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MILK AND DAIRY INDUSTRY IN ROMANIA – ANALYSIS OF THE DEGREE OF COMPETITIVENESS AT EUROPEAN LEVEL

ABSTRACT

The paper presents an analysis of milk and dairy industry in Romania in the period 2011-2020 to reveal the degree of this sector competitiveness at European level. Several economic indicators were taken into consideration for the purpose of this study (production value, number of enterprises, apparent labour productivity, gross value added per employee, share of gross operating surplus in value added and investment rate), on the basis of which a comparative analysis was carried out with other EU member states. An analysis of the milk and dairy trade of Romania was also carried out for the period 2011–2022.

The results of the study reveal that in the investigated period, Romania ranked last in terms of average cow milk yield in the European Union. Romania cannot cover the consumption needs of milk and dairy products from domestic production, being dependent on imports. For the period 2011–2022, Romania's balance of trade in milk and dairy products was negative, with imports coming mainly from the intra-Community area. The increase of input costs as well as the new EU regulations regarding climate change mitigation and animal welfare could lead to a continuous decline of cow herds in Romania.

Key words: milk and dairy industry, economic indicators, competitiveness, trade.

JEL Classification: Q13, Q19.

I. INTRODUCTION

According to Eurostat data, the European Union is the second largest producer of milk worldwide, with a production of approximately 160 million tonnes of raw milk in the year 2022. Dairy production is a key pillar of the EU agricultural sector, representing approximately 12% of total agricultural output (European Parliament, 2018).

The European agricultural and food system, supported by the Common Agricultural Policy (CAP), is already a global standard in terms of food safety and security of supply. In the context of current challenges (COVID-19 pandemic, the war in Ukraine, energy crisis, climate change), it is also intended to become a standard for sustainability. A shift to a sustainable food system can bring environmental, health and social benefits, as well as fairer economic gains (European Commission).

Given the current European context, the degree of competitiveness of the Romanian milk and dairy sector comes into question. In spite of the good potential of high-quality food production in Romania, the domestic milk and dairy production has decreased in recent years, although the demand for these products has increased. Trade deficit in milk and dairy products has significantly increased, and the degree of self-sufficiency in dairy products is continuously decreasing. The sector is facing serious challenges with regard to milk processing and quality, as well as logistic problems both at the level of farms and processing plants, as well as transport to urban areas.

2. STATE OF KNOWLEDGE

The dairy sector in the European Union has undergone many changes throughout its history, the most recent change being the removal of milk production quotas in April 2015. The milk quota system was introduced in 1984 and provided for national milk production quotas in the member states and individual quotas established for each producer or buyer, with an additional tax for those who exceeded their quota (Jongeneel and Gonzalez Martinez, 2022a).

The removal of the milk quota system marked the end of a significant constraint on the development of the milk sector in the EU, allowing market forces to replace this milk supply constraint (Jongeneel and Gonzalez, 2022b).

A slowdown in milk production growth is expected in the next years, given that more emphasis is placed on the health and longevity of dairy cow populations and on an increased share of organic production, as well as on environmental constraints. However, productivity is still an important element to ensure the economic viability of the sector. Price volatility, as well as the availability of workforce and generational renewal also bring additional uncertainty to the future of milk production. At the same time, changes in consumer preferences might appear, reflecting animal welfare concerns, adoption of plant-based milk and dairy products, a growing demand of organic dairy products or societal concerns with regard to the use of genetically-modified inputs in the production process. Another element that could bring changes in the demand of dairy products in the EU is the increasing consumer interest in local production (short supply chains) (Jongeneel *et al*. 2023).

3. MATERIAL AND METHOD

The present paper analysed the evolution of milk and dairy processing industry in Romania in the period 2011–2020. The study highlighted the effects produced by the energy crisis, the COVID-19 pandemic and the war in Ukraine on the competitiveness of milk and dairy industry in Romania.

For the evaluation of milk and dairy processing industry in Romania, the following indicators were analysed: production value, number of enterprises, apparent labour productivity, gross value added per employee, share of gross operating surplus in value added and investment rate.

For the purpose of this research, the tempo online, MARD, FADN, EUROSTAT databases were used, as well different studies, reports and publications from Romania and other countries.

4. RESULTS AND DISCUSSIONS

4.1. MILK AND DAIRY PROCESSING INDUSTRY IN ROMANIA

According to data published on termene.ro platform, the first three largest milk and dairy producers in Romania in the year 2022 were the following: Albalact, Danone and Brașov dairy factory (Olympus dairy products).

