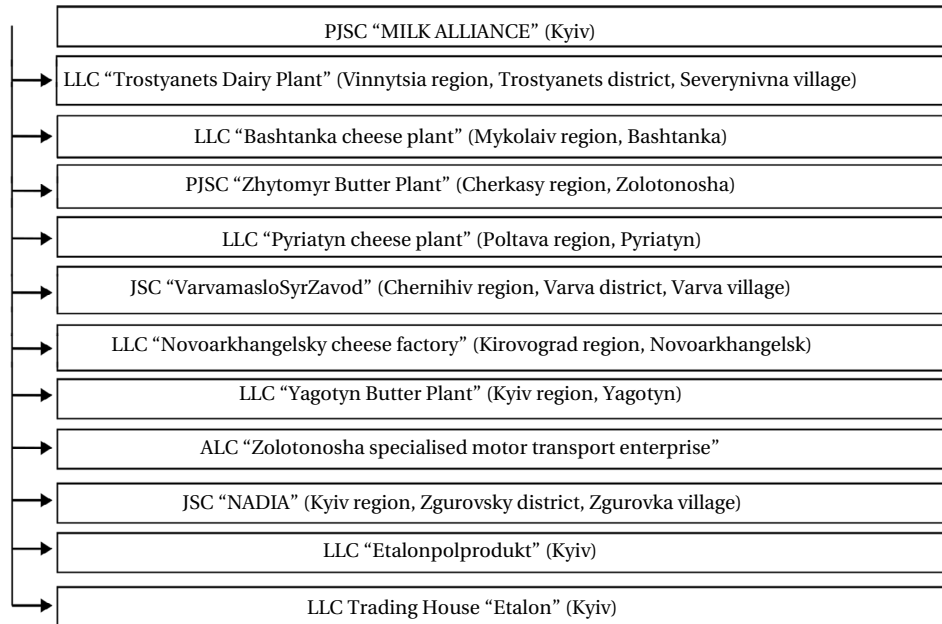
Monitoring of the efficiency of dairy processing enterprises was performed on the example of the Group of Companies “Milk Alliance”, whose activities are related to milk processing and production of hard cheeses, milk powder, whole milk products, butter and other related products (Fig. 1).

The Group's production facilities are located in different regions of Ukraine, including Kyiv, Chernihiv, Cherkasy, Poltava, Kirovograd, Vinnytsia and Mykolaiv regions. The immediate parent company of JSC “Milk Alliance” is MilCo Holding N.V. (Netherlands), which owns 100% of shares of JSC “Milk Alliance”. The Group of companies “Milk Alliance” unites powerful enterprises for the production and sale of the main types of dairy products, the leader of the dairy industry of Ukraine.

The Group of companies includes enterprises for the production of cheese, whole milk and dairy products, enterprises for the collection and processing

of milk and dairy products, and companies engaged in the sale of products in Ukraine and abroad. The products are manufactured under the brands “Pyriatyn”, “Slavia”, “Yagotynske”, “Yagotynske for Chil-

dren”, “Zlatokrai” and “MilkAlliance”. The company’s product portfolio is balanced to meet the demands of a wide range of consumers in various product categories of the dairy and cheese market.



**Figure 1.** Enterprises belonging to the Group of companies “Milk Alliance”, 2020

**Source:** Developed based on [17]

The company is in continuous search of new progressive solutions and new products. Innovative technologies are being introduced, and the principles of business management are constantly being improved, in particular, all the largest plants are certified according to international standards of management and quality control ISO 9000 and HACCP, which allows the enterprises of the Group of companies “Milk Alliance” to meet modern market requirements [21].

The economic mechanism of functioning of JSC “Milk Alliance” and its enterprises is structured: on the management of production and assortment of dairy products manufactured by the company’s enterprises; on the system of quality assurance and control of products; on the organisation of supply of raw materials and other material resources; on the marketing management system; on the organisation of national sales and export; on the system of information support, development and implementation of information technologies, software; on the organisation of research and development. All dairies of JSC “Milk Alliance” have successfully passed the certification audit for compliance with the integrated food safety and quality management system with

the requirements of two international standards ISO 9001:2015 and ISO 22000:2018 (HACCP).

