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STATE SUPPORT OF THE DAIRY INDUSTRY AND PROSPECTS FOR ITS DEVELOPMENT IN THE POST-WAR PERIOD

Purpose. The article aims – to identify current trends, determine the level of state support and prospects for the development of the dairy industry in Ukraine in the post-war period, taking into account cooperation with the EU.

Methodology / approach. The research was conducted using the comparison method with the nearest EU country – Poland. The analysis of indicators of the development of the dairy industry was carried out on the basis of the data of the State Statistics Service of Ukraine, Poland, Eurostat, and Statista company using methods of relative values, a series of dynamics.

Results. Analysis of the dynamics of the main dairy industry indicators in Ukraine revealed a long-term trend towards a decrease in milk production volumes. During 1990–2021, the volume of milk production decreased by 3 times, and the number of cows decreased by 5 times. Since 2020, the dairy industry has shifted from being export-oriented to becoming dependent on imports. On the other hand, Poland, which is geographically and climatically close to Ukraine, shows the opposite dynamics of the dairy industry development. Studying the functioning of the dairy sector in Poland revealed a high level of state financial support and fiscal stimulation. The study shows that the financial support of the dairy industry of Ukraine is noticeably insufficient, and the fiscal stimulation provided is inadequate. Moreover, the efficiency of managing budget funds is low. The situation is further complicated by the ongoing military aggression from Russia. Considering the constraints of state funding, it is suggested that the array of instruments for supporting animal husbandry should be tailored based on the scale of entrepreneurial entities involved; differentiation in the provision of state support should also apply to agricultural producers in the de-occupied territories. In order to fully and promptly manage the amount of financing, it is necessary to speed up the procedure for distributing funds between areas and approving financial documentation; it is expedient to consider the possibility of payments for the keeping dairy cattle for small business entities without the need for coordination with the main manager of funds.

Originality / scientific novelty. The obtained results allow a deeper investigation of the main development issues of the Ukrainian dairy industry in the pre-war period and under martial law in the context of further European integration.

Practical value / implications. The study's findings can be the basis for further scientific research in the direction of developing a comprehensive set of measures to stimulate Ukraine's dairy industry. This is of particular importance in the post-war period promoting the restoration of food security.

Key words: milk, dairy industry, dairy products, production, financing.

Introduction and the literature review. The production of milk and dairy products is a significant sector of the global economy. In 2021, the value of the dairy market worldwide was estimated at approximately USD 871 billion (Statista, 2022). According to forecasts, this value is expected to grow to USD 1,128 billion by 2026. As of 2021, there are 133 million dairy farms globally, supporting 600 million people, and providing employment for 240 million individuals directly or indirectly in the dairy sector (Global Dairy Platform, 2022).

The European Union holds the first place in terms of milk production in the world. In 2022, the production of cow's milk in the EU amounted to 143.9 million tons. The United States ranks second with a production volume of around 103 million tons, and India holds the third place with an indicator of 97 million tons (Statista, 2023). Milk production takes place in all EU countries, and it accounts for a significant part of the value of EU agricultural products. The main producers of milk within the EU are Germany, France, Poland, the Netherlands, Italy, and Ireland. Together, they account for almost 70 % of EU production.

The dairy sector plays a decisive role in nutrition, disease prevention, as it contains valuable components necessary for human health. It also represents a vital component of food security in every country. Notably, in numerous countries, including the EU, the dairy industry receives extensive support compared to other branches of agriculture (Knips, 2005). Farming is an inherently risky and expensive business, particularly due to its heavy dependence on weather and climate conditions compared to other industries (Shkvarchuk, 2009). These uncertainties emphasize the importance of the public sector's role in ensuring social protection and stable incomes for farmers. Consequently, the complex issues surrounding state support for the dairy sector have received significant attention from researchers and practitioners worldwide.

Government interventions in the domestic dairy market are most commonly aimed at controlling quantities of production, establishing minimum prices, and guaranteeing farmers' incomes (Knips, 2005). The current European Union Common Agricultural Policy (EU CAP) is not closely related to the performance indicators of the industry and is mainly focused on supporting farmers' incomes, improving animal welfare, and promoting ecological farming methods. Therefore, a significant part of scientific works is devoted to researching the impact of subsidies on the efficiency of dairy farms. Thus, Pisulewski & Marzec (2022) studied the impact of five types of subsidies granted under the EU CAP on the inefficiency of Polish dairy farms. According to the results of analytical calculations, these scientists came to the conclusion that the greatest effect is observed in relation to dairy cows. A 1 % increase in subsidies leads to a 0.490 % increase in milk production. Research by Koç & Uzmay (2022) confirms the positive effect of subsidies on the technical efficiency of dairy farms in Turkey.

Petrack & Götz (2019) conducted a regression analysis based on a sample of 180 commercial dairy farms in Kazakhstan and Russia. Taking into account herd size and other farm characteristics, individual farms received 18 % more subsidies than

enterprises. The results of the study showed that for individual farms, subsidies have a greater effect than for enterprises in terms of increasing the herd. This confirms the positive relationship between the amount of subsidies and the growth of the cattle population.

Bojnec & Latruffe (2013) investigated the relationship between the size, subsidies, and productivity of farms in Slovenia during the period of adaptation of the dairy sector to CAP conditions (2004–2006). It was concluded that smaller farms exhibit lower technical and economic efficiency but demonstrate higher allocative efficiency and profitability. Subsidies reduce technical and economic efficiency but promote allocative efficiency and profitability. A study by Kumbhakar et al. (2023) confirms the positive impact of subsidies on total factor productivity and profitability of farms in Norway. Kondaridze & Luckstea (2023) claim that a 1 % increase in subsidies leads to a roughly 0.02 % increase in milk product trade for an average country.

Although most scholars agree on the positive impact of subsidies on dairy farm performance, there are studies that show mixed results. Thus, Latruffe et al. (2016) investigated the relationship between subsidies and the technical efficiency of farms specializing in the production of dairy products. The study was conducted for farms located in nine Western European countries that received support under the EU CAP for the period 1990–2007. Results show that the effect of subsidies on technical efficiency may be positive, zero or negative, depending on the country.

Some researchers are concerned that the subsidies could lead to a decrease in the competitiveness of the dairy industry. For example, Chen & Yu (2019) investigated the impact of subsidies on reducing the competitiveness of China's dairy industry. They came to the conclusion that government subsidies have a negative impact on the Lerner index for the top privately owned firms, but do not have a significant effect on state-controlled ones after controlling for advertising, time trend, and proprietorship.

One of the crucial challenges in the development of the dairy sector is the requirement for substantial financing in diverse forms, particularly through investments. Thus, Lazzarini et al. (2019) report that the main problems of the dairy sector in Argentina are a 12 % decrease in the number of cows in the last 12 years and an outdated infrastructure that requires significant investment. However, Lazzarini et al. (2019) argue that Argentina has the potential to double milk production. Baudracco et al. (2022) conducted an assessment of the required capital investments in the dairy industry in Argentina.

One of the tools for stimulating the dairy industry is taxes, particularly value-added tax (VAT). Revoredo-Giha et al. (2020), analyzing the tax burden of VAT, found that, as a result of the short-term introduction of VAT on dairy products in Malawi (at a rate of 16.5 %), 24.3 % of VAT revenues came from consumers, and the remaining 75.7 % – from the domestic industry. These scientists also reported a significant decrease in consumption after the introduction of VAT on pasteurized milk. Consumer demand for pasteurized milk is highly sensitive to price changes, and consumers were unable to absorb the full price increase due to VAT, resulting in a substantial reduction

in consumption. This forced the industry to reduce prices throughout the supply chain, leading to reduced production and adversely affecting the economic situation of farmers.

Scientists studying the state of the dairy industry in Ukraine focus on problematic issues in this sector that require state support. Pronko et al. (2020a; 2020b) considered the current problems of the market of milk and dairy products in Ukraine, among which is the need to ensure the quality of milk and to modernize production based on the latest technologies. These improvements are crucial and require systematic and effective state financial support for producers. Onegina et al. (2022) presented empirical evidence of asymmetric price transmission along the milk supply chain in Ukraine. This study suggests that the farming sector does not have sensitive pricing levers. In contrast, the practice of the EU provides examples of policy actions aimed at strengthening the market positions of farmers in the case of price transmission. These measures include financial support and facilitating access to finance and innovation for farmers. Kosar et al. (2022) assessed the impact of factors on demand in the dairy market of Ukraine. According to the calculations of these scientists, an increase in the number of cattle by 1 % causes the increase of the supply of milk to processing enterprises by 0.546 % and all other factors are equal. This highlights the importance of government subsidies aimed at maintaining cattle.

The authors of the above publications mainly share the opinion regarding the urgency of increasing the volume of milk production, considering the growing global demand for milk and dairy products and the importance of state support for the dairy industry. While foreign scientific works are mainly devoted to studying the effectiveness of various types of subsidies, insufficient attention is paid to the study of the level of such support.

