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CHALLENGES IN THE MILK MARKET (INVESTMENTS, DISRUPTIONS, LOGISTICS, COMPETITIVENESS, PRICES, AND POLICY)

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11

MOTIVES AND FINANCIAL SOURCES OF INVESTMENTS IN DAIRY FARMS[8]

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11.1. Introduction

Dairy farms are an important economic sector. Considering all food products, dairy products have a significant link of functional food. This is due to the fact that dairy products are characterized by health-promoting features- a unique origin and a specific composition of milk (Świderski et al. 2018). Production and processing of dairy products contribute to both a strong economy and a healthy populations.

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According to statistical data, in 2019, the production of cow's milk in Poland amounted to 14,089.9 million liters. Compared to 2018, it increased by 322.1 million liters (2.3%) The average annual milk yield per cow was 5803 liters and increased by 56 liters(1.0%), compared to 2018. Individual farms produced 13,172.0 million liters of milk (2.5%) more than in the previous year representing 93.5% of the total national production. In 2019, milk production per 1 ha of agricultural land was 959 liters compared to 939 liters in 2018, a 2.1% increase (GUS 2019a). The number of dairy cows in December 2019 was 2,403.7 thousand head (GUS 2019b).

The greatest amount of milk in Poland is produced by Mazowieckie and Podlaskie voivodships comprising 44% of the total milk supply in the country (Milk market 2020). In December 2019, the average number of dairy cows per 100 ha of UAA was 14.7 head. The largest number of cows were located in the voivodships specializing in milk production – Podlaskie (39.2 head) and Mazowieckie (25.2 head). The lowest milk production is shown in the Podkarpackie, Lubelskie, Śląskie and Łódzkie voivodships (Milk market 2020).

In 2019, raw material supplies to the dairy industry increased by 2.1%. The production of liquid milk, including consumption milk and milk for secondary processing, decreased by 1.3%. The production of condensed milk and cream decreased by 6.8%, while the production of milk powder increased by only 0.6% (Milk market 2020). The production of butter and milk fats increased by 3.4%, including butter with a milk fat content of 80-85% (4.5% increase). The production of curd cheeses increased by 2.1%, and the production of rennet-ripened cheeses by 0.9%. In 2018, the balance consumption of milk, including milk intended for dairy products, without milk converted into butter, on a per capita was 224 liters about 2.8% higher than in the previous year (Milk market 2020).

The dairy sector is also very important in the European Union. The main milk producers are Germany, France, Great Britain, the Netherlands, Italy, and Poland, which together produce almost 70% of the milk produced in the European Union (Milk market 2020). World milk production in 2019 increased by 1.4%, to about 852 million tons, where 81% of production was cow's milk. In 2019, the purchase prices of raw milk

in Poland slightly increased. According to the data, the average price was 1.35 PLN / l and was 0.5% higher than in 2018.

In 2019, an increase in purchase price was recorded in twelve voivodships, and a decrease in price in four. The highest increase in price was recorded in the voivodships where the purchase price of milk is among the lowest in the country: Łódzkie (by 3.5%), Świętokrzyskie (by 1.8%) and Małopolskie (by 1.2%). A drop in price was registered in two voivodships that specialize in milk production, namely in Warmińsko-Mazurskie (by 1.7%) and Podlaskie (0.1%). In the first quarter of 2020, the average purchase price of raw milk in Poland was 1.37 PLN / l and was 1.3% lower than in 2019 (Milk market 2020).

11.2. Aim and method

The aim of the research was to assess the opinions of owners of specific farms on the factors determining investment activity in the process of modernization of given dairy farms. Within the main objective, the following specific objectives were defined:

- Assess the sources of financing for investment activities;
- Determine the most important motives behind the investment activity.

In this paper, the diagnostic survey method was chosen as the research method, which is "a way of gathering knowledge about structural and functional attributes and the dynamics of social phenomena, opinions and views of selected communities, the intensification and directions of development of specific phenomena and any other institutionally located phenomena" (Pilch and Bauman 2007). The research tool is a questionnaire, the answers are provided by the respondents.

The research was carried out throughout the country on a group of 383 dairy farms which made investments in their businesses. The surveyed participants are divided into four groups depending on the size of the investment (PLN thousand) into:

- Less than PLN 300 thousand – 151 farms,
- PLN 300.1-600 thousand – 104 farms,

– PLN 600.1-900 thousand – 52 farms,
– Greater than 900 thousand PLN – 76 farms.