These international standards define the requirements for a food safety and quality management system and are designed specifically for organisations that wish to prove their ability to systematically produce quality and safe products that meet consumer requirements.

In 2020, all enterprises confirmed the international Halal certificate issued by the “Halal Alraid” Research and Certification Center, which allows Muslims around the world to eat all assortment items of the “SLAVIA”, “Yagotynske”, “Pyriatyn” trademarks. The mentioned certificate provided an opportunity to export food products to the countries of the Arab-Muslim world. The economic mechanism of the functioning of dairy processing enterprises included in the Group “Milk Alliance” has unified tactics designed to improve the sanitary condition of enterprises, the introduction of deep processing of raw materials, and energy saving.

The comprehensive analysis of the efficiency of the economic mechanism of functioning of dairy processing enterprises in the process of research is

structured by the following elements: assessment of the production and assortment policy of enterprises; assessment of the economic efficiency of enterprises and using their resource potential; factor analysis of changes in the profitability of enterprises; monitoring and diagnostics of liquidity and solvency of enterprises; analysis and determination of the level of financial stability of enterprises; monitoring the level of business activity of enterprises; determination and retrospective analysis of the integrated indicator of the efficiency of the economic mechanism of milk processing enterprises.

The application of the tools of such a structured system of indicators provided an opportunity to analyse in detail in retrospect the efficiency of the economic mechanism of the dairy processing enterprises of the Group of Companies "Milk Alliance".

Notably, each dairy processing enterprise that is a part of Group "Milk Alliance" has its specific features. Thus, LLC "Yagotynsky Butter Plant" and the branch "Yagotynske for Children" are located near Kyiv and the main consumers of their products are urban residents. Enterprises have the opportunity to sell low-transportable and unsuitable for long-term storage of drinking milk and fermented milk products without deep processing of raw materials.

The processing enterprises (LLC "Bashtanka Cheese Plant", LLC "Zolotonosha Butter Plant" and LLC "Pyriatyn Cheese Plant"), which are located far from large cities and consumers, mostly process milk into products with a long shelf life (hard cheeses, butter, condensed milk, skimmed milk powder, casein) and wide domestic and foreign markets.

Monitoring of the efficiency of the economic mechanism of milk processing enterprises was performed according to their production and financial statements. The analysis of the production and sales policy of dairy processing enterprises identified some trends. During the analysed period, LLC "Bashtanka cheese plant" almost halved the production and sales of hard cheeses (from 3697 tons in 2017 to 1978 tons in 2020), sales of processed cheeses decreased by 38.4%, and butter – by 27.7%. There is a structural transformation of the assortment policy of the enterprise in the field of increasing the production and sale of different types of fermented milk products – yogurts – 1.9 times, milk – 1.7, fermented baked milk – 1.5, sour cream and kefir – 1.4 times.

The transformation processes that have occurred in the field of the export orientation of the dairy industry of Ukraine have influenced the assortment policy of LLC "Zolotonosha Butter Plant". During the analysed period, the production and sales of hard cheeses decreased by 10 times (from 1501 tons in 2016 to 155 tons in 2020). The company increased the production of butter by 1.5 times, protein and fat products – by 1.3 times, and whey powder – by 1.2 times. Since 2018, the company has expanded its range of dairy products and started the production of milk powder and soft cheeses.

The second in the Group of companies "Milk Alliance" in terms of production and revenue from sales of LLC "Pyriatyn cheese plant". During the analysed period, the company remained unchanged in the production of its main product – hard cheese (3,500 tons of cheese were produced in 2020 compared to 3,200 tons in 2016) but expanded its range since 2018 with the production of milk-containing products and whey powder.

LLC "Yagotynsky Butter Plant" ranks first in terms of production and sales of dairy products in the Group of Companies "Milk Alliance". During 2016-2020, the company increased the production and sales of its product range – drinking milk – by 5.3%, cheese and curd products – by 10.0%, and fermented milk products – by 42.4%.

