

THE ROLE AND IMPORTANCE OF COOPERATIVE BANKS IN THE FUNDING PROCESS OF AGRICULTURAL FARMS IN POLAND

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ABSTRACT

Cooperative banks perform very important role in the process of finance all the investment activities and projects undertaken by farmers. Farms are now complex companies focused on product development and income generation. The use of preferential loans by cooperative banks improves the productive and economic efficiency of their farms, allowing them to develop in competitive market conditions.

Keywords: farm, cooperative, Kraków Cooperative Bank, preferential loans, sources of farm founding, production-economic efficiency.

INTRODUCTION

Cooperative banks operating in Poland are important institutions being a part of the banking system financing agricultural activity. Farms are willing to resort to the financial tools offered by cooperative banks that have relevant knowledge on the specific aspects of agriculture. Financing of investments taken up by farm owners by cooperative banks generates a number of benefits and as a result such financial instruments are treated as the core external source of agricultural activity.

The paper covers the role and importance of cooperative banks in the funding process of agricultural farms in Poland. To this end, an analysis was carried out of financing effects of farms in Małopolska by Kraków Cooperative Bank and 19 cooperative banks that were taken over in 1993-2016. The source financial data concerning the reviewed farms has been acquired from Kraków Cooperative Bank and covered 2004-2016. The sources relied on booking entries of business plans made for the purposes of loans. The studies performed were partial studies of representative farms using the services of the reviewed financial institution. The studies were made on a sample of 312 farms functioning in the province of Małopolska, in the districts of:

Miechów, Proszowice, Wieliczka, Myślenice, Kraków, Brzeg, Chrzanów, Bochnia, Tarnów and Olkusz.

The theoretical part of the paper was produced with the monographic method, on the basis of a number of articles and publications in the sphere of banking. When the author's research was processed, the induction method was applied. The economic effectiveness of farms was assessed with an analysis of selected economic ratios, including production profitability ratios, relative cost amounts, production profitability, direct surplus, ROA, long-term debt and total income.

THE NOTION AND NATURE OF FARM

Farms are a fundamental agricultural production generating unit, being an item on the list of key items of agricultural economics. In accordance with GUS data, in 2016 there were overall 14 543.3 farms covering the agricultural area of 1410.7 ha, including primarily farms of the area of 2 to 5 ha (465.9) and from 5 to 10 ha (309.9) [Ziółkowska (ed.) 2017, p. 124, 126].

The term of "agricultural farm" [farm] is understood differently which is due to the complex specific features of those entities and the variety of functions performed by them [Kołoszko-Chomentowska, Sieczko 2014, p. 98]. The term of agricultural farm has been evolving over years in Polish law. The legislation related to the subject is extensive and refers to various regulations evolving with time [Czerwińska-Koral 2015, p. 1]. The first definitions of farms were drafted within financial regulations and afterwards the interpretation of the term was developed compliant with the needs of the registration authority. The term of "agricultural farm" was finally incorporated to the Civil Code with the Act of 28 July 1990 amending the Civil Code (Journal of Laws No. 55, item 321) [Czerwińska-Koral, p. 381]. In compliance with Art. 2.1 of the Act of 15 November 1984 on agricultural tax (Journal of Laws of 2016, item 617), an agricultural farm is an area of land with total area of more than 1 ha or 1 conversion ha, owned by a natural person, legal person or an organisational unit [Act on agricultural tax, Art. 2]. Pursuant to Art. 55³ of the Act of 23 April 1964 – Civil Code (Journal of Laws of 2017, item 459), an agricultural farm includes arable land, forests, buildings or parts thereof, equipment and livestock as long as they constitute or may constitute an organised economic whole, along with any rights concerning the running of a farm [Civil Code, Art. 55³]. It should be noted that an agricultural farm is treated as a set of assets which makes the term similar to that of an enterprise in its basic meaning and thus may be traded. The components of a farm were identified by the legislator both a tangible and intangible components in the form of rights related to operating the farm [Gniewek, Machnikowski 2017].

In terms of ownership relations, the method of management and the significance of the household within the community of individual farms, family agricultural farms have been

identified. Their core feature is the family nature which is manifested in a direct relationship between a farm and a household [Kołoszko-Chomentowska, Sieczko 2014, p. 101].

Additionally, attention should be paid to the understanding of a farm in economic terms. In that context, an agricultural farm is defined as an adequately identified and organised group of people, land and other means of production, focused on production of agricultural commodities [Zegar 2012, p. 98]. It may be also defined as an adequately organised economic unit comprising a set of means of production, such as land, work and capital, which is open to its environment and subject to changes occurring in that context [Duczowska-Piasecka 2009, p. 71].

The dynamic social and economic development that occurred in the recent decades, has contributed to modifying the role of farms in the economy. The increasingly closer relationships of those entities with the external environment resulted in a situation whereby they have lost their original nature and aligned to the prevailing social and economic conditions. Self-sustaining peasant farms have evolved to traditional self-supplying commodity family-owned farmsteads to be transformed later into family agricultural farms which are not being transformed into private agricultural enterprises and further on into agribusiness enterprises [Kołoszko-Chomentowska, Sieczko 2014, p. 98, 104].

Today's agricultural farms often are complex enterprises. Running such farms is no longer just a style of life but it is primarily professional activity focused on generating market products and generating sales revenues [Duczowska-Piasecka 2009, p. 95]. The implementation of such assumptions is subject both to natural, organisational, economic conditions and the technological resources compliant with competition and innovation requirements. The effective functioning of farms is increasingly subject to the changing market environment as well as the abilities and potential to catch up with the social and economic needs [Urban 2008, p. 12]. The provision of adequate financing is the pre-condition for operation and development of farms. Availability of funds and opportunities to use certain funding forms of farms are the factors supporting core agricultural activity that also add momentum to implementing new technological and organisational solutions [Brodawska-Szewczuk 2009, p. 136]. That contributes to generating increasingly tangible effects of agricultural activity such as income from agricultural farms [Zegar 2008, p. 16].

FINANCING OF AGRICULTURAL FARMS

Poland's accession to the European Union and the recent dynamic globalisation process of capital and financial markets have contributed to creating new opportunities to resort to funding sources of the activity. In the domestic market, other forms of investments and financing have been developed aligned to the constantly changing economic conditions [Nogalski et al. 2004, p. 22].

In the context of financing methods, all sectors of the economy are characterised with specific nature [Marcysiak, Marcysiak 2009, 119]. Agriculture is a very sensitive sector which means that it requires the development of specific support mechanisms and