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## **COMPARISON OF THE FINANCIAL CONDITION OF MILK PROCESSING ENTERPRISES IN POLAND AND UKRAINE**

Key words: milk, processing, profitability, profit, the dairy industry

**ABSTRACT.** The study aimed to compare and evaluate the effectiveness of enterprises processing and trading dairy products in Poland and Ukraine. Milk processing is an important sector of food production. Milk and milk products account for about 14% of world trade in agricultural products. The five largest companies from Poland and Ukraine were selected for the study. Evaluation of the effectiveness of dairy enterprises required the adoption of appropriate indices. Therefore, the research considered, above all, the indices characterizing the profitability of the surveyed companies as the basic ones in the evaluation of the financial condition of enterprises. In addition, the evaluation included the surveyed enterprises' return on sales, assets, and equity. The analyses were performed based on data available in the EMIS database for 2016-2020. In Poland, the milk processing sector was in a relatively good financial condition, although the profitability ratios were not too high. Profitability ratios have long been lower than the food industry average and have fallen even further in recent years. The data show that the return on equity slightly exceeded the interest rate on bank deposits and treasury bonds. In Ukrainian enterprises, the return on equity, assets, and sales was much higher, but it was also characterized by high volatility.

### **INTRODUCTION**

Milk is one of the world's most popular and valuable agricultural products. Milk and milk products account for about 14% of global trade in agricultural products, and fresh cow's milk accounts for 82.7% of global milk production [FAO 2016]. Milk processing is one of the primary activities in the production of foodstuff. It is forecast that the demand for dairy products and technologies will increase in the coming years [Britt et al. 2018].

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Milk and dairy products are essential food in human nutrition worldwide [Špička 2015, Feil et al. 2020] and are considered strategic commercial goods [KOWR 2020]. For this reason, the dairy sector can also be considered one of the critical parts of the food system. The dairy industry is also a source of income for farmers, processors, distributors, and other participants in the global food chain.

Therefore, the study addressed the issue of assessing the operation of enterprises by analyzing their profitability. It is an important indicator that shows whether or not the company's operations are effective.

## CONDITION OF THE DAIRY INDUSTRY IN POLAND AND UKRAINE

The dairy industry is one of the leading industries in Ukraine and has shown a tendency for active development for many years. This industry is integral to ensuring the country's food security and supporting socially vulnerable groups of the population, as well as the primary source of livelihood and employment for rural residents [Shpychak et al. 2022]. However, since 2014, the situation in the dairy sector has become more complicated. The biggest problem of the dairy sector was the loss of the Russian market [Gereles, Szöllösi 2019], which accounted for about 80% of exports of dairy products [Linetska 2022]. Nonetheless, a significant achievement of the dairy sector in Ukraine has been the increase in the milk yield of dairy cows.

In the 90s of the last century, Ukraine occupied the 6th place in milk production worldwide. Currently, it is the 18th place. Over the last 30 years, processing enterprises have decreased almost three times. At the end of 2019, 192 enterprises showed the effects of their business operations, which confirms that milk production and processing in this country have significantly decreased [Linetska 2022]. Due to logistical problems related to the Russian invasion, there was a temporary suspension of operations or production reductions. Currently, about 65% of dairy companies continue to operate – enterprises in this industry resume operations in the regions where it is possible [Dairy Global 2022]. Raw milk production has so far remained stable, and Ukraine has not had to import dairy products [Dairy Global 2022], although the number of dairy cows has decreased significantly. In the 1990s of the XX century, 6.3 million heads of cattle were kept on farms. In 2020, about 1.7 million cows were on the farms [Linetska 2022]. According to the latest data from the Association of Milk Producers, milk production in Ukraine decreased by 12.4% in the ten months of 2022 due to reductions in the number and productivity of cows in front-line zones and areas with active hostilities. Despite this, revenues from the export of dairy products from Ukraine in September 2022 reached a year-to-date record and amounted to USD 35.9 million, which is 2.45 times more than in September 2021 [Interfax Ukraine 2022].