Revenue of LLC "Bashtansky cheese plant" from the sale of dairy products increased by 26.2% (from 718.9 million UAH in 2014 to 907 million UAH in 2020), gross profit increased by 24%, while the net financial result decreased by 17.3%, or by 5 million UAH (Table 2).

During the analysed period, the company received a net loss in the crisis years of 2015 and 2019. Factor analysis of the decrease in the net financial result identified that the decrease in the profitability of the enterprise was influenced by: an increase in the cost of production of dairy products (a decrease in profit amounted to UAH 163.4 million), an increase in financial expenses related to borrowings and interest payments, reduced net profit by UAH 38 million, an increase in operating expenses reduced profit by UAH 6.1 million.

The operating leverage effect is estimated at 0.66, i.e. with a 1% increase in sales, net profit increased by 0.66%. Production risk is assessed as low.

The increase in revenue from sales of LLC “Zolotonosha Butter Plant” was 52.4% (from UAH 644.4 million in 2014 to UAH 999.2 million in 2020). However, the rate of cost growth led to a decrease in the gross profit of the enterprise by 19%. Due to a significant increase in other income, the company’s net profit doubled and reached UAH 71.5 million in 2020. The company was unprofitable in 2015, 2017 and 2018. Based on the factor analysis of changes in net profit, it

was established that the priority impact on its growth was an increase in sales revenue (the impact was estimated at UAH 343.4 million), and an increase in other operating and other income of the enterprise, which increased net profit by UAH 55.5 and 51.0 million, respectively. The level of operating leverage of the enterprise was 1.32, which states a rather high sensitivity of net income to changes in sales revenue and the presence of significant production risk.

**Table 2.** A general assessment of the composition and dynamics of financial results of the enterprises of LLC “Milk Alliance” in 2014-2020, UAH mln

Indicator	2014	2015	2016	2017	2018	2019	2020	2020, %, before 2014
<b>LLC «Bashtanka cheese factory»</b>								
Net income from sales of products (goods, works, services)	718.9	581.5	664.7	846.9	1023.8	997.9	907.0	126.2
Cost of sales of products (goods, works, services)	615.7	488.4	524.4	681.7	841.11	886.8	779.0	126.5
Net financial result: income (loss)	28.8	(3,9)	43.9	46.0	24.1	(14,8)	23.8	82.7
<b>LLC «Zolotonosha Butter Plant»</b>								
Net income from sales of products (goods, works, services)	655.5	675.2	764.3	1087.4	1052.5	1095.0	999.2	152.4
Cost of sales (goods, works, services)	545.6	617.2	659.1	899.6	970.8	1033.5	891.4	163.4
Net financial result: income (loss)	35.4	(5,9)	44.4	73.6	(25,8)	(54,3)	71.5	202.0
<b>LLC «Pyriatyn cheese plant»</b>								
Net income from sales of products (goods, works, services)	773.2	759.1	1055.4	1521.0	1616.5	1356.0	1371.0	177.3
Cost of sales of products (goods, works, services)	650.1	891.8	659.8	1284.7	1456.7	1286.1	1242.0	191.1
Net financial result: income (loss)	47.3	4.5	60.0	96.4	(16,0)	(62,1)	37.6	79.5
<b>LLC «Yagotinsky butter plant»</b>								
Net income from sales of products (goods, works, services)	1171.7	1659.6	2024.7	2706.1	3201.7	3160.5	3166.3	270.2
Cost of sales (goods, works, services)	894.4	1271.2	1521.8	2052.9	2342.4	2566.8	2657.9	297.2
Net financial result: income (loss)	25.0	60.7	129.6	164.5	253.7	184.7	129.5	517.6

**Source:** Developed based on [21]

During the analysed period, the revenue from sales of LLC “Pyriatyn Cheese Plant” increased by 1.8 times (from UAH 773.2 million in 2014 to UAH 1371.0 million in 2020). Therewith, the cost price almost doubled, sales expenses increased by 77.8%, and other operating expenses – by 83.3%. The company twice ended the financial year with a loss result (in

2018 and 2019). In 2020, the company received a net income of UAH 37.6 million, which is 20.5% lower than in 2014. The following factors had the greatest impact on the decrease in the company’s profitability: an increase in production costs (reduced net profit by UAH 591.1 million), an increase in sales costs (reduced income by UAH 20.6 million), an

increase in financial expenses associated with servicing long-term liabilities and short-term bank loans, reduced the net financial result by UAH 22.2 million.