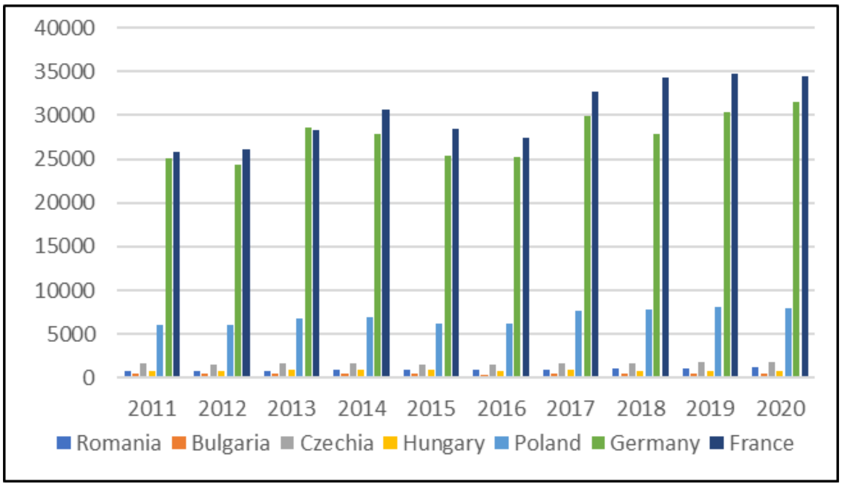
The company Albalact, part of the French group Lactalis, ranked first in the top of dairy companies in Romania in 2022, as in 2021. In the year 2022, the turnover of the company was by 27.3% higher compared to 2021 and the profit higher by 17.6% compared to the previous year (economedia.ro, 2023).

According to APIA data, the largest dairy processor in Romania, Lactalis Romania, which took over the companies LaDorna Lactate, Albalact, Rarăul, Covalact, Lactate Harghita, is supplied with the largest raw milk quantity from the DN Agrar Group. Established in the year 2008, DN Agrar GROUP operates in Alba, Sibiu and Hunedoara counties and is the largest integrated livestock farm in Romania, both with cow milk production and crop production (economedia.ro, 2023).

Production value

From the analysis, it was found that production value of the dairy industry in Romania had an upward trend in the period 2011-2020, except for the year 2012, when it decreased by 5.3% compared to the previous year, and the year 2015, when it decreased by 1.3% compared to 2014 (Figure 1). An increase in the production value by 57.7% in 2020 compared to 2011 could be noticed, higher by 9.7% than in 2019.

A comparative analysis of the production value of dairy industry in Romania with other four EU-27 member states (Bulgaria, Czechia, Hungary, Poland) reveals that in the year 2022, production value in Romania was 2.3 times higher than that of Bulgaria and 1.6 times higher than that of Hungary, but 1.4 times lower than in Czechia and 6.4 times lower than in Poland.



Source: Eurostat.

Figure 1. Evolution of the production value in Romania and other EU-27 member states in the period 2011–2020, million euros.

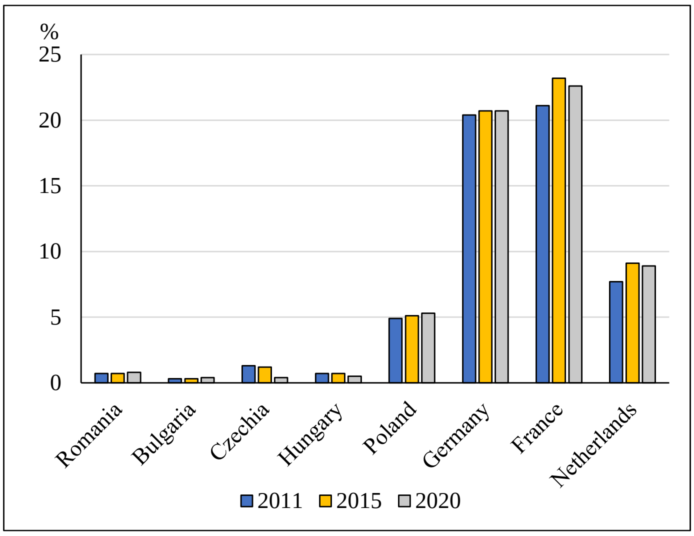
Table 1

Variations of production value in the dairy industry

Country	**2020/2011**	**2020/2015**	**2020/2019**
Romania	57.7%	46.4%	9.7%
Bulgaria	29.1%	28.3%	8.7%
Czechia	6.4%	9.1%	-0.2%
Hungary	-6.1%	-9.7%	-1.0%
Poland	33.9%	28.3%	-0.1%
Germany	22.0%	24.3%	4.0%
France	33.2%	20.8%	-0.9%
Netherlands	45.2%	22.7%	1.5%

Source: Author's calculations based on Eurostat data.