Purposeful selection was used in the research. The basis for qualifying the farm for the study was the investment made in 2007-2019 and the farmer's willingness to participate in the study.

11.3. Investments in economic theory

Investments are the main determinant of the growth and development of an economic entity. Investments affect the modernization of production processes, increasing the production scale and increasing the amount of commodity produced (Józwiak and Kagan 2008). The amount of investment depends on the income that a farm can achieve (Orłowska 2013). Moreover, an important aspect impacting farms was Poland's accession to the European Union, which took place on May 1, 2004. After that, all EU funds contributed to the increase in income and intensified investment activities (Poczta 2008). Activities related to investments in farms are dependent on many factors, including macroeconomic variables, market conditions, budget and financial situation of farms (Bórawski 2014).

Investments in a farm are divided into two categories:

1. Replacement investments – renewal of worn-out assets and replacement of worn-out fixed assets;
2. Development investments – improvement of the farm's efficiency, increasing the owned fixed assets (Zając 2012).

The development of enterprises is carried out with many kinds of investment outlays. Investments lead to an increase in the value of the unit, improve the entity's competitiveness, as well as increase production capacity, leading to an increase in sales and an increase in farm income (Szafraniec-Siluta and Zawadzka 2017).

According to the Central Statistical Office, "investment outlays are financial or material expenditures aimed at creating new fixed assets or improving existing tangible assets" (GUS 2020a) through reconstruction, extension, reconstruction or modernization of existing tangible assets, as well as expenditure on the so-called first investment equipment

(Rogowski 2004). Investment outlays are divided into outlays for fixed assets and other outlays. Outlays for fixed assets are outlays on:

- Buildings and structures (including buildings and premises as well as civil and water engineering structures), including, inter alia, construction and assembly works, design and cost estimate documentation;
- Equipment, technical devices and tools (including instruments, movables and equipment);
- Means of transport;
- Other, ie: detailed drainage, costs incurred when purchasing land and used fixed assets, livestock (primary herd) and long-term plantings, as well as interest on credits and investment loans for the period of investment implementation (GUS 2018).

The remaining outlays are outlays on the so-called first equipment of the investment and other costs related to the implementation of the investment. These outlays do not increase the value of fixed assets (GUS 2018).

Investments in agriculture in macroeconomic terms started as a kind of breakthrough in Polish agriculture with entry into the European Union. Closely tied with the integration with the European Union, critical issues arose in the agricultural and rural sectors for maintaining high GDP activity and properly implementing macroeconomic policies.

The factor of economic growth is, therefore, capital growth, an increase in the number and quality of the workforce and the improvement of the potential for using these resources, which is also evidenced by an increase in profitability in the enterprise sector (Molo 2013). The stage of socio-economic growth in each country is the main criterion for the proper dynamization of the agricultural economy. The higher the level of development, the more profitable the situation to intensify agriculture (Tomczak 2000).

Incorporating Poland into the Common Agricultural Policy, changed the profitability and investment outlays of Polish agriculture significantly. Then, as a consequence, Polish farms benefited from subsidies aimed at the Common Agricultural Policy of the European Union (EU CAP). The investment measures implemented by farmers determine

their development and competitive position. All investment activities are relatively dependent on the underlying financing, as well as their availability and universality. In this respect, the best known form of investment is the farm's own funds (Baraniak 2017).

11.4. Results and discussion

The macroeconomic situation is very important because in the absence of favorable conditions, effective and comprehensive restructuring of agriculture, as well as economic development of rural areas becomes an abstraction (Mrówczyńska-Kamińska 2008). The macroeconomic dimension of investments in the economy integrates with two important things, namely investments being a source of capital condensation are the cause of economic growth (supply side), in a short time investment result in economic growth – GDP as one of the superior links of the total demand (demand side). The long-term impact of investments causes the intensification of productivity and work efficiency.