Agriculture is widely recognized as a risky activity, highly dependent on weather and climate conditions. Additionally, the effective functioning of this industry is crucial for ensuring food security in each country. Consequently, agriculture, including the dairy sector, receives state financial support worldwide and enjoys significant tax preferences. Since 1990, the volume of milk production in Ukraine has decreased by 3 times, and the number of cows has decreased by 5 times. Since 2020, the dairy industry has transformed from being export-oriented to import-dependent.

We assume that the current level of state financial support and fiscal incentives for the dairy industry in Ukraine is insufficient for its successful development. To verify this hypothesis, our study compares the main performance indicators, level of financing, and fiscal stimulation of the dairy industry in Ukraine and Poland.

The purpose of the article is to identify current trends and determine the level of state support and prospects for the development of the dairy industry in Ukraine in the post-war period, taking into account cooperation with the EU.

Methodology. The research used a systematic review of scientific literature on the topic, as well as informative materials from the Ministry of Agrarian Policy and Food of Ukraine, the European Commission, and various international and national organizations, including the International Dairy Food Association, Food and

Agriculture Organization, and the Association of Milk Producers. To assess the level of state support and financing in Ukraine and compare it with the nearest EU country – Poland, we used a method of comparison, considering Poland's positive dynamics in the development of the dairy industry.

The calculation and assessment of the level of state financing in relation to GDP in Ukraine and Poland for the period 2015–2022 were made based on data from the Ministry of Agriculture and Rural Development of the Republic of Poland and the Ministry of Agrarian Policy and Food of Ukraine, using the method of relative values and series of dynamics.

When calculating the total amount of direct payments for livestock support in Poland (for the period 2015–2021), we took into account the following types of direct payments: (1) payments for young farmers, (2) payments for keeping cattle, (3) payments for keeping cows, (4) payments for keeping sheep, (5) payments for keeping goats.

In Ukraine, the financing of animal husbandry from 2015 to 2019 was carried out within the budget program 2801540 “State support of the livestock industry”. In 2020–2021 – within the framework of the budget program 1201150 “Financial support of agricultural producers” in the directions “State support for the development of animal husbandry and processing of agricultural products” and “Financial support for the development of farms”. In 2022 – within the budget program 2801500 “Support to farms and other producers of agricultural products” in the direction of “State support for the development of animal husbandry and processing of agricultural products”. Accordingly, in order to determine the volume of expenses for financing animal husbandry in Ukraine, we included the amounts of actual expenses from reports on the implementation of relevant budget programs.

The analysis of development indicators for the dairy industry in Ukraine, Poland, and the EU was conducted using data from the State Statistics Service of Ukraine, Poland, Eurostat, and Statista, with the method of relative values and dynamic series analysis.

Results and discussion.

1. Analysis of the development of the Ukrainian dairy industry in the pre-war period. The situation in the dairy industry of Ukraine over the last thirty years differs significantly from the global trend. While world milk production increased from 440 million to 726 million tons during 1991–2021 (more than 1.5 times), Ukraine experienced a sharp decrease in milk production from 24.5 million tons to 8.71 million tons (almost 3 times) over the same period (Zhupinas, 2023; State Statistics Service of Ukraine, 2022a). The decline in milk production is primarily related to households (Table 1). In 2021, agricultural enterprises produced 2.77 million tons of milk (0.2 % less than in 2020), while households produced 5.95 million tons (8.6 % less than in 2020). Table 1 data also reveals a notable decrease in the cattle population in Ukraine. In 2021, the cattle population was 2,874.0 thousand heads, which is 218.0 thousand heads (7.1 %) less than in 2020 and significantly less by 1,551.8 thousand heads (35.1 %) compared to 2012. Moreover, the dairy herd in 2021 was 1,673.0 thousand

heads, marking a decline of 6.3 % compared to 2020 and a substantial 35.2 % decrease compared to 2012 (UkrAgroConsult, 2023).

Table 1

The main indicators of the dairy industry in Ukraine for 2012–2021

Indicator	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Milk production, thousand tons	11377.6	11488.2	11132.8	10615.4	10381.5	10280.5	10064.0	9663.2	9263.6	8713.9
including: agricultural enterprises	2535.3	2582.5	2647.5	2669.2	2705.6	2765.7	2755.5	2728.6	2761.2	2767.7
% to all categories	22.3	22.5	23.8	25.1	26.1	26.9	27.4	28.2	29.8	31.8
households	8842.3	8905.7	8485.3	7946.2	7675.9	7514.8	7308.5	6934.6	6502.4	5946.2
% to all categories	77.7	77.5	76.2	74.9	73.9	73.1	72.6	71.8	70.2	68.2
Consumption of milk and dairy products per person (in milk equivalent), kg	214.9	220.9	222.8	209.9	209.5	200.0	197.7	200.5	201.9	201.5
Self-sufficiency in milk and dairy products, %	104.6	101.6	103.6	105.0	103.6	107.7	107.5	103.1	99.1	95.2
Cattle, thousands of heads	4425.8	4645.9	4534.0	3884.0	3750.3	3682.3	3530.8	3332.9	3092.0	2874.0
including cows	2582.2	2554.3	2508.8	2262.7	2166.6	2108.9	2017.8	1919.4	1785.5	1673.0

Source: compiled by the authors based on data from (State Statistics Service of Ukraine, 2022c; State Statistics Service of Ukraine, 2022f).

Against the background of a decrease in the milk production and the number of cattle, other negative trends are observed in Ukraine's dairy industry. During 2000–2021, the export of milk in Ukraine decreased from 1,100 to 369 thousand tons (almost 3 times), while milk imports increased significantly from 50 to 781 thousand tons (more than 15 times) (Figure 1). As a result, in 2020, Ukraine became a net importer of dairy products for the first time in its history. Conversely, countries with high levels of economic development have been experiencing the opposite trend, with a focus on increasing the volume of milk production and export to compete for sales markets. For example, the volume of US dairy product exports reached a record value of 2.82 million tons in 2022, marking a growth of 52 % over the past 10 years (IDFA, 2023b). This illustrates the efforts of developed economies to expand their market presence. A clear example of such competitiveness can be seen in the ongoing dispute between the USA and Canada over the sale of American dairy products (IDFA, 2023a).

Since the second half of the 1990s, there has been a significant decline in the consumption of milk and dairy products in Ukraine. In 1990, the average consumption per person was 373 kg per year of dairy products, but by 2021, it decreased to 201.5 kg per year. The average consumption of dairy products in Ukraine for the period 2018–2021 was recorded at 200.4 kg per person per year (Table 1). This falls almost half the annual norm of 380 kg per person recommended by the Ministry of Health (Association of Milk Production, 2022a).

Moreover, the number of dairy farms and processing plants in Ukraine has also experienced a notable decrease since 1990. While there were 643 dairies operating in

1990, as of January 1, 2022, only 140 factories were licensed to produce dairy products, with only 111 currently in operation (Zhupinas, 2023). The decline in consumption, coupled with the reduction in the number of cows and uncontrolled imports, has led to stagnation in the dairy industry, putting it at risk of becoming an endangered sector. The deterioration of the dairy sector is a matter of national security, the health of Ukrainians and losses in the economy (Association of Milk Production, 2022a). It is imperative to address this situation promptly. To achieve a successful resolution, it is crucial to study the successful experiences of other countries.