Revenue from the sale of products of LLC “Yagotyn Butter Plant” increased by 2.7 times, while the cost price increased by 3 times. During 2014-2020, the functioning of the economic mechanism of LLC “Yagotyn Butter Plant” was described by stable profitability, which increased from UAH 25 million in 2014 to UAH 129.5 million in 2020. The most significant positive impact on the 5-fold increase in net profit was identified by the following factors: the growth of sales revenue increased profit by UAH 199.5 million, other income – by UAH 24.4 million, and the reduction of other expenses contributed to an increase in net income by UAH 19.4 million. The greatest adverse impact on the net financial result of the company had a threefold increase in the cost of production. The increase in sales expenses by 88% reduced net income by UAH 112.2 million, and the increase in financial expenses by 38.8% reduced net income by UAH 20.2 million. The effect of operating leverage is estimated at 1.92, which indicates a fairly high elasticity of net income to fluctuations in sales revenue and the presence of production risk.

The research has established a steady tendency to increase borrowed capital by the enterprises of the Group “Milk Alliance”. If in 2014 the share of equity capital of LLC

“Bashtanka cheese plant” accounted for 47% of the total amount, in 2020 the mentioned figure decreased almost three times – to 16.4%. During the analysed period, the company gradually increased using borrowed resources, the maximum share of which in 2019 exceeded 90%. During the analysed period, the capital of the LLC “Zolotonosha Butter Plant” increased by 2.5 times, using borrowed funds increased by 3.4 times, and equity capital increased by only 16%.

The growth of financial expenses of LLC “Pyriatyn cheese plant” almost 5 times due to the increase of borrowed capital by the enterprise. Therewith, equity capital decreased by half during 2014-2020, and its share in the total capital structure decreased from 60.8% to 24.4%. If the level of production risk of the enterprise is estimated as low (a change in sales revenue by 1% leads to a change in net income by 0.45%), then the increase in the level of financial leverage from 0.65 to 3.11 due to an increase

in long-term liabilities by 25%, and the amount of short-term loans to UAH 93.4 million, significantly increases the financial risk of the enterprise.

LLC “Yagotyn Butter Plant” for the analysed period increased its equity capital 4 times, and its share increased from 27.7 to 38.3%. The growth rate of borrowed capital is 1.6 times lower than the same indicator of increasing its resource potential. However, the growth of borrowed capital by 2.5 times resulted in an increase in financial expenses for servicing long-term liabilities and short-term bank loans by only 38%, which indicates the efficiency of the company’s financial and financial risk management system.

The research determined the type of financial stability of enterprises:

- the financial condition of LLC “Bashtanka Cheese Plant” during 2014-2020 was identified as normal; during 2014-2017, the type of financial stability of LLC “Zolotonosha Butter Plant” was assessed as normal, but since 2018 it has been transformed into a crisis state; the financial stability of LLC “Pyriatyn Cheese Plant” in 2014-2017 was identified as absolute, but for the period 2018-2020 as a crisis;
- during 2015-2020, LLC “Yagotyn Butter Plant” ensured a normal level of financial stability.

The profitability of LLC “Bashtanka cheese plant” for the analysed period did not exceed 7.2%. In 2020, this indicator was 2.7%, which is 1.5% lower than in 2014. The decrease in efficiency is observed in all components of the enterprise, except for equity, the profitability of which increased from 17.8 to 27.9%.

The twofold increase in net income could not but affect the profitability of LLC “Zolotonosha Butter Plant”. The highest rates of growth returned on equity (from 30.9 to 53.8%) and return on fixed assets (from 32.7 to 49.8%). Profitability increased by 1.1 p.p. and remains at an insufficient level - only 6.9%. The efficiency of using working capital, borrowed capital and all property of the enterprise decreased.