If we make a comparison with the main two cow milk producers of the EU-27, Germany and France, a significant difference can be noticed between the production value in Romania and the other two countries; production value in the two countries is 25.1 times and 27.4 times higher respectively.

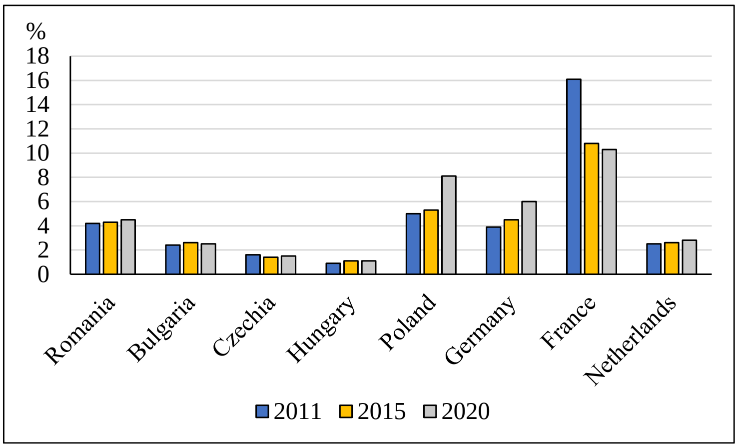


Source: Author's calculations based on Eurostat data.

Figure 2. Share of production value of member states in total EU-27.

Number of enterprises in the dairy industry

In the year 2020, at EU-27 level, France had the highest number of enterprises (10.3%) followed by Poland (8.1%). Romania, with 567 enterprises, had only 4.3% of the total number of enterprises in the dairy industry in the EU-27 (Figure 3).



Source: Author's calculations based on Eurostat data.

Figure 3. Share of the number of enterprises of member states in total number of enterprises of the EU-27 in the year 2020.

Following the comparison of Romania's values with those of other EU-27 member states, it was found out that the number of enterprises in Romania was about 2.3 times lower than that of Poland and about 4 times higher than that of Bulgaria. Author's calculations based on Eurostat data revealed that in the year 2020 the average number of employees per enterprise in Romania decreased by 20% compared to 2011, Romania having the lowest number of employees per enterprise among the analysed countries (22.6 employees).

Table 2

Variations of the number of enterprises in the dairy manufacturing industry

Country	**2020/2011**	**2020/2015**	**2020/2019**
Romania	9.9%	8.0%	2.5%
Bulgaria	9.7%	1.0%	-3.7%
Czechia	-6.0%	8.7%	4.5%
Hungary	27.7%	11.7%	0.7%
Poland	67.5%	57.4%	-0.4%
Germany	60.0%	28.2%	5.6%
France	-34.0%	-1.8%	2.9%
Netherlands	17.8%	11.9%	6.5%

Source: Author's calculations based on Eurostat data.

Apparent labour productivity in the dairy industry

Apparent labour productivity is calculated as a ratio of value added at factor costs to the number of employees.

Among the countries taken for comparison, only the apparent labour productivity in the dairy industry in Bulgaria was lower than that of Romania. Although an increase was noticed, by 64.7% in the year 2020 compared to 2011, this was approx. 6.2 times lower than that of the Netherlands and approx. 5.4 times lower than that of Germany.

Table 3

Variations of apparent labour productivity in the dairy industry

Country	**2020/2011**	**2020/2015**	**2020/2019**
Romania	64.7%	73.5%	20.2%
Bulgaria	79.5%	62.8%	12.0%
Czechia	50.9%	43.8%	6.7%
Hungary	35.4%	11.3%	2.8%
Poland	27.2%	29.4%	8.3%
Germany	61.4%	42.6%	9.1%
France	25.7%	-3.6%	0.7%
Netherlands	19.6%	14.7%	29.0%

Source: Author's calculations based on Eurostat data.

Gross value added per employee in the dairy industry

Although the gross value added per employee in the dairy industry in Romania had an increasing evolution in the analysed period, this remains well below the values in the Netherlands, Germany and France.