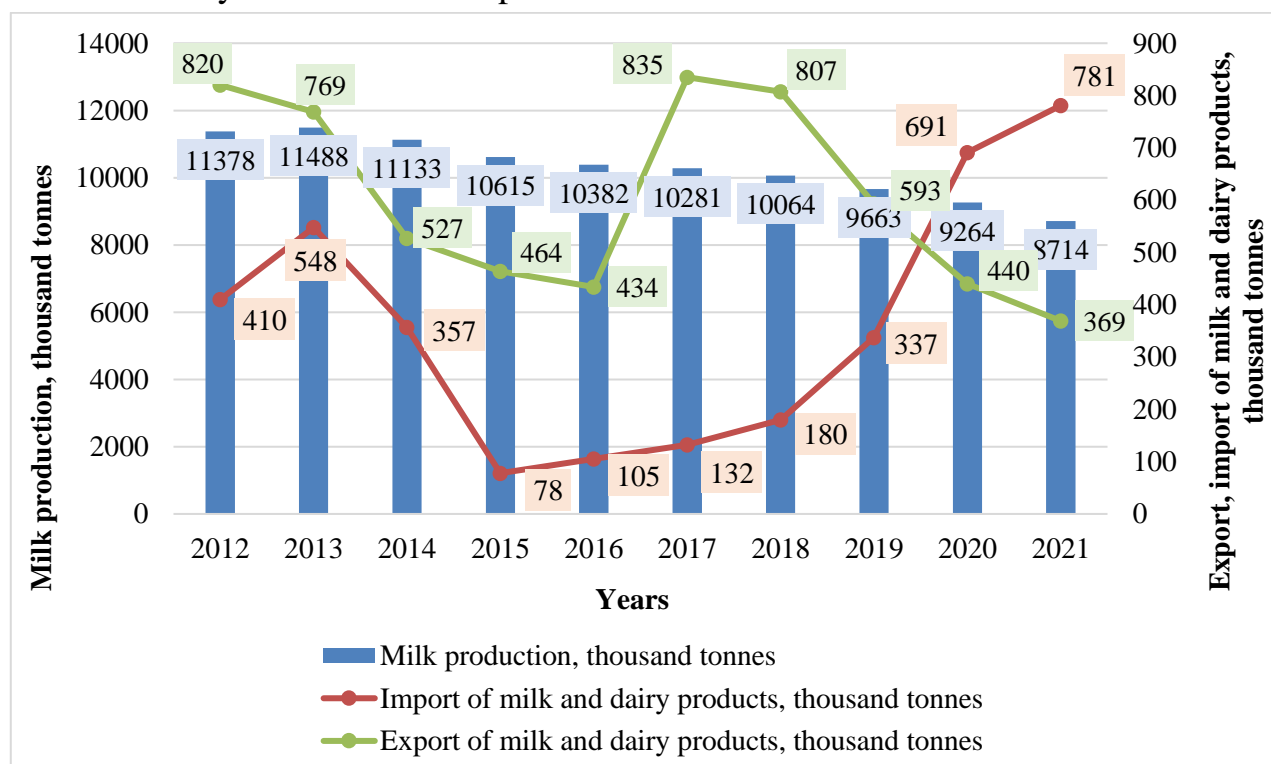


Figure 1. Production, export, and import of milk and dairy products in Ukraine for 2012–2021

Note. Data for 2014–2021 are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol, and temporarily occupied territories in the Donetsk and Luhansk regions.

Source: formed by the authors based on State Statistics Service of Ukraine (2022b); State Statistics Service of Ukraine (2022c).

2. Support for the development of the dairy industry in the EU. The European Union (EU) is the largest producer of milk and dairy products worldwide, thanks to unprecedented financial support. The EU's multiannual financial framework (MFF) for 2021–2027 amounts to EUR 1.21 trillion in current prices. Within this budget, 32 % (EUR 386.6 billion) is allocated to the Common Agricultural Policy (CAP), divided between two funds:

(1) European Agricultural Guarantee Fund (EAGF): The EAGF receives an appropriation of 291.1 billion EUR, primarily supporting income assistance for farmers and market-related measures. Approximately EUR 270 billion will be allocated to income support schemes;

(2) European Agricultural Fund for Rural Development (EAFRD): the EAFRD receives a total of EUR 95.5 billion for various rural development initiatives (European Commission, 2023a).

The European Union faced three dairy crises related to milk profitability during the period 2008–2018. The initial crisis occurred in 2009 when milk prices dropped by 17 %, resulting in a decrease in profitability from EUR 125 per ton of milk in 2008 to EUR 88 per ton in 2009. However, the situation improved in 2010–2011, with a gross profit of EUR 134 per ton. The second crisis emerged in 2012, characterized by falling prices amid rising costs, leading to a decline in gross profit. In 2013–2014, the gross profit rebounded to EUR 133 per ton. In 2015, the third crisis commenced, persisting until the 1st quarter of 2016, marked by a further decline in prices. The gross profit in 2016 was EUR 84 per ton. Following an increase in milk prices in 2014, there was subsequent growth in the number of cows and the volume of milk production in the next two years. However, this coincided with a decrease in global demand for imports, especially from Russia and China, which negatively impacted the gross profit of milk production in the EU. As a consequence, the share of dairy farms with a positive gross profit in the EU decreased from 95 to 91 % in 2014–2016 (European Commission, 2021).

Direct payments and subsidies play a key role in shaping the gross profit of milk production in the EU. In 2009, subsidies accounted for over half of the income of dairy farms (58 %). However, this proportion decreased in the subsequent years, falling below 40 % in 2013–2014 (to 39 % and 37 %, respectively) and reaching 34 % in 2017. During the 2015–2016 crisis, subsidies' share of income increased again, reaching 45 % and 47 %, respectively. Notably, in nominal terms, the cost of subsidies increased steadily from EUR 7,751 per AWU in 2008 to EUR 11,514 per AWU in 2018 (European Commission, 2021).

One of the measures aimed at supporting the dairy industry and consumers of dairy products is the reduction of the value-added tax (VAT) rate. Our closest neighbours and major competitors in the EU have implemented lower VAT rates for dairy products: Germany with a rate of no more than 7 %, France at 5.5 %, and Poland at 5 %. Russia and Belarus have a VAT rate of 10 % (Association of Milk Production, 2022a). Similarly, Italy and the Netherlands apply VAT rates of 10 % and 6 %, respectively (Association of Milk Production, 2022b). Furthermore, the Polish government took a significant step to protect against inflation by reducing the VAT rate to 0 % for specific food products, including dairy products, from February 1, 2022, until mid-2023 (Ministry of Finance ..., 2022a; Chancellery ..., 2022b). This step provides substantial support to the Polish dairy industry and enhances the competitiveness of Polish dairy products.

Russia's armed aggression against Ukraine had far-reaching consequences, which led to a surge in global inflation rates and a significant increase in prices for energy resources and agricultural products. In response to these challenges, on April 6, 2022, Directive (EU) 2022/542 came into effect in the EU, granting member states broader authority to implement reduced value-added tax rates. This directive includes the

option for member states to introduce a new rate below 5 % for a limited selection of goods and services.

The EU aims to support consumers' access to essential products and services and provide assistance to local producers and farmers through these measures. The innovative directive allows Member States to implement a new reduced rate below 5 % for 7 % of the 24 categories of goods and services listed. Additionally, Member States are granted the right to apply reduced VAT rates (5 % or higher) to the remaining 24 categories on the same list (AgroPerspective, 2023).

3. Support for the development of the dairy industry in Poland. To compare the level of state support for producers of milk and dairy products in Ukraine and EU countries, we will select Poland as a relevant reference point due to its geographical proximity, comparable size, and similar climatic conditions. The area of Poland is 312,700 km², with 51.2 % classified as rural regions. The country's total population is 38.5 million people, with 39 % of residents in rural areas. Significantly, 12 % of the population is engaged in agriculture, a significantly higher proportion compared to the EU average of 5 %. This is primarily attributed to the prevalence of small family farms in Poland, with approximately 55 % of the 1.5 million farms having an area of less than 5 hectares (European Commission, 2023b). The agri-food sector in Poland holds great national significance, influencing the economic, social, and environmental spheres. The total share of agriculture, forestry, and fisheries in the gross added value is twice as high as the EU average. Key sectors within the Polish agriculture industry include dairy, grain growing, pig farming, poultry, and horticulture (European Commission, 2022).

Poland holds the 5th position in terms of the volume of dairy product production and ranks 3rd in the size of the dairy cow herd within the European Union. In 2019, Poland contributed to 1.7 % of global milk production and accounted for 8.5 % of the total milk supply to the EU-28, closely following the Netherlands, which accounted for 9.7 % of the milk supply (Quick scan Polish dairy sector, 2020).

As pointed out by Sobczykński et al. (2015), two main events had an influence on the dairy sector in Poland in recent decades: the transformation to a market economy in 1989 and accession to the European Union in 2004. After Poland joined the EU, milk and dairy production became more concentrated, which led to economies of scale. Over the period of 2005–2019, the turnover of milk processing companies experienced substantial growth, exceeding 90 %. Remarkably, Poland's milk production surpasses domestic consumption by approximately 20 %, and a substantial portion of this surplus is exported as dairy products to foreign markets. Accordingly, exports exceed imports (Figure 2). Consequently, Polish exports of dairy products increased almost four times after joining the EU (Quick scan Polish dairy sector, 2020).

Figure 3 illustrates the trends in milk production volume and the number of cows in Poland and Ukraine from 2012 to 2021. It is evident that starting from 2017, Poland has been surpassing Ukraine in terms of the number of cows. This result was largely achieved due to the strong financial support of Polish agriculture in general and the dairy sector in particular.