Unfortunately, rising milk prices, related to further Russian activities and the situation in global markets, are a big challenge. As Yana Linetska [2022] points out, experts predict a decrease in global milk production due to a significant increase in production costs and due to a decrease in demand for dairy products on the global market caused by a decrease in imports by China and buyers from South-Eastern Asia and Northern Africa.

Lyudmila Pronko and a team of researchers [2020] indicated that the sales price was an essential factor in the development of production activities for milk producers. However, there were many problems in Ukraine's dairy industry that hindered its development, including, in particular, increased competition from illegally operating enterprises, grey market, counterfeit products, and lack of trust and cooperation between the producers and the processors. The fact that the Ukrainian dairy sector faced many challenges was also indicated by Anna Gereles and László Szöllősi [2019].

In assessing the entire dairy sector, it is also essential to analyze the condition of milk processing companies responsible for the entire range of dairy products [Cheremisina et al. 2022]. Unfortunately, it is difficult to analyze these aspects due to the effects of warfare. As Chris McCullough [2022] points out, many animals, including cows, died due to bombings and diseases due to the ongoing warfare in the country.

In Poland, a downward trend in the cattle population is also seen, while the milk yield of dairy cattle is increasing. Therefore, there is no threat of excessive demand in the domestic market. As Maria Zuba-Ciszewska [2019] points out, the changes, which have taken place in milk production in the last 20 years, have had a significant impact on the food security of the country. Although it is indicated that shortly the situation in the domestic milk market will be determined by the effects of restrictions introduced in connection with COVID-19, the war in Ukraine, and the crisis on global markets, production is stable. Prices and production costs change. Despite the difficulties, the entrepreneurs are developing their activities on international markets, as evidenced by the increase in revenues from foreign sales in 2021 and a higher growth rate than in 2020 [KOWR 2022]. Polish dairies must follow trends and develop new, more innovative products to compete in international markets.

According to expert opinions, the Polish dairy industry is not inferior to the Western European one in terms of modernity and diversification of the offered product range, and the leaders of this sector have technologies at the highest world level [KOWR 2020]. According to the data of the Central Statistical Office (GUS) [2022], milk production in Poland in 2020 amounted to 14.4 billion liters.

## MATERIAL AND METHODS

Due to the dairy industry's importance in food production, the study aimed to compare and evaluate the effectiveness of enterprises processing and trading in dairy products in Poland and Ukraine. The analyses focused on assessing the profitability of enterprises. The research on the Polish dairy industry shows that it was characterized by relatively low profitability [Wasilewski, Ganc 2016]. An interesting aspect is in what direction the situation developed in the following years in Poland and what the results are in this respect for milk processing enterprises in Ukraine. Due to a large number of such enterprises, the companies with the highest turnover were selected for the analysis. The assessment of changes in the efficiency of enterprises dealing in the production and trade of dairy products required the use of appropriate indices, the summary of which is presented in Table 1, along with their calculation formulas. Financial indices characterizing the profitability of the surveyed companies were used as one of the most important criteria for assessing the financial condition of the enterprises.

Secondary data sources were used in the research process. The study was based on data from 2016-2020 concerning five leading dairy companies in Poland and Ukraine. The chosen enterprises process and sell dairy products. The choice of the largest companies was purposeful because, in the current, very changeable conditions (especially in Ukraine) – they have the most excellent chance of further existence and development. The enterprises selected for the study had the highest revenues in 2020 among all milk processing companies. In Ukraine, these were enterprises reaching over EUR 80 million in sales revenues, employing from 240 to over 1,800 employees, and, in Poland, gaining over EUR 300 million and employing from nearly 1,000 to over 3,000 employees. The information was retrieved from the Emerging Markets Information Service (EMIS) database.