All relative performance indicators of LLC “Pyriatyn cheese plant” (except for return on equity) decreased during the analysed period. The profitability of the company decreased from 6.4 to a minimum of 2.8%, the profitability of production – from 7.3 to 3%, and sales – from 6.1 to 2.7%. The increase in net income by 5.7 times, compared to the increase in revenue from sales of products by 2.7 times, had a

relatively positive impact on the performance indicators of LLC “Yagotyn Butter Plant”. The profitability of the enterprise, and other dairies of the Group of companies “Milk Alliance”, remains low (4.3%) but there is a tendency to double the growth of this indicator compared to 2014. Return on equity increased by 4.8% (from 17.1% in 2014 to 21.9% in 2020).

The aggregate integral indicator of the efficiency of the economic mechanism of milk processing enterprises is calculated using the method of matrix-coordinates based on the structuring of a set of priority indicators of economic efficiency, liquidity and solvency, financial stability and business activity of enterprises (Table 3).

**Table 3.** System of performance indicators of the economic mechanism of milk processing enterprises of the Group of Companies “Milk Alliance”, 2014-2020

Indicator	LLC «Bashtanka cheese factory»		LLC «Zolotonosha Butter Plant»		LLC «Pyriatyn cheese factory»		LLC «Yagotinsky butter plant»	
	2014	2020	2014	2020	2014	2020	2014	2020
Net income	28788	23813	35410	71519	47313	37602	25028	129547
Sales profitability	4.0	2.6	5.4	7.2	6.1	2.7	2.1	4.1
Profitability of activity	4.2	2.7	5.7	6.9	6.4	2.8	2.2	4.3
Profitability of own capital	17.8	29.7	30.9	53.8	18.8	30.8	17.1	21.9
Profitability loan capital	15.6	5.8	20.0	11.8	29.1	9.9	6.5	13.5
Coverage ratio	2.61	2.28	2.23	1.25	4.41	2.13	1.44	2.00
Ratio of rapid liquidity	2.17	0.83	2.01	0.62	3.89	1.37	1.01	1.79
Ratio of total liquidity	0.05	0.08	0.03	0.36	0.09	0.48	0.08	0.02
Excess of own and long-term sources of working capital development	83223	11834	-957381	-239125	187385	-59060	-84982	25889
Ratio of autonomy (independence)	0.47	0.16	0.39	0.18	0.61	0.24	0.28	0.38
Ratio of financial stability	0.67	0.43	0.61	0.29	0.78	0.42	0.48	0.51
Equity ratio of own working capital	0.32	-0.07	-5.3	-0.04	0.53	0.05	-0.08	0.07
Ratio of turnover of assets	2.7	2.4	3.6	1.7	2.2	3.4	3.3	3.1
Ratio of accounts receivable turnover	3.9	8.4	4.9	19.4	2.9	8.9	5.4	3.8
Ratio of accounts payable turnover	6.2	3.2	5.8	1.9	8.4	4.7	4.2	4.2
Ratio of turnover of material reserves	8.5	8.7	10.9	3.0	9.8	7.4	5.6	10.8
Ratio of turnover of equity capital	4.5	11.3	5.7	7.5	3.1	11.2	8.0	5.3
Ratio of turnover loan capital	3.9	2.2	3.7	1.7	4.8	3.6	3.1	3.3
<b>Aggregate indicator of efficiency of the economic mechanism</b>	<b>11.52</b>	<b>6.92</b>	<b>10.81</b>	<b>5.78</b>	<b>12.29</b>	<b>6.62</b>	<b>5.18</b>	<b>6.99</b>

**Source:** Developed and calculated based on [21]

The highest level of the efficiency indicator of the economic mechanism in 2020 was in LLC “Yagotyn Butter Plant” – 6.92, the lowest (5.78) – in LLC “Zolotonosha Butter Plant”. Except for LLC “Yagotyn Butter Plant”, where the aggregate indicator tends to grow, all

other enterprises of the Group of companies “Milk Alliance” significantly worsened the main indicators of their efficiency. Thus, “Zolotonosha Butter Plant” and “Pyriatyn Cheese Plant” reduced their efficiency by almost half, and “Bashtanka Cheese Plant” – by 40%.