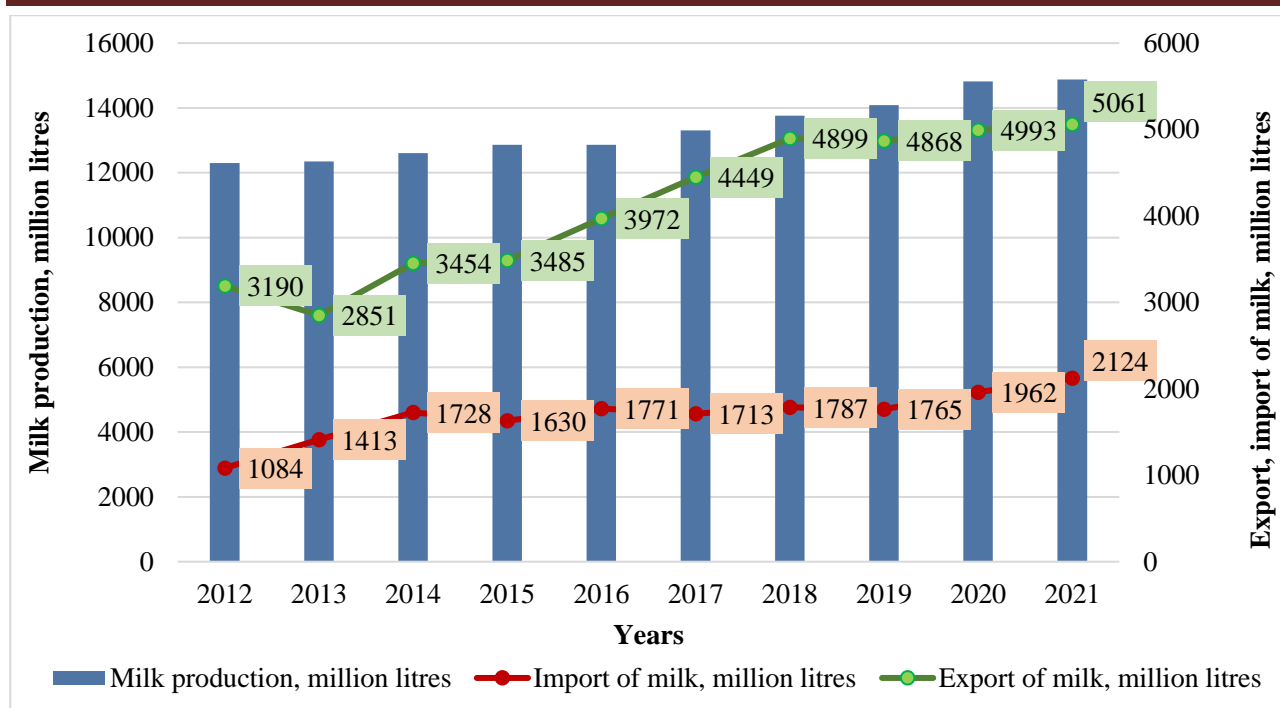


Figure 2. Production, export, and import of milk in Poland for 2012–2021

Source: formed by the authors based on Statistics of Poland (2023).

Under the Polish Rural Development Program for the period 2014–2020, a total of EUR 13.6 billion of public funds were allocated, comprising EUR 8.7 billion from the EU budget and EUR 4.9 billion of national funding. A significant portion of this funding, amounting to EUR 4.76 billion, was dedicated to “increasing the viability and competitiveness of farms”.

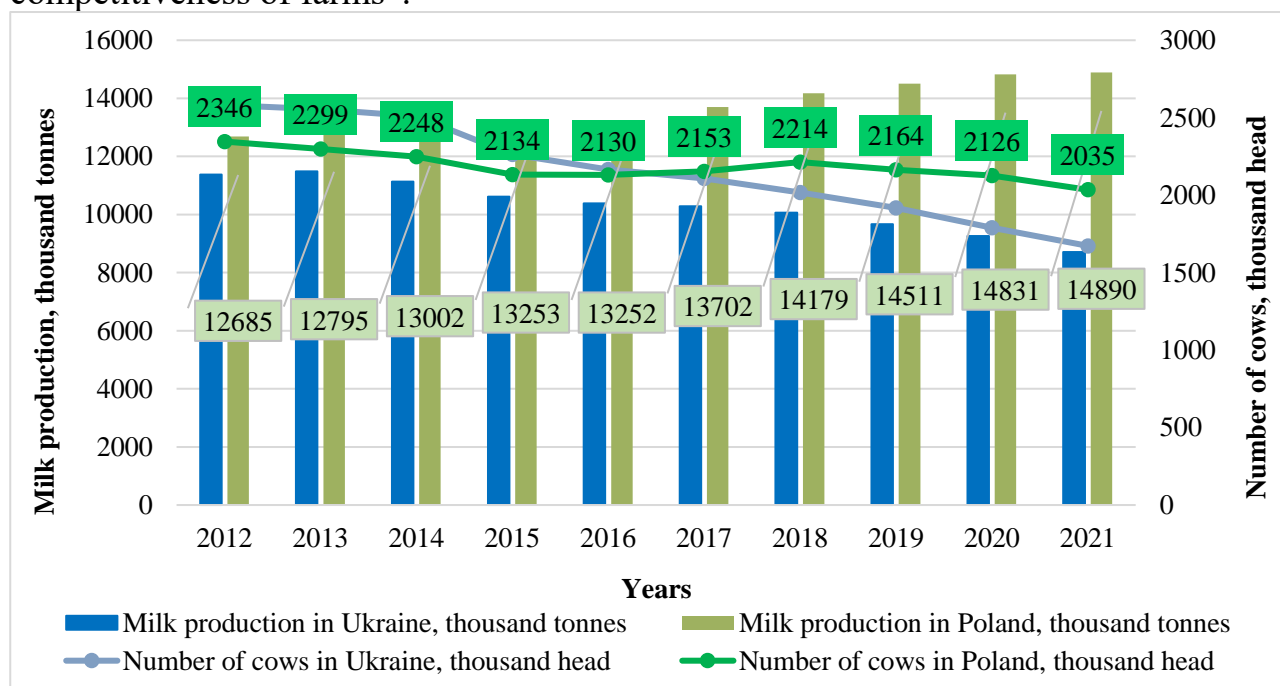


Figure 3. Dynamics of milk production and the number of cows in Ukraine and Poland for 2012–2021

Source: formed by the authors based on State Statistics Service of Ukraine (2022a); Eurostat, (2022a); Eurostat (2022b).

The primary objectives of the program were to offer investment support to approximately 200,000 farms, generate more than 22,000 job opportunities, and establish over 1,600 producer groups. Moreover, 30 % of the support was specifically allocated for the implementation of environmentally friendly farming practices (European Commission, 2023b).

During the period of 2021–2022, Poland received a total funding of EUR 944.7 million for the development of rural areas as part of the Next Generation EU financing plan to aid recovery after the COVID-2019 pandemic (European Commission, 2023c).

As outlined in the Strategic Plan of the Common Agricultural Policy (CAP) for Poland from 2023 to 2027, the development of agriculture is slated to receive a total funding of EUR 25.144 billion, with EUR 22.052 billion coming from the EU budget and EUR 3.092 billion from the national budget (European Commission, 2022). Key payments related to the development of animal husbandry under this plan will be provided for the following purposes:

- supporting young cattle: farms with 3 to 20 young cattle aged no older than 12 months will be beneficiaries. The budget allocated for this program is approximately EUR 182 million per year;

- keeping cows: farms with 3 to 20 animals older than 24 months will be beneficiaries. The budget allocated for this program is approximately EUR 161 million per year;

- compensation for additional costs and lost income due to the implementation of agricultural practices aimed at improving animal welfare. The average annual budget for this initiative is EUR 275 million. Direct payments per cow may reach up to EUR 355.

The program also includes financing for the conservation of genetic resources of animals facing the threat of extinction in agriculture, with a total budget of approximately EUR 102 million. The funding for the support of dairy cattle under this initiative is PLN 2,738 per head (EUR 602.4), while for beef cattle, it is PLN 1,752 per head (EUR 385.4). Additionally, there is an additional one-time payment of PLN 15,131 per head (EUR 3,328.8) to compensate for the costs of providing males for sperm collection.

Additionally, young farmers receive extra income support from the budget, amounting to approximately EUR 38 million per year. Financing is provided to support the development of small farms with an economic size of less than EUR 25 thousand. The maximum support for start-up businesses is set at PLN 120,000 (EUR 27,027), payments for short supply chain (RHD, direct sales, direct deliveries) and organic farms – PLN 100 thousand (EUR 22,522) (Common Agricultural Policy beyond 2020, 2023).

It is worth noting that the volume of direct payments to support agriculture in Poland is higher than the EU average. This level of support provides significant competitive advantages for Polish dairy producers.

4. Support for the development of the dairy industry in Ukraine. State financing in Ukraine is conducted through the program-target method (PTM), which involves

managing budget funds to achieve specific results using an assessment of the effectiveness of budget utilization throughout the budget process. The core of the PTM is the budget program, which encompasses a strategic goal, purpose, and tasks. In the context of animal husbandry, financial support in recent years has primarily been channelled through the budget program 2801540 “State support of the animal husbandry industry”. The strategic goal of this budget program is to ensure the country’s food security, enhance Ukraine’s role in supplying agricultural products to the global market, boost the competitiveness of domestic agricultural products, enhance industry efficiency, and maintain market stability. The primary purpose of the budget program is to support entities within the agro-industrial complex to foster the development and efficiency of the livestock industry. The program aims to achieve tasks such as stabilizing the cow population and increasing the volume of livestock product production (State Audit Service of Ukraine, 2017).