Table 1. Profitability index

Indicators	Characteristic	Formula
Return on equity (ROE)	It determines the value of the net financial result per unit of equity	$\frac{\text{Net financial result}}{\text{Equity}}$
Return on sales (ROS)	It defines operating efficiency and is calculated as the ratio of net financial result to net sales revenue, expresses number of units of profit or loss generated by each sales unit	$\frac{\text{Net financial result}}{\text{Sales revenues}}$
Return on assets (ROA)	It makes it possible to check to what extent the total assets held generate a profit or loss	$\frac{\text{Net financial result}}{\text{Total assets}}$

Source: study based on [Sierpińska, Jachna 2017]

## RESULTS

The research on the profitability of enterprises shows that profitability is a crucial issue, especially in determining future directions of business activity and development. The profitability assessment is an information tool supporting reasonable management decisions and is essential in identifying the factors affecting it. Therefore, it is one of the most critical elements of the financial and assets analysis of the company. Profitability ratios are important for the management of milk processing enterprises and their customers, suppliers, and banking institutions.

Analysis of the profitability of milk production and processing enterprises is not a new issue. Many researchers have conducted research in this field, both in Poland (for example [Pietrzak 2006, Gradziuk 2009, Wasilewski, Ganc 2016, Ziętek-Kwaśniewska et al. 2022]) and in other countries [Wilson 2011, Bach et al. 2020], including Ukraine [Grechko, Chernozhukova 2018, Ishchuk, Lyahovska 2020].

An analysis of the surveyed enterprises' financial results preceded the indices' interpretation. The analysis of financial results should also include a detailed assessment of the process of generating a profit and its use, which would help in making decisions in the enterprise [Voronko et al. 2021]. Therefore, the analyses were made by interpreting the fundamental profitability ratios characterized by very high volatility.

Table 2 presents the profits (losses) of the analyzed companies, and Tables 3 and 4 show the results of calculations for selected enterprises in Ukraine and Poland.

The financial results of the surveyed enterprises were very diverse. In some years, enterprises generated losses, which affected the profitability ratios. Therefore, the profitability ratio was negative in some years in the analyzed enterprises. On the other hand, the results of Fud Development TOV were characterized by the lowest volatility, with this company achieving the highest return on equity in 2019 (Table 3). As shown, it was characterized by a more favorable situation due to the possibility of obtaining a higher financial surplus.

The return on assets ratio, which is a good measure for assessing operating activity in the inter-company comparisons [Sierpińska, Jachna 2017], ranged from almost -20% to over 43% fluctuations were visible in one Ukrainian company (Lactalis-Ukraine DochP). This index shows how effectively the assets generate a net profit. On this basis, it can be concluded that a more favorable financial condition characterizes the enterprise with a higher return on assets, as it has a lower level of debt.

Return on equity analysis is not a prominent issue for enterprises where the parent company covers losses ("lends" capital). A positive return on equity with a loss incurred indicates that the calculation of the index with the "ordinary" formula results in its positive value (negative profit and negative equity). A similar situation may occur when calculating return on assets.

Table 2. Financial results of Polish and Ukrainian enterprises in the analysed period

Company	Net financial result [thousand EUR] in the years				
	2016	2017	2018	2019	2020
Fud Development TOV	-	1,540.13	2,158.15	1,927.53	1,234.61
Danon Dnipro TOV	-294.37	4,127.27	2,441.01	4,913.74	8,354.24
Firma Liustdorf TOV	3,238.78	5,532.31	5,285.17	7,856.80	4,988.83
Yagotynsky Butter Plant TDV	4,578.73	5,470.37	7,896.51	6,387.79	3,729.09
Lactalis-Ukraine DochP	-3,430.15	2,520.67	6,930.56	13,697.20	-2,414.22
Spółdzielnia Mleczarska Mlekpól w Grajewie	5,954.54	11,295.10	6,617.51	2,689.44	6,385.36
Spółdzielnia Mleczarska Mlekovita	15,290.24	22,339.79	2,994.88	9,773.66	20,825.50
Polmlek Sp. z o.o.	425.94*	11,937.43	3,977.79	5,702.97	10,423.70
Okręgowa Spółdzielnia Mleczarska w Piątnicy	1,480.45*	2,453.70	1,146.76	3,410.70	3,096.32
Okręgowa Spółdzielnia Mleczarska w Łowiczu	463.34*	-2,685.87	-45,596.86	1,163.71	10,785.98

\* Due to the lack of data for 2016, data for 2015 were provided

Source: EMIS

Return on assets will be negative because profit is negative (loss), and the value of assets is positive. Therefore, the profitability analysis should always be supplemented with profit (loss) and equity. Negative equity means a threat to the company's future business and can lead to its insolvency. For example, such a situation may occur when the enterprise is part of a capital group that supports the enterprise financially.