Table 4

Variations of gross value added per employee in the dairy industry

Country	2020/2011	2020/2015	2020/2029
Romania	65.5%	72.8%	20.1%
Bulgaria	78.8%	64.4%	11.7%
Czechia	53.0%	44.3%	6.9%
Hungary	38.9%	23.9%	3.5%
Poland	27.7%	29.4%	8.2%
Germany	62.5%	43.3%	9.5%
France	25.6%	-3.7%	0.7%
Netherlands	18.3%	13.9%	29.2%

Source: Author's calculations based on Eurostat data.

Share of gross operating surplus in value added in the dairy industry

The gross operating surplus (GOS) expresses the amount of money remaining at the disposal of enterprise after paying salaries and taxes. GOS describes the operating profitability of a company over a complete operational cycle.

The share of gross operating surplus in the value added of the dairy industry in Romania is comparable to that of countries taken for comparison, but, as highlighted in the table below, it was lower by 17.3% in 2020 compared to 2011.

Table 5

Variations of the share of gross operating surplus in value added in the dairy industry

Country	2020/2011	2020/2025	2020/2019
Romania	-17.3%	1.9%	31.8%
Bulgaria	3.5%	7.3%	2.5%
Czechia	9.2%	0.0%	12.8%
Hungary	4.0%	-2.8%	6.6%
Poland	-10.3%	6.2%	10.3%
Germany	48.8%	53.5%	5.8%
France	-2.9%	-27.7%	8.4%
Netherlands	-31.6%	-6.5%	5.2%

Source: Author's calculations based on Eurostat data.

Investment rate in the dairy industry

Investment rate is calculated as the ratio of the value of investments to the value added at factor cost. This ratio relates the investment of enterprises in fixed assets (buildings, machinery, etc.) to the value added created during the production process.

The investment rate in the dairy industry in Romania recorded the largest decrease in the year 2020 as against 2011 and 2019 compared to the other member states.

Table 6

Variations of investment rate in the dairy industry

Country	**2020/2011**	**2020/2015**	**2020/2019**
Romania	-29.3%	-15.4%	-34.7%
Bulgaria	-29.0%	-48.2%	-9.6%
Czechia	32.3%	-1.1%	-16.9%
Hungary	35.3%	50.0%	-2.8%
Poland	8.4%	-21.4%	-11.2%
Germany	-16.8%	-39.4%	-4.3%
France	20.1%	-16.2%	-12.4%
Netherlands	43.1%	-28.2%	-18.4%

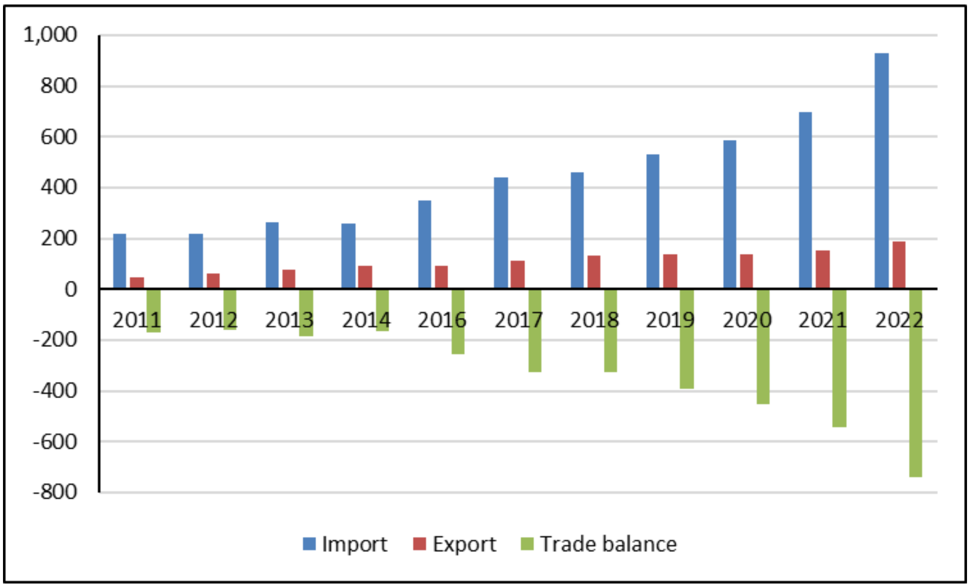
Source: Author's calculations based on Eurostat data.