In recent years, the funding allocated under the budget program 2801540 “State support of the livestock industry” has been extremely limited. For instance, in 2015, a budget of UAH 250 million (EUR 10.3 million) was planned for this program, but only UAH 40.6 million (EUR 1.7 million) were used, which was only 16.2 % (Stavnycha, 2021). The number of directions financed within the framework of this program changed from year to year, which makes it difficult to accurately analyze the dynamics. However, there is no general trend indicating an increase in financial support. Furthermore, in 2020–2021, the budget program 2801540 “State support of the livestock industry” was absorbed by another budget program, namely 1201150 “Financial support of agricultural producers”, likely due to further reductions in funding for an already underfunded animal husbandry sector.

During 2018–2019, the volume of livestock financing experienced its highest level. Notably, in 2018, subsidies were granted for young cattle born on individuals’ farms, receiving an amount of UAH 2,500 (EUR 77.8) per head before reaching one year of age. Additionally, enterprises received a subsidy of UAH 1,500 (EUR 46.7) per head for keeping cows. However, in 2020, the state support norm for raising young cattle born on individuals’ farms was discontinued.

In 2021, direct payments related to the support of cow breeding were made within the budget program 2801580 “Financial support of agricultural producers” in two directions. A special budget subsidy is paid under the direction “State support of livestock production” for the increase in the number of cows of own reproduction. A subsidy was provided for each existing, self-breeding cow in the amount of UAH 30,000 (EUR 928.5) per head. Such a subsidy was awarded to 229 economic entities for 10,022 heads of increased cows (Pavlenko, 2022). Consequently, in 2021, only 21.5 % of business entities in the field of cattle breeding were able to use the help. In the same year, a special budget subsidy was paid for the maintenance of cows in all areas of productivity under the direction of “Financial support for the development of farms”. The subsidy was calculated in the amount of UAH 5,000 (EUR 154.8) per head, but no more than UAH 250,000 (EUR 7,738) per farm. Recipients of such a subsidy are farms that keep five or more cows. 457 farms received this subsidy for

11,500 cows (Pavlenko, 2022). This makes up 43.7 % of business entities in the field of cattle breeding of all directions. In summary, not all business entities were able to receive a subsidy to stimulate the number of cows in 2021.

Figure 4 illustrates a significantly lower level of public funding of livestock production in relation to GDP in Ukraine compared to Poland. From 2015 to 2021, the financial support in Poland fluctuated between 0.07 % to 0.093 % of GDP, whereas in Ukraine, it ranged from 0.002 % to 0.067 % of GDP from 2015 to 2022. This difference is intensified by the fact that the absolute size of the GDP in Ukraine in 2015–2022 is, on average, 4.4 times lower than in Poland, which gives grounds for stating an extremely low amount of livestock financing.

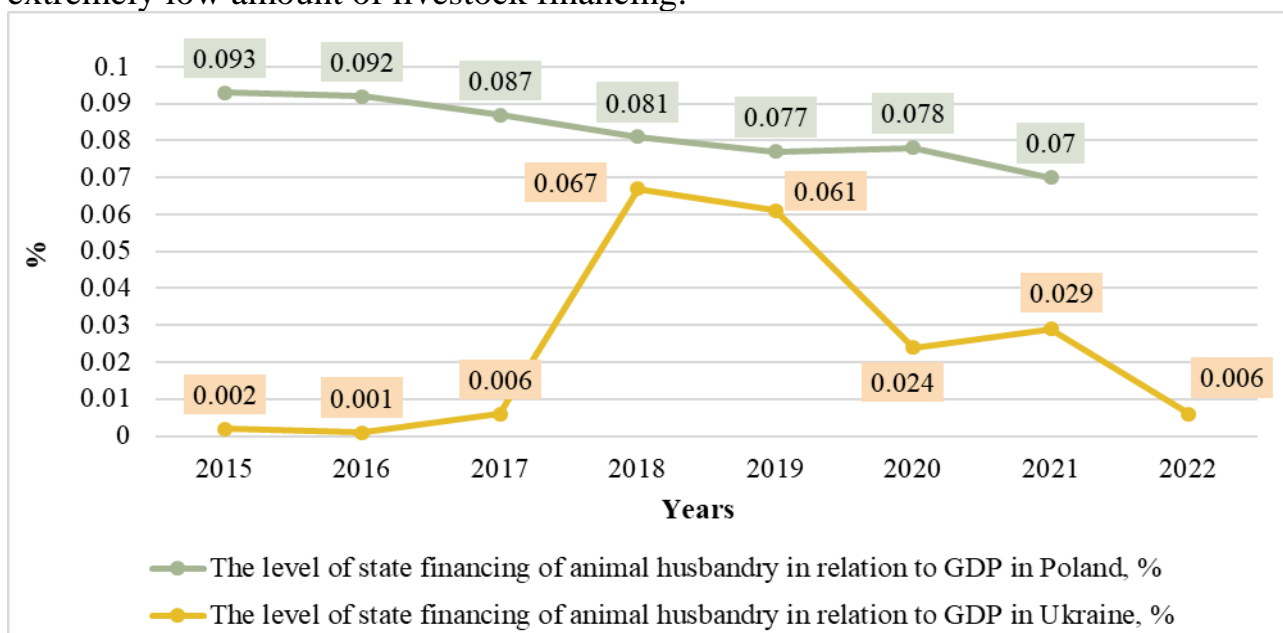


Figure 4. The level of state financing of animal husbandry in relation to GDP in Ukraine and Poland in 2015–2022

Note. Data on the actual state financing of livestock farming in Poland for 2022 have not yet been made public.

Source: Stavnycha (2021); Pavlenko (2022); Minfin (2023); Agency for Restructuring ... (2023); The Ministry of Agriculture ..., (2023); Statistics of Poland ... (2018); eRegion (2023).

According to OECD data, the budget support in Ukraine during 2019–2021 accounted for less than 1 % of the gross income of farms (OECD, 2021). In comparison, Iceland had the highest share of subsidies in the total revenue of dairy farms in 2019, at 59.86 %, followed by Japan and Norway with 58.42 % and 56.54 %, respectively (Kondaridze & Luckstea, 2023).

The insufficiency of state financial support for animal husbandry in Ukraine is further exacerbated by the low level of efficiency in its usage. According to the results of the state financial audit of the Ministry of Agrarian Policy and Food of Ukraine budget programs from January 1, 2015, to June 30, 2017, it was revealed that in 2015, budget funds amounting to UAH 209,415.1 (EUR 8,565.49) allocated for the budget program 2801540 “State support of the livestock industry” were not used due to the untimely adoption of the procedure for their use. This resulted in the failure to achieve the performance indicators specified in the budget program for 2015. Moreover, the

average partial reimbursement of the cost for one head of heifers, and cows of domestic origin, purchased for further reproduction, decreased by UAH 5.7 thousand (EUR 269) compared to the plan. These findings indicate the low effectiveness of implementing the directions of the budget program during the period of 2015–2017 (State Audit Service of Ukraine, 2017).

Based on the findings of the audit conducted by the Accounting Chamber, it was determined that in 2018, the budget program 2801540 “State support of the livestock industry” employed state budget funds amounting to UAH 2,389,844.2 thousand (EUR 74,350.6 thousand), which accounted for 99.5 % of the planned allocation (UAH 2,401,000 thousand or EUR 74,697.68 thousand). However, the remaining balance of unused funds, totalling UAH 11,155.8 thousand (EUR 347 thousand), was returned to the budget, indicating ineffective management of budget funds. The incomplete use of funds was observed across all areas of this program. For instance, the planned special budget subsidy for the maintenance of dairy, dairy-beef, and meat production was UAH 515,000 thousand (EUR 16,022.2 thousand), but only UAH 511,906.6 thousand (EUR 15,926 thousand) was used. Similarly, the planned special budget subsidy for raising young cattle born on the farms of individuals was UAH 322,000 thousand (EUR 10,017.8 thousand), with only UAH 320,081.4 thousand (EUR 9,958.1 thousand) being used (Accounting Chamber, 2019). The Report on Agrarian Policy highlights that the main reasons for fluctuations in the amount of state support for the agro-industrial complex are the imperfections in mechanisms for obtaining and distributing budget funds and violations of budget discipline during their use. The frequent changes in the order and mechanisms of allocating funds from the state budget, their complexity, late approval, and constant modifications throughout the year, as well as budget limitations, lead to delays in receiving state financial support, its inefficient utilization, and eventual return to the State Budget at the year-end (Stavnycha, 2021).

In addition, questions arise regarding the transparency of the use of state financial support. For instance, the audit revealed that state support for the livestock industry under the direction of “Partial compensation of the cost of construction and reconstruction of livestock farms and complexes, milking parlours, enterprises for the processing of agricultural products in the part of expenses financed by bank loans” (with planned expenses of UAH 65,000 thousand (EUR 2,022.2 thousand), actual expenditures amounted to UAH 62,926.1 thousand (EUR 1,957.7 thousand) in 2018 and were used by only 7 economic entities located in 5 regions of Ukraine. Notably, 33.1 % and 30.0 % of the funds were allocated to two business entities in the Ivano-Frankivsk and Dnipropetrovsk regions, respectively (Accounting Chamber, 2019).