Return on sales (ROS) also belongs to the group of profitability ratios based on the net financial result. This index is a percentage value showing what part of the revenue remains at the company's disposal after deducting all costs and taxes. Again, neither the optimum value nor desirable results are not defined.

Therefore, the results are often interpreted by comparing them with the results of other companies. As for previously analyzed indices, the return on sales also showed considerable differences. There were also negative values, indicating deficits in some enterprises.

The profitability of milk processing in Poland was also very diverse in subsequent years, although it was characterized by lower volatility than in the Ukrainian companies. It was also at a lower level than the best companies in Ukraine. It is confirmed by Mirosław

Table 3. Profitability of the surveyed Ukrainian enterprises

Company	Profitability ratio [%] in years				
	2016	2017	2018	2019	2020
Return on equity					
Fud Development TOV	-	295.90	129.15	557.00	124.77
Danon Dnipro TOV	-503.00	23.94	16.43	41.29	58.14
Firma Liustdorf TOV	26.97	33.49	25.94	25.82	16.47
Yagotynsky Butter Plant TDV	54.81	41.03	55.80	34.97	21.85
Lactalis-Ukraine DochP	8.83*	-7.40	-27.78	-97.72	17.14*
Return on assets					
Fud Development TOV	-	4.33	-7.01	5.36	4.96
Danon Dnipro TOV	-1.00	13.18	7.50	12.72	21.64
Firma Liustdorf TOV	13.06	17.40	15.13	16.41	10.80
Yagotynsky Butter Plant TDV	18.42	17.12	20.83	13.61	8.36
Lactalis-Ukraine DochP	-19.94	12.67	28.07	43.21	-7.73
Return on sales					
Fud Development TOV	-	0.95	-1.32	1.04	0.81
Danon Dnipro TOV	-0.28	3.74	2.08	3.75	7.43
Firma Liustdorf TOV	4.76	7.13	5.81	6.60	4.86
Yagotynsky Butter Plant TDV	6.40	6.08	7.92	5.28	4.09
Lactalis-Ukraine DochP	-5.60	3.60	7.80	13.22	-2.76

\* Positive value ratio is a consequence of the negative financial result (loss) and negative equity

Source: own research based on EMIS

Wasilewski and Marzena Ganc [2016], who showed that dairy cooperatives in Poland were characterized by low profitability. The return on equity was the least favorable in the years 2017-2018 in Spółdzielnia Mleczarska w Łowiczu. It resulted in a loss in those years and a negative return on assets and sales. Of course, lower return on sales shows that higher revenues are required to achieve a certain profit level. After all, the highest return on equity was noted by Polmlek.

The return on equity ratio can be compared with the return on investments available on the financial market. First of all, the return on equity changes over time. Therefore, each company should be analyzed separately to obtain detailed information on why it achieved such an index value.