4.2. MILK AND DAIRY TRADE

From the analysis carried out by the author on the basis of Eurostat data, it resulted that in the period 2011-2022 Romania had a negative balance of trade in milk and dairy products. This trade deficit increased after 2015, with the removal of milk quotas. The increase of consumption was also reflected in the increase of milk and dairy imports, Romania being unable to meet its consumption needs from domestic production. Thus, in the year 2016, the value of milk and dairy products increased by 27.4% compared to 2015. In the year 2022, an increase by 379.7% of the value of milk and dairy imports can be noticed, compared to 2010. As against 2021, the value of milk and dairy imports increased by 33.7%. In the year 2020, which marked the beginning of COVID-19 pandemic, the value of milk and dairy imports increased by 10.2% compared to 2019. In the second pandemic year, the increase was higher than in the previous year, namely 18.6%.

The imported quantity of milk and dairy products increased by 142.8% in the year 2022 compared to 2010, to reach 473.8 thousand tonnes. Although the growth rate of exports was higher (an increase by 304.2% in 2022 as compared to 2010), the deficit of the balance of trade increased (Figure 4).

In the year 2020, milk and dairy imports increased by 9.5% as compared to 2019, while exports decreased by 7.5%. Romania imported milk and dairy products by 10.2% more in the year 2022 compared to 2021, and exports increased by only 0.4%. In the year 2010, Romania imported 195.15 thousand tonnes of milk and dairy products, while in the year 2022 imports totalled 473.8 thousand tonnes.



Source: https://trade.ec.europa.eu/access-to-markets/en/statistics.

Figure 4. Milk and dairy trade in Romania (million euros).

According to data provided by the National Institute for Statistics, the main milk suppliers of Romania in the year 2022 were the following: Hungary, Poland, Czechia, Germany, Ireland and Spain. The value of milk imports from Hungary was approx. 65 million euros, while the value of milk imports from Poland was 11 million euros.

Although Romania imports approximately 4 times more than it exports, several Romanian brands export dairy products to international markets. According to NIS, the largest exporter of milk and dairy products from Romania in the first 10 months of the year 2022 was Brașov dairy factory (Olympus dairy products), followed by Danone and Hochland Romania.

5. CONCLUSIONS

In recent years, the dairy cow herds in the EU have continuously decreased. In early 2023, dairy cow herds in the EU totalled about 20 million heads, down by 0.6% compared to the previous year. Even though the dairy cow herds of the EU decreased until 2020, raw milk deliveries to dairy factories increased due to productivity increase.

The new EU directives on the environment and climate change mitigation will lead to additional unproductive investments, which will further impact milk production profitability. As in 2022, as a result of the war between Russia and Ukraine, in the year 2023 input costs (energy, feed, fertilisers) remained high.

In the year 2022, Romania ranked 7th in the EU-27 in terms of dairy cow herds, as in 2021, accounting for 5.4% of the dairy cow herds of the EU-27. In terms of raw cow milk production delivered to processing, Romania ranked 18th in the EU-27 in the year 2022, accounting for only 0.8% of the total raw milk production of the EU-27.

In the year 2022, the average cow milk yield in Romania was the lowest in the EU (3367 kg/head), which reflects the low competitiveness of the sector.

The three largest producers of milk and dairy products in Romania in the year 2022 were: Albalact, Danone and Brașov milk factory (Olympus dairy products).

A comparative analysis of the production value of dairy industry in Romania with other four EU member states (Bulgaria, Czechia, Hungary, Poland) highlights that in the year 2022 production value in Romania was 2.3 times higher than that of Bulgaria and 1.6 times higher than in Hungary.

In the year 2020, the number of enterprises in Romania was approximately 2.3 times lower than that of Poland and about 4 times higher than that of Bulgaria.

Among the countries taken for comparison only the apparent labour productivity in the dairy industry in Bulgaria was lower than that of Romania.

Although gross value added per employee in the dairy industry in Romania had an increasing trend in the analysed period, this remains far below the values in the Netherlands, Germany and France.

The share of gross operating surplus in the value added of the dairy industry in Romania is comparable to that of countries taken for comparison, but in 2020 it decreased by 17.3% compared to 2011.

The investment rate in the dairy industry in Romania had the largest decrease in 2020 compared to 2011 and to 2019 compared to the other member states.

In the period 2011-2022, Romania had a negative balance of trade in milk and dairy products. This trade deficit grew larger after 2015, with the removal of milk quotas on April 1, 2015.

The main milk suppliers of Romania in the year 2022 were the following: Hungary, Poland, Czechia, Germany, Ireland and Spain. The value of milk imports from Hungary reached approximately 65 million euros.

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