## ► Conclusions

Interaction of dairy market participants is based on commodity-money relations, including price characteristics of raw milk – dynamic fluctuations, quality standards, volumes and regional deviations.

The analysis of the production and financial statements of the Group of Companies “MilkAlliance” demonstrated that the decrease in the efficiency of the economic mechanism of dairy processing enterprises is explained by the following factors: increase of borrowed capital by enterprises (long-term and short-term bank loans) to finance current activities, respectively, and increase of financial expenses for servicing their obligations, which significantly reduces the net financial result; excess of the growth rate of net sales income compared to the growth rate of milk cost; decrease in coverage and quick liquidity indicators with simultaneous growth of absolute liquidity of the enterprise, which is associated with the development of unproductive assets; decrease in the level of financial stability of

enterprises, indicators of autonomy and financial stability, coefficients of equity mobility and provision with own working capital, which increases the dependence of enterprises on borrowed funds; decrease in the level of provision of enterprises with their own working capital and asset turnover, increase in the period of their turnover and increase in the operating cycle of enterprises; decrease in the level of business activity of enterprises by indicators of turnover of receivables and payables, turnover of assets and inventories, equity and borrowed capital.

Considering the above, the solution to the problem of improving the efficiency of the economic mechanism of functioning of dairy processing enterprises should emphasise the following areas that require further scientific study: optimisation of the structure of assets and liabilities of business entities and forecasting of receivables; introduction of a system for assessing the solvency and financial discipline of potential buyers; operational control over the efficiency of production costs to increase profitability.

## ► References

- [1] Hurwicz, L. (1994). Economic design, adjustment processes, mechanisms, and institutions. *Economic Design*, 1, 1-14.
- [2] Abalkin, L.I., et al. (1986). *The economic mechanism of social formations*. Moskva: Mysl'.
- [3] Chukhno, A. (2007). Economic mechanism and ways to improve it at the present stage. *Economy of Ukraine*, 3, 60-67.
- [4] Demianenko, M.Ya. (2000). *Finance of agricultural enterprises (manual on financial relations in market conditions)*. Kyiv: IAE.
- [5] Luzan, Yu.Ya. (2010). *Organizational and economic mechanism for ensuring the development of agro-industrial production of Ukraine*. Kyiv: NNTs IAE.
- [6] Rossokha, V.V. (2009). Organizational and economic mechanism and its role in the development of the agricultural sector. *Bulletin of KhNAU. Series: Economics of Agro-Industrial Complex and Nature Management*, 13, 84-91.
- [7] Shyian, N.I. (2020). *Improving the components of the economic mechanism of effective development of livestock*. Kharkiv: KhNAU.
- [8] Babiak, N.D., & Paskalova, A.H. (2015). Balanced system of indicators in assessing the cost management of the dairy enterprise. *Innovatsiina Ekonomika*, 4(59), 87-92.
- [9] Dzhedzhula, V.V., Yepifanova, I.Yu., & Dziubo, M.Yu. (2018). Directions for improving the efficiency of the dairy industry. *Investments: Practice and Experience*, 11, 12-14.
- [10] Zhalinska, I.V. (2016). The impact of transformation processes on the activities of dairy enterprises in times of crisis. *Journal of ZSTU: Economics, Management and Administration*, 2(76), 65-73.
- [11] Keranchuk, T.L. (2015). Actual problems of enterprises of the dairy industry of Ukraine. *Scientific Works of the National University of Food Technologies*, 6(21), 48-53.
- [12] Kozak, O.A. (2020). Assessment of the role and significance of the dairy subcomplex for solution of food supply and the national economy. *Ekonomika APK*, 11, 39-51. doi: 10.32317/2221-1055.202011039.