Table 4. Profitability of the surveyed Polish enterprises

Company	Profitability ratio [%] in years				
	2016	2017	2018	2019	2020
Return on equity					
Spółdzielnia Mleczarska Mlepol w Grajewie	2.44	3.55	1.72	0.69	2.45
Spółdzielnia Mleczarska Mlekovita	8.42	10.63	1.39	4.37	8.78
Polmlek Sp. z o.o.	1.54	26.15	8.02	9.39	15.15
Okręgowa Spółdzielnia Mleczarska w Piątnicy	2.00	2.81	1.26	3.38	2.87
Okręgowa Spółdzielnia Mleczarska w Łowiczu	0.21	-1.09	-22.75	0.74	6.68
Return on assets					
Spółdzielnia Mleczarska Mlepol w Grajewie	1.66	2.29	1.14	0.45	1.30
Spółdzielnia Mleczarska Mlekovita	4.90	5.70	0.75	2.33	4.93
Polmlek Sp. z o.o.	0.46	9.02	2.74	3.48	6.78
Okręgowa Spółdzielnia Mleczarska w Piątnicy	1.31	1.92	0.83	2.30	1.94
Okręgowa Spółdzielnia Mleczarska w Łowiczu	0.11	-0.58	-10.91	0.28	2.63
Return on sales					
Spółdzielnia Mleczarska Mlepol w Grajewie	0.81	1.20	0.70	0.27	0.63
Spółdzielnia Mleczarska Mlekovita	1.87	2.15	0.27	0.81	1.65
Polmlek Sp. z o.o.	0.23	4.14	1.42	1.79	3.31
Okręgowa Spółdzielnia Mleczarska w Piątnicy	0.68	0.90	0.40	1.10	0.93
Okręgowa Spółdzielnia Mleczarska w Łowiczu	0.03	-0.16	-3.56	0.10	0.80

Source: own research based on EMIS

## CONCLUSIONS

Based on the conducted analysis, although it was very general, it can be indicated that the Polish and Ukrainian enterprises in the dairy industry differed significantly in terms of profitability. In most companies, the profitability ratios were negative, resulting in losses in some years. Such situations occurred in both Polish and Ukrainian companies. The enterprises in Ukraine were characterized by average higher profitability. However, compared to the Polish companies, they were lower in terms of sales revenues and the number of employees.

The results achieved by the company and its financial condition are primarily influenced by the environmental conditions, as indicated by Małgorzata Porada-Rochoń and Justyna Franc-Dąbrowska [2018], who indicated that, regardless of the financial condition of companies, the primary conditions for their operation and improvement of their financial condition is determined by economic development and legislation. Therefore, the conducted analysis should be extended with a study of the situation in the business context and a detailed assessment of each company's situation.

It should be an interesting research direction in the current turbulent environment, especially once the geopolitical situation calms down. However, the current situation is very volatile, and the results may deteriorate due to the hostilities in Ukraine, causing, for example, difficulties in the operation of the processing industry due to the Russian attacks, which result in a lack of electricity, which also affects the dairy industry. It may result in business closure and product sales chain disruption.

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## PORÓWNANIE KONDYCJI FINANSOWEJ PRZEDSIĘBIORSTW PRZETWÓRSTWA MLEKA W POLSCE I W UKRAINIE

Słowa kluczowe: mleko, przetwórstwo, rentowność, zysk, przemysł mleczarski

### ABSTRAKT

W opracowaniu jako cel badań przyjęto porównanie i ocenę efektywności przedsiębiorstw przetwórstwa i handlu produktami mleczarskimi w Polsce oraz w Ukrainie. Przetwórstwo mleka jest znaczącym działem produkcji artykułów żywnościowych. Mleko i jego przetwory stanowią około 14% światowego handlu produktami rolnymi. Do badań wybrano po pięć największych firm z Polski i Ukrainy. Ocena efektywności przedsiębiorstw mleczarskich wymagała przyjęcia odpowiednich wskaźników. W badaniach uwzględniono przede wszystkim wskaźniki charakteryzujące rentowność badanych firm, jako podstawowe w ocenie sytuacji finansowej przedsiębiorstw. Dokonano oceny poziomu rentowności sprzedaży, majątku i kapitałów własnych badanych przedsiębiorstw. Analizy wykonano na podstawie danych dostępnych w bazie EMIS za lata 2016-2020. W Polsce przetwórstwo mleka charakteryzowało się stosunkowo dobrą sytuacją finansową, chociaż wskaźniki rentowności nie były zbyt wysokie. Wskaźniki rentowności od dawna były niższe niż średnio w całym przemyśle spożywczym, a w ostatnich latach jeszcze się obniżyły. Dane wskazują, że rentowność kapitału własnego nieznacznie przekraczała oprocentowanie lokat bankowych i obligacji skarbowych. W przedsiębiorstwach ukraińskich rentowność zarówno kapitału własnego, aktywów, jak i sprzedaży była znacznie wyższa, jednak charakteryzowała się dużą zmiennością.

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