The importance of agriculture in generating GDP and employment in economically highly developed countries decreased to 1.4%. In Poland, however, the impact of agriculture was positive with agriculture's share of GDP creation at 3%, and within the agri-food sector – 10% (MRiRW 2019). These relationships are also affected by the activity in rural areas, including depopulation. These events took place despite a huge increase in agricultural production, the fundamental elements of which were converted into means of production of industrial origin and biological evolution, modern varieties of plants and animal breeds (MRiRW 2019). In order for agriculture to continue to have a positive impact on GDP, investment or re-investment in farms is needed.

In this research, farmers were asked about their motives for investment activity. The information contained in Table 1 shows that the most numerous motives indicated were the increase in agricultural income and the increase in the scale of production. For, farms where the value of investments was in the range of 300.1-600 thousand PLN, motives for investment were improvement of the organization (88.46%) and increase in agricultural income (87.50%).

Table 1. Motives for starting investment activities

Motives for investment	Investment value [thoudand PLN]			
	Less than 300	300,1-600	600,1-900	Greater than 900
Increase in production scale	88,08	87,50	92,31	92,11
Increase in agricultural income	86,09	87,50	88,46	89,47
Change in the direction of production	13,24	18,27	17,31	6,58
Launching new production to diversify	16,56	23,08	17,31	17,11
Improving the quality of production	70,20	85,58	76,92	84,21
Possibility of refining products	45,69	48,08	50,00	51,13
Lowering production costs	68,87	77,88	63,43	78,94
Improving the organization of production	69,54	88,46	69,23	82,89
Adaptation of the production profile to market requirements	56,29	74,04	69,23	71,05
Legal conditions	37,75	42,31	44,23	36,84

Source: own elaborations based on research (n=383)

Compared to other European countries, the Polish economy is distinguished by an uninterrupted, relatively high growth rate. According to the data of the International Monetary Fund, Poland's Gross Domestic Product (GDP) increased by 4.0% in real terms and reached USD 565.85 billion at the end of the year (GUS 2020b). According to the data of the International Monetary Fund, the Polish economy ranks 22nd in the world in terms of GDP.

Data from the current research project with dairy farm owners indicated the sources of financing the investment. The research shows that the majority of dairy farm owners used their own resources and EU subsidies to implement their investment. The second highest source was EU loans and subsidies. Own funds and credit were ranked third (Table 2).

The dominant factor influencing the level of GDP is internal demand – investment and consumption demand. Even with higher investment outlays, agricultural productivity is increasing. The result is an increasing degree of automation and a lower intensity of human involvement in agricultural activities (MRiRW 2019). In 2019, over 1.4 million farms used 14.7 million ha and had 10.0 million large livestock. As a result of the increase in plant production (by approx. 12%) as well as

livestock production (by approx. 3%), the global agricultural production increased by 7% in current prices (GUS 2020c).

Table 2. Sources of financing for planned investments of surveyed farmers depending on the amount of financial support (%)

Investment sources	Investment value [thousand PLN]			
	Less than 300	300,1-600	600,1-900	Gerater than 900
With own resources and EU subsidies	50,33	56,73	51,92	56,58
With an EU loan and subsidy	23,18	27,88	23,08	32,89
With my own funds and credit (I have exhausted my EU funds limit),	8,61	14,42	15,38	19,74
With only own resources	15,23	16,35	9,61	19,74
Only on credit	2,65	-	1,92	2,63
Leasing	3,31	-	3,84	3,95

Source: own elaborations based on research (n=383)

11.5. Endogenous investment conditions

Endogenous conditions are related to the productivity of agriculture, mainly with the level of supply as a means of production, the scale of innovation, fixed assets at ones's disposal, as well as the ability to fund investment activities from one's own resources (Kusz and Gędek 2012).

Land is a specific production factor for agriculture. Its value is subject to soil quality and climate, which determines its productivity (Bezat-Jarzębowska and Rembisz 2015). The overriding internal conditions include the following five areas:

- labor productivity in agriculture, the added value per employee, employment in agriculture expressed as a percentage of the total number of employees,
- the size and structure of farms,
- the amount of agricultural income per employee in agriculture,
- production scale, and
- the share of sales in production – commodity production (Bezat-Jarzębowska and Rembisz 2015).

Endogenous conditions, determined by the producer, have a predominant influence on building the productivity (Rembisz 2006). In certain geographic locations, success in the market largely depends on internal forces (Gołębiewska 2008).