In 2022, the provision of a special budget subsidy for the maintenance of cattle (cows) of all productivity areas was executed under the budget program 2801500 “Support to farms and other producers of agricultural products” in the amount of UAH 5,300 (EUR 156) per cow, but not exceeding UAH 530,000 (EUR 15,597.4) for one recipient. Through these funds, a special budget subsidy for keeping cows was granted to 10,247 recipients for 62,090 cows, amounting to UAH 329.077 million

(EUR 9.7 million) (Ministry of Agrarian Policy ..., 2023).

According to a survey conducted among business entities in the agro-industrial complex (276 respondents) as part of the “German-Ukrainian Agricultural Policy Dialogue” project, it was found that in 2022, only 30.32 % of respondents applied for state agricultural subsidies. Among them, the majority (54.76 %) received at least part of the subsidies. However, a significant number of respondents (45.07 %) were not aware of the possibility of applying for a subsidy. Additionally, 41.45 % of respondents did not know where to seek instructions or advice on the application process. Moreover, 34.47 % of respondents believed that applying for state support was not worth their efforts. Reported reasons for not applying for agricultural subsidies indicate that there is substantial room for improving allocation and distribution processes (Kvartiuk, 2023).

The low efficiency of budget funds management significantly increases the negative effect of their insufficiency. A simple increase of funds in the context of Ukrainian realities will not give the desired outcomes (Yaroshevykh et al., 2021). Therefore, without enhancing the mechanism for using financial resources to support animal husbandry, just increasing expenditures will not give desired results.

In Ukraine, most goods and services are taxed at a single VAT rate of 20 %, which reduces the competitiveness of Ukrainian dairy products and hampers their consumption. Among the 28 EU member states, dairy raw material prices are lower in 26 countries compared to Ukraine. Additionally, finished dairy product prices in Ukraine are also higher than those in the EU and the global market, rendering them uncompetitive. This situation has led to a decline in exports by USD 45 million in value equivalent from 2018 to 2019, while imports increased by 1.5 times, amounting to an increase of USD 46 million. Moreover, imports increased for all product items. The trend of import growth intensified further in 2020, with a significant influx of products from EU countries such as Poland, Germany, France, the Netherlands, Italy, and also from the Republic of Belarus. The Republic of Belarus benefits from more cost-effective raw materials due to its effective financial support for milk producers. As a result, Ukrainian dairy products faced a lack of competitiveness in terms of pricing compared to imported alternatives. One of the factors contributing to high prices on the domestic market is the 20 % VAT rate imposed on finished goods (Verkhovna Rada of Ukraine, 2020).

In order to protect our domestic dairy industry, preserve jobs (which is extremely important in the current situation), and ensure sufficient tax revenues, it is critical to enhance fiscal support for our local producers at the state level. Additionally, reducing the VAT on finished dairy products will help in lowering prices and increase the purchasing power of Ukrainians. Because the share of Ukrainians' spending on milk and dairy products in 2021 was 15.2 %. Moreover, the share of food expenditure in Ukraine is one of the highest. Developed countries typically do not exceed 15 % in food costs. As per the USDA rating in 2021, Ukraine ranked 92nd, positioned between Ethiopia (41.3 % of food expenditure, USD 245 per person) and Cambodia (42.7 %, USD 546 per person), placing it among countries with a higher percentage of food

expenditure (Dukhnytskyi, 2023). The low level of income hinders the population's access to quality food (Brychka et al., 2023). The work of Revoredo-Giha et al. (2020) supports the necessity for a moderate approach to VAT on milk in developing countries. These researchers found that the introduction of VAT on pasteurized milk in Malawi in 2016 led to decreased demand and had negative repercussions for both supply chains and consumers. Gaarder (2019) contends that reducing VAT on food diminishes inequality in consumer welfare. The absence of VAT benefits restricts the availability of milk and dairy products for the population of Ukraine and does not contribute to an increase in their consumption. Therefore, implementing measures to reduce VAT and stimulate domestic dairy production will be vital to promote the accessibility and consumption of these essential products among Ukrainians.

5. The impact of the war on the dairy industry in Ukraine. The ongoing war has had a significant impact on the amount of milk production and livestock in Ukraine. In 2022, the total milk production amounted to 7,556 thousand tons, reflecting a substantial decrease of 13.3 % compared to 2021. However, agricultural enterprises demonstrated relatively more positive dynamics with a decrease of 5.3 % (equivalent to 2.6 million tons) compared to the previous year (Infagro, 2023a). Analysing the trend in milk production from 2015 to 2021, it is evident that there has been an annual decline ranging from 1 to 5.9 %. Thus, considering the pre-war course of declining milk production, it can be inferred that the military actions by Russia further contributed to a reduction in milk production by at least 7.4 % (13.3–5.9 %), amounting to a loss of approximately 644 thousand tons.

It is worth noting that when examining the monthly data for 2022 (Table 2), the rapid decline in milk production occurred during the period from March to August. However, from September 2022, the rate of decline in milk production began to slow down. This change can be attributed to the recapture of a significant portion of the occupied territories, leading to their return under the control of Ukraine.

Table 2

Monthly milk production in Ukraine in 2021–2022, thousand tonnes

Month	2021	2022	Rate of change, %
January	532	522	-1.9
February	525	486	-7.4
March	696	560	-19.5
October	766	637	-16.8
May	914	752	-17.7
June	885	742	-16.2
July	872	726	-16.7
August	845	710	-16.0
September	778	668	-14.1
October	716	658	-8.1
November	625	565	-9.6
December	565	530	-6.2
Total	8719	7556	-13.3

Source: formed by the authors based on State Statistics Service of Ukraine (2022b); Infagro (2023b).

In 2021, the highest milk production was recorded in the Poltava region with 690.7 thousand tons (by 5.95 % less than in 2020); followed by Vinnytsia with 686.1 thousand tons (6.05 % less); and Khmelnytska with 653.8 thousand tons (0.34 % more) of milk. The lowest volumes of milk production for 2021 were demonstrated in Luhansk (102.1 thousand tons; 7.69 % less than in 2020), Donetsk (144.2 thousand tons; 7.50 % less), and Zaporizhia (180.6 thousand tons; 10.59 % less) regions (State Statistics Service of Ukraine, 2022b). It should be noted that the regions that were under occupation and still partially are at the moment are at the bottom of the ranking in terms of milk production (except Kharkiv region). And the top 3 regions were not in the war zone.

As of December 1, 2022, there are 1.38 million cows in Ukraine (Milkua.info, 2022). On December 1, 2021, there were 1610.7 thousand heads, while on December 1, 2020, there were 1728.2 thousand heads of cows (State Statistics Service of Ukraine, 2022d). It would be wrong to attribute the decrease in the number of cows in 2022 by 230.7 thousand only to the war because, in previous years, there was also a decrease. For the period 2012–2021, the annual rate of decrease in the number of cows was within 1.6 %–6.8 %. If we start from 2021, in which the number of cows decreased (as of December 1, 2021) by 117.5 thousand heads, then we can talk about a decrease in the number of cows as a result of the war by 113.2 thousand heads, or by 7.5 %.

In addition to physical losses (reduction in the number of cows, destruction of property), the martial law in Ukraine has caused a number of urgent problems and needs for the dairy sector: (1) lack of funding to pay for labour and other operating costs, especially for enterprises that have suffered material losses as a result of the war; (2) relocation of production facilities from dangerous regions where active hostilities have been or are continuing; (3) logistics face multiple challenges including blocked ports, transportation timing and modes, border checkpoint capacities, transit routes through EU countries, registration procedures for transit goods, and escalated logistics costs in various regions such as Africa and the Middle East; (4) insurance instruments/letters of credit related to export contracts, given that a majority of foreign buyers demand deferred payment, causing delays in working capital; (5) certification of product adherence to the standards and requisites of EU countries, since these nations might become the primary sales market for the Ukrainian dairy sector in the upcoming months; (6) necessity to advocate for the interests of Ukrainian dairy producers in key importing markets (Lytvyn, 2022).

Furthermore, commencing from June 3, 2022, the National Bank of Ukraine took measures to curb inflation by raising the discount rate from 10 to 25 %. This adjustment signifies a lack of access to affordable loans. Consequently, the dairy industry will require a specialized program to bridge this financial gap. According to the Kyiv School of Economics, the direct financial setbacks for agriculture due to the ongoing Russia's war in Ukraine, as of November 10, 2022, have reached USD 6.6 billion, encompassing losses of USD 362.5 million in the livestock sector. As a result, the indirect repercussions on agriculture as a whole are projected to be around USD 34.25 billion (KSE, 2023).