- [13] Mykhailenko, O.V., & Skomorokhova, S.Yu. (2018). Improving the competitiveness of dairy products in Ukraine. *Black Sea Economic Studies*, 29, 16-19.
- [14] Ralko, O.S., Ilienکو, N.O., & Spasenko, Yu.O. (2016). Prospects for the development of exports of dairy processing enterprises of Ukraine. *Scientific Works of the National University of Food Technologies*, 3(22), 82-90.
- [15] Rossokha, V.V., & Petrychenko, O.A. (2018). Development of the milk and dairy products market in Ukraine. *Ekonomika APK*, 8, 43-54.
- [16] Tyvonchuk, S.V., Tyvonchuk, Ya.O., & Pavlotska, T.P. (2017). Development of the milk production market in Ukraine in the context of European integration processes. *Ekonomika APK*, 4, 25-31.
- [17] Usykova, O.M. (2019). The concept of competitive strategic choice and analysis of the development of dairy enterprises in Ukraine. *Eastern Europe: Economy, Business and Management*, 2(19), 198-204.
- [18] Fedulova, I. (2018). Dairy market of Ukraine: Opportunities and threats. *Commodities and Markets*, 1, 15-28.
- [19] Shpychak, O.M. (2021). Organisational and economic problems of milk production in Ukraine and their solutions. *Ekonomika APK*, 4, 24-39.
- [20] State Statistics Service of Ukraine. (n.d.). Retrieved from <http://www.ukrstat.gov.ua>.
- [21] Group of Companies "Milk Alliance". (n.d.). Retrieved from <http://milkalliance.com.ua>.

#### ► Список використаних джерел

- [1] Бабяк Н. Д., Паскалова А. Г. Збалансована система показників в оцінці ефективності управління витратами молокопереробного підприємства. *Інноваційна економіка*. 2015. № 4(59). С. 87–92.
- [2] Джеджула В. В., Єпіфанова І. Ю., Дзюбо М. Ю. Напрями підвищення ефективності діяльності підприємств молочної галузі. *Інвестиції: практика та досвід*. 2018. № 11. С. 12–14.
- [3] Жалінська І. В. Вплив трансформаційних процесів на діяльність підприємств з виробництва молочних продуктів в умовах кризи. *Вісник Житомирського державного технологічного університету. Серія: Економічні науки*. 2016. № 2 (76). С. 65–73.
- [4] Керанчук Т. Л. Актуальні проблеми підприємств молочної галузі України. *Наукові праці Національного університету харчових технологій*. 2015. № 6 (Т. 21). С. 48–53.
- [5] Козак О. А. Оцінка ролі та значення молокопродуктового підкомплексу для вирішення продовольчого забезпечення та національної економіки. *Економіка АПК*. 2020. № 11. С. 39–51.
- [6] Лузан Ю. Я. Організаційно-економічний механізм за-безпечення розвитку агропромислового виробництва України : монографія. Київ : ННЦ ІАЕ, 2010. 472 с.
- [7] Михайленко О. В., Скоморохова С. Ю. Підвищення конкурентоспроможності молочної продукції в Україні. *Причорноморські економічні студії*. 2018. Вип. 29. С. 16–19.
- [8] Офіційний сайт Груп компаній «Молочний альянс». URL: <http://milkalliance.com.ua> (дата звернення: 15.10.2021).
- [9] Офіційний сайт Державної служби статистики України. URL: <http://www.ukrstat.gov.ua> (дата звернення: 2.10.2021).
- [10] Ралко О. С., Ільєнко Н. О., Спасенко Ю. О. Перспективи розвитку експорту продукції молокопереробних підприємств України. *Наукові праці Національного університету харчових технологій*. 2016. № 3. (Т. 22). С. 82–90.
- [11] Россоха В. В. Організаційно-економічний механізм та його роль у розвитку аграрної сфери. *Вісник ХНАУ. Серія: Економіка АПК і природокористування*. 2009. № 13. С. 84–91.