This signals a particularly important role of the internal potential of a given enterprise, taking into account first of all production resources, which affect the amount of income obtained (Poczta et al. 2009).

Nowadays, more and more often one can come across the thesis that the development of agriculture depends to a lesser extent on the internal substrate than on external conditions (Walenia 2009).

Investments provide the desired level of technological equipment, which determines the value of the gross margin in given farms (Kocira 2008). The property, relevance and number of fixed assets determine production capacity. For both maintaining or expanding production capacity, it is desirable to make investment outlays. Through investments, depleted fixed assets are reconstructed, and increased investments expand assets. Investment activities are based on deliberate, thoughtful and intentional use of large financial resources for durable goods (Czubak and Mikołakczyk 2012).

Investment expenditures have definite goals as part of an investment action plan. When initiating an investment action plan, the main factor becomes the farm's ability to make changes, and to achieve a specific investment goal. The indirect goal of investments may be to preserve the quality and quantity of fixed assets. Consequently, good investment plans can increase both income and profits. One example of investment strategy in agriculture is the investment in land which is a primary production factor.

Investments in mechanization are particularly related to the situation in agriculture and to the level of income for farmers with their own farms (Wójcicki 2014). Poland's accession to the European Union improved the position of farmers due to the introduction of the Common Agricultural Policy. In addition, it also contributed to the initiation of some financial support processes for agriculture by launching agri-environmental programs (Jucherski and Król 2013).

Price volatility makes the investment in agricultural equipment difficult to analyze. Constant or average prices should be used to assess the value of specific investment outlays. (Pawlak 2016).

11.6. Summary and conclusion

Farm owners who are actively managing the farm can benefit from investment support programs. The level of investment activities was directly related to current production capacity. Funds from the European Union were helpful for new investments; however some investment decisions were directly related to the availability and form of support available in subsidies and other aid programs. The progress of farms is related to the internal knowledge of production, technology, and marketing, in addition to the principles of the Common Agricultural Policy of the European Union with availability of aid programs. The increase in farm resources provides the opportunity to increase the scale of production, as well as providing for improvement of production processes and animal welfare.

Investments improved the efficiency and competitiveness of farms. The dominant reason for conducting investment activities is the conviction that in the future the income will be much higher than the investment costs incurred. The main motivation for the investment were striving to increase agricultural income and increase the scale of production.

The implemented investments were mainly for modernization and development, with the goals of reducing costs, increasing production capacity and stabilizing the market. Owner equity was used for investment, together with funds obtained from European Union funds. Farm owners with small land areas felt apprehensive about high investments on farms due to the high risk of failure with low profitability of production and high market volatility. Therefore, the investments undertaken in agricultural holdings are very diverse. Most of the surveyed farmers consider the lack of the necessary equity capital and difficulties in obtaining loans as significant barriers to undertaking investment activities.

In spite of everything, the overriding source of investment financing are own funds. Nowadays, investments in agriculture are an absolute necessity. Investment activities save labor and increase the level of

organization. You should carefully and reliably adjust your production potential and production costs to be able to compete in the market in the best possible way.

Investment in agriculture in necessary for continued profitability and viability. Strategic use of investments to adjust production potential and costs to be competitive in the market is necessary. The most common source of funding for investment was “own funds” combined with EU funds.

Farmer dissatisfaction with the functioning of the information system for obtaining EU funds may limit investment opportunity.

Farmers should focus primarily on investments that ensure an increase in the quantity and quality of the farm's commercial production. Each investment should be adapted to the scale and direction of production. Proper diagnosis of factors influencing the stability of agricultural income reduces the risk and contributes to efficient management and development of the farm, especially when making new investments.

On the website of the Central Statistical Office, data values are quoted in current prices, but does not take into account increasing prices. Therefore, it is required to estimate the value of investment outlays in average prices in the years covered by the analysis (Pawlak 2016). An important premise for investing in fixed assets in agriculture is their high degree of wear. In 2018, it was 77.1% (GUS 2019c).

Data for 2019 for capital expenditures, when broken down by expenditure typed showed that 43.5% were buildings and structures, 27.4% were equipment, technical devices and tools and, only 15.4% were allocated to means of transport. According to the data, a total of 1,491,679 agricultural tractors were purchased in Poland, including 226,133 in the Mazowieckie voivodship (GUS 2019c).

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