The impact of war on the level of food security. The state of the milk market undeniably has implications for the overall national food security level. Globally, this aspect is evaluated through the Global Food Security Index (GFSI), which includes evaluations in the following domains: (1) affordability, (2) availability, (3) quality and safety, (4) natural resources and resilience (since 2022, sustainability and adaptation). The deterioration of global food security over the past decade is due primarily to climate change and agricultural intensification, with the conditions being further exacerbated by the impacts of COVID-19 (Kumareswaran & Jayasinghe, 2022). In 2022, the global implications of the Russia's war in Ukraine were also added to this list.

In the broader perspective of 2012–2022, Poland rose from the 24th to the 21st position in the GFSI index ranking, whereas Ukraine fell from the 44th position to the 71st, signifying a decline in food security levels. In the year 2020, among 113 nations worldwide, Ukraine ranked 54th (Figure 5). For comparative purposes, the Czech Republic claimed the 6th position, Romania the 22nd, Belarus the 23rd, Poland the 25th, Kazakhstan the 32nd, Hungary the 36th, Bulgaria the 44th, Turkey the 47th, and Serbia the 52nd. Ukraine achieved its highest scores in two categories: 1) affordability – 74.4 and 2) quality and safety – 75.3. Meanwhile, Poland held a substantial lead over Ukraine in terms of 1) affordability – 85.1 versus 74.4, 2) availability – 65.8 versus 51.6, and 3) quality and safety – 83.6 versus 75.3 (GFSI, 2022).

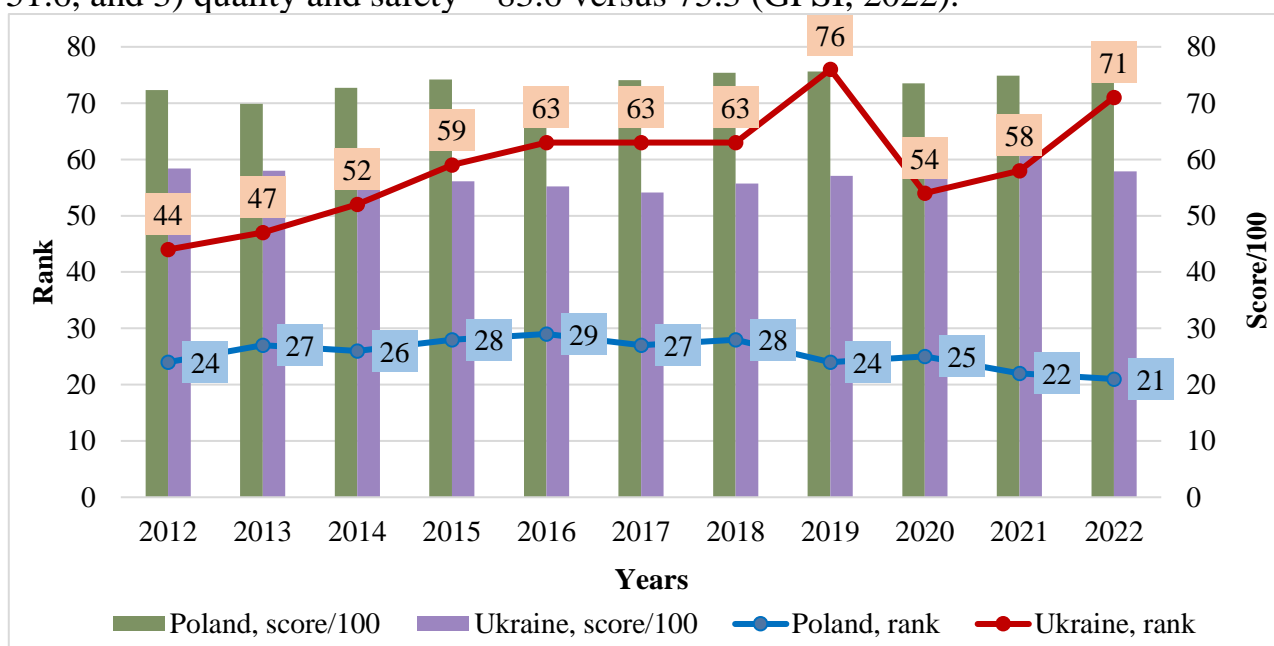


Figure 5. Dynamics of the GFSI rating for Ukraine and Poland for 2012–2022

Source: formed by authors based on (GFSI, 2022).

In the context of the GFSI index, Ukraine held the 58th position in 2021. However, in 2022, due to the impact of Russia's military aggression, Ukraine experienced a considerable decline in its ranking, moving from the 58th to the 71st place. In contrast, Poland witnessed an incremental improvement in its standing, advancing from the 22nd to the 21st position. The regression in Ukraine's ranking was primarily caused by challenges related to affordability, as well as sustainability and adaptation aspects (GFSI, 2022).

6. Ways to improve the current state of the dairy industry of Ukraine. *Export as an opportunity to survive.* During the war, the domestic dairy product market in Ukraine experienced a significant contraction due to a significant increase in the number of citizens migrating abroad. Forecasts show that domestic demand declined to around 2.7 million tonnes, down 22 % from 2021. Hence, the revival of the sector, the preservation of employment opportunities, and the ability to contribute to the nation's budget during the wartime conditions are expected to hinge significantly on exports (Lytvyn, 2022).

Surprisingly, despite the ongoing war, Ukraine managed to export dairy products worth USD 344.6 million in 2022, marking a remarkable 39 % increase compared to the preceding year. Several factors contributed to this achievement, including (1) the active role of the European community in facilitating trade liberalization between Ukraine and the EU, (2) elevated global prices for dairy products during the initial three quarters of the year, and (3) the competitive edge of Ukrainian dairy offerings in the European market, particularly during the summer-autumn period. However, a shift was observed in the fourth quarter, as worldwide dairy product prices began to decline, subsequently impacting shipment volumes (UkrAgroConsult, 2023).

Promising prospects lie ahead as Ukraine explores potential collaborations with EU countries, Great Britain, and Canada, facilitated by the elimination of all customs duties and taxes on Ukrainian exports. This removal of duties and fees enhances the competitive edge of Ukrainian products in these markets. While the appeal of attractive prices and the removal of quotas for Ukrainian goods is evident, the volume of supplies to the EU remains constrained by logistical challenges. Nevertheless, European traders are demonstrating a readiness to bolster cooperation with Ukrainian exporters. By June 15, 2022, the EU had accredited 33 Ukrainian production facilities eligible to export products to its member states, including 5 newly accredited facilities since the onset of the war. Furthermore, 28 of these accredited capacities are authorized for export to Great Britain (Lytvyn, 2022).

Currently, Israel is the main importer of Ukrainian dairy products, the share of Ukraine in the import of dairy products to Israel is 6.8 %. According to data from the State Customs Service covering the period from June 1, 2022, to June 26, 2022, Ukraine has also exported dairy products to other countries, including Moldova, Armenia, Georgia, Azerbaijan, Uzbekistan, Israel, Saudi Arabia, Kuwait, Egypt, Bangladesh, Myanmar, Thailand, Philippines, Liberia, Trinidad and Tobago, Gambia, USA, Canada, Puerto Rico, among others, which collectively account for approximately 46 % of the overall exports. In parallel, approximately 54 % of these products find their destination in EU countries. In total, these exports amount to slightly over 7,462 net tons of dairy products, equating to an approximate monetary value of USD 19 million. The global market has unveiled a niche for Ukrainian offerings, and seizing this opportunity remains imperative (Lytvyn, 2022).

Foreign financial support. Following the collaborative meeting of the governments of Ukraine and the EU in Kyiv on February 2, 2023, the European Commission has undertaken a series of consequential decisions aimed at fostering

closer ties between Ukraine and the EU. Some of these decisions will markedly impact the dairy industry. In particular, the European Commission is working hard to help Ukraine fully exploit the potential of the Association Agreement, which covers the Agreement on Deep and Comprehensive Free Trade Areas (DCFTA). Within this context, the Priority Action Plan for 2023–2024, outlining pivotal avenues for DCFTA implementation, will serve as a guiding framework for extending Ukraine's reach into the EU's internal market. The European Commission has also published a comprehensive package of technical support for the Agreements on Conformity Assessment and Acceptance of Industrial Goods (ACAA). In a concerted effort to strengthen Ukraine, the Commission has additionally revealed supplementary measures designed to streamline trade, including the suspension of import duties on Ukrainian exports. In addition, the Commission is now ready to propose the extension of these measures beyond June 2023. In the midst of these initiatives, the Commission has announced Ukraine's integration into key EU programs. The Commission and Ukraine signed the accession to the Single Market Program (SMP). This agreement promises Ukraine business assistance, streamlined market access, an advantageous business climate, sustainable growth, and internationalization. By becoming a part of this program, Ukraine will have the chance to take advantage of unique bidding opportunities within the ongoing programs and initiatives (Infagro, 2023c).