- [12] Россоха В. В., Петриченко О. А. Розвиток ринку молока та молокопродукції в Україні. *Економіка АПК*. 2018. № 8. С. 43–54
- [13] Тивончук С. В., Тивончук Я. О., Павлоцька Т. П. Розвиток ринку виробництва молока в Україні в контексті євроінтеграційних процесів. *Економіка АПК*. 2017. № 4. С. 25–31.
- [14] Усикова О. М. Концепція конкурентного стратегічного вибору та аналіз розвитку молокопереробних підприємств України. *Східна Європа: економіка, бізнес та управління*. 2019. № 2(19). С. 198-204.
- [15] Федулова І. Ринок молочної продукції України: можливості та загрози. *Товари і ринки*. 2018. № 1. С. 15–28.
- [16] Фінанси сільськогосподарських підприємств (посібник з питань фінансових відносин у ринкових умовах) ; за ред. М. Я. Дем'яненка. Київ : ІАЕ, 2000. 604 с.
- [17] Хозяйственный механизм общественных формаций / Абалкин Л. И. и др. ; под общ. ред. Л. И. Абалкина. Москва : Мысль, 1986. 268 с.
- [18] Чухно А. Господарський механізм та шляхи його удосконалення на сучасному етапі. *Економіка України*. 2007. №. 3. С. 60–67.
- [19] Шиян Н. І. Удосконалення складників економічного механізму ефективного розвитку скотарства: монографія. Харків : ХНАУ, 2020. 350 с.
- [20] Шпичак О. М. Організаційно-економічні проблеми виробництва молока в Україні та їх вирішення. *Економіка АПК*. 2021. № 4. С. 24–39.
- [21] Hurwicz L. Economic Design, adjustment processes, mechanisms, and institutions. *Economic Design*. 1994. Vol. 1. P. 1-14.

## Ефективність господарського механізму взаємодії учасників молочного ринку та функціонування молокопереробних підприємств

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► **Анотація.** В умовах сьогодення виробництво молочної продукції займає провідне місце в АПК України. В Україні високий економічний, природно-кліматичний, трудовий потенціал розвитку молочної галузі. Мета статті – провести комплексний аналіз ефективності господарського механізму щодо відносин між учасниками молочного ринку, а також показників функціонування молокопереробних підприємств з обґрунтуванням напрямів її підвищення. У процесі дослідження використано ряд методів: абстрактно-логічний – для формулювання висновків; порівняльного аналізу – для зіставлення показників ефективності функціонування молокопереробних підприємств та виявлення тенденцій їх зміни; табличний – для наочного зображення отриманих результатів дослідження; матриці координат – при визначенні сукупного інтегрального показника ефективності молокопереробних підприємств; розрахунково-конструктивний – для розрахунку показників економічної ефективності, ліквідності та платоспроможності, фінансової стійкості й ділової активності підприємств; монографічний – при деталізації сучасних тенденцій функціонування молокопереробних підприємств; факторного аналізу – для визначення факторів впливу на чистий фінансовий результат підприємств. Розглянуто сучасні трансформації, що відбуваються на ринку молока та молочних продуктів України, встановлено масштаби зниження показників попиту і пропозиції. Проаналізовано сучасний стан сировинної бази молокопереробних підприємств України (динаміка закупівельних цін на молоко, моніторинг якості, ретроспектива закупівлі молока молокозаводами). Проведено моніторинг ефективності функціонування молокопереробних підприємств групи компаній «Молочний альянс». Запропоновано й апробовано елементну структуру аналізу ефективності функціонування молокопереробних підприємств. Розраховано сукупний інтегральний показник ефективності молокопереробних підприємств на основі структуризації сукупності пріоритетних показників економічної ефективності, ліквідності й платоспроможності, фінансової стійкості та ділової активності. Запропоновано основні напрями підвищення ефективності функціонування молокопереробних підприємств. Набули подальшого розвитку методико-практичні аспекти щодо комплексного дослідження ефективності господарського механізму функціонування молокопереробних підприємств України та обґрунтування напрямів її підвищення. Визначені підходи і результати дослідження можуть бути використані органами державного й галузевого управління при організації моніторингу та розробки пріоритетних заходів щодо підвищення ефективності підприємств вітчизняної молочної галузі

► **Ключові слова:** молоко, молокопродукція, витрати, ефективність, рентабельність, фінансова стійкість, прибуток