Discussion. The study findings validate the hypothesis of insufficient state financial support for Ukraine's dairy industry. Examination of key indicators for the country's dairy sector reveals a consistent trend of declining milk production. From 1990 to 2021, milk production decreased by threefold, cattle numbers by 8.8 times, and cow numbers by fivefold. This trend corresponds with decreased exports and increased imports of milk and dairy products. Ukrainian dairy product prices rank among the highest in the EU. Since 2020, the dairy industry has transitioned from being export-focused to import-reliant. Consequently, it can be concluded that the strategic objectives of budget program 2801540 "State support of the livestock industry" in terms of dairy farming development, have not been fully realized.

In contrast, Poland, a country with similar geographical and climatic conditions to Ukraine, displays opposite trends in its dairy industry indicators. Investigation into the Polish experience highlights a notably high level of state financial support for the dairy sector through various forms and fiscal incentives. Calculations from the authors indicate that during 2015–2021, Poland's state financial support ranged between 0.07 and 0.093 % of GDP, whereas Ukraine's support during 2015–2022 varied between 0.002 and 0.067 % of GDP. This discrepancy is compounded by Ukraine's significantly lower GDP, averaging 4.4 times less than Poland's from 2015 to 2022. According to OECD data, the budget support in Ukraine during 2019–2021 accounted for less than 1 % of the gross income of farms (OECD, 2021). In comparison, Iceland had the highest share of subsidies in the total revenue of dairy farms in 2019, at 59.86 %, followed by Japan and Norway with 58.42 % and 56.54 %, respectively (Kondaridze & Luckstea, 2023). These combined facts indicate the extremely low level of state financing for livestock breeding in Ukraine. The self-sufficiency level in milk

and dairy products in Ukraine dropped to 95.2 % in 2021, posing a significant threat to national food security. The situation has been further exacerbated by Russia's military aggression. Direct losses in the livestock sector due to the Russia's war in Ukraine reached USD 362.5 million by November 10, 2022. Indirect losses stemming from logistical disruptions, power outages, and the shift to generators are even more substantial.

Beyond the limited funding volume, the state support system for livestock breeding in Ukraine has a number of shortcomings that exacerbate the funding deficit. Simply increasing financial allocations for livestock production without addressing these deficiencies is likely to lead to suboptimal results. The principal drawback lies in the imperfection of mechanisms for procuring and distributing budget funds, coupled with lapses in budgetary discipline during their utilization. Moreover, the allocation of the finite state financial support for animal husbandry transpires without differentiation based on the scale of business entities. This approach overlooks the fact that small enterprises often face financial constraints, whereas medium-sized enterprises generally do not encounter such limitations. Economic potential of small enterprises depends significantly on their financing capabilities (Yaroshevych et al., 2019). Therefore, special emphasis on dairy cattle breeding for small enterprises is imperative. Table 3 provides key indicators depicting the funding structure and capital investments of dairy cattle breeding enterprises in Ukraine, differentiated by size.

Table 3

**Structural indicators of enterprises in the field of dairy cattle breeding
in Ukraine in 2021**

Types of enterprises by size	Structure of funding sources, %				Share of equity by the size of enterprises, %	Number of active enterprises, %	Gross investment in tangible goods, %
	equity capital	long-term commitments and provision	current liabilities and provision	including short-term banking credits			
Large enterprises	-	-	-	-	-	-	-
Medium enterprises	73.5	4.0	22.5	16.0	72.8	25.9	91.9
Small enterprises	39.7	4.5	55.9	4.3	19.0	74.1	8.0
of which micro-enterprises	39.4	0.8	59.4	2.8	8.1	59.4	0.1
Total	-	-	-	-	100.0	100.0	100.0

Source: calculated and compiled by the authors according to the State Statistics Service of Ukraine (2022e).

The data presented in Table 3 for the year 2021 in Ukraine reveal that within this sector, medium-sized enterprises exhibit a predominant capital structure comprised of proprietary capital (73.5 %), while liabilities and provisions collectively constitute 26.5 %. Conversely, among small enterprises, the scenario is reversed, with equity contributing to 39.7 % of overall financing sources, and obligations and provisions accounting for 60.3 %. Notably, the proportion of long-term obligations and provisions

within the financing source framework of micro-enterprises is significantly lower (0.8 %) compared to the broader category of small enterprises (4.5 %). The composition of short-term bank loans within the structure of current obligations and provisions differs across these segments: 16.0 % for medium-sized enterprises, 4.3 % for small enterprises, and 2.8 % for micro-enterprises. This divergence stems from the limited accessibility of bank credit for small businesses due to inadequate liquid collateral. Furthermore, the context of wartime conditions contributes to the hesitance of commercial banking institutions, which adopt stringent risk assessment strategies, to extend loans to farmers situated in zones of potential risk (Pavlenko, 2022).

The lack of financing sources for small business entities is further exemplified by the limited proportion of capital investments allocated to tangible assets. Specifically, for small enterprises, this constitutes 8.0 % of the total volume within this domain, and for micro-enterprises, a mere 0.1 %. In contrast, medium-sized enterprises allocate a substantial 91.9 % of capital investments to this category (as shown in Table 3). Given this reality, the relevance of considering this aspect when devising a state financial support program for animal husbandry becomes particularly pronounced during times of war and post-war transition, given the heightened vulnerability of small enterprises in such crisis contexts. Moreover, research by Petrick & Götz (2019) underscores that state subsidies foster a higher growth rate in the cow population within small farms compared to agro-holdings.

For newly established business entities in the sphere of small business, securing an adequate volume of financing is of utmost significance for their effective initiation and subsequent growth. This aspect is comprehensively accounted for within the array of instruments comprising the state support framework for Polish farms. This framework encompasses supplementary direct payments directed at young farmers. These payments are intended for farmers who are initiating or have commenced their farming operations within the five years prior to their initial application, and who are under the age of 40 in the first year of application submission. In the year 2021, the payment rate stood at PLN 308.59 per hectare (EUR 67.6). In Ukraine, during the same year, additional payments for newly established farms were exclusively allocated for obtaining agricultural advisory services, contingent upon a contract concluded prior to the culmination of the present budgetary period and substantiated by completed work records.

In EU countries, a strategy to ease administrative complexities for small farms involves the implementation of a unified payment, which serves as a replacement for various other forms of income support provided to farmers. This approach could be adopted in Ukraine within its financial capacities.

The findings of a survey conducted among diverse economic entities as part of the “German-Ukrainian Agricultural Policy Dialogue” project (75 respondents) indicate that during periods of martial law and limited funding, interest-free lending programs are particularly pertinent, alongside direct subsidies per hectare and per head of cattle. This perspective is prominent among farms working on up to 100 hectares, facing constraints in working capital, and lacking a favourable credit history.

Respondents also proposed measures to expedite fund allocation across sectors and streamline the process of assessing recipients' documents and decisions on payments (Pavlenko, 2022).

Considering the impact of high inflation and international trends in mitigating its effects on food affordability for the population, we consider it necessary to reduce the VAT on milk and dairy products to 5 %. This step would stimulate higher dairy consumption and, in part, offset the budgetary implications of a lower VAT through a reduction in the informal market in this sector.

Conclusions. In the upcoming years, the state budget is expected to face a deficit for reconstruction. It is probable that Ukraine will seek financial assistance from foreign partners, particularly directed towards the revival of the dairy industry. However, for optimal utilization of these resources, it is imperative to establish an efficient mechanism for managing animal husbandry financing, along with reliable oversight over fund use.

Taking into account the limitations of state funding, we believe that (1) the set of instruments for state financial support of animal husbandry should be formed depending on the size of business entities because small business entities (especially micro-enterprises) have the greatest need for additional financial resources; (2) agricultural producers in the de-occupied territories should have priority access to such assistance; (3) the conditions and criteria under which state support is guaranteed to be available should be clearly defined; (4) to ensure comprehensive and timely financing, it is imperative to expedite the fund allocation process across sectors and streamline the approval of financial documentation; (5) it is needed to accelerate document review and decision-making processes for state subsidy disbursement; (6) furthermore, exploring the possibility of providing cattle maintenance payments to small business entities without requiring main fund manager coordination is advisable; (7) in order to counteract the decline in dairy farming, mitigate the reduction in milk and dairy product production, and alleviate consumer price hikes, introducing a reduced VAT rate (5 %) on milk and dairy products is recommended. This practice aligns with the norm in European Union countries and aims to uphold food product accessibility, particularly crucial given the relatively high portion of Ukrainian expenditures dedicated to food.

The primary limitation of this study is the restricted dataset available for assessing the state support level for Ukrainian animal husbandry. Consequently, the analysis is limited to data for 2015–2022, which, to some extent, restricts the dynamics evaluation. Moreover, the number of directions and sub-directions funded within the budget program 2801540 “State support of the livestock industry” varied annually, complicating a precise analysis of trends.

The findings of this study can serve as a foundational information source for constructing a state financial support program for Ukraine's dairy industry, incorporating insights from European practices. These results are the basis for further scientific research in the direction of developing a set of measures to revitalize the dairy sector of Ukraine and restore food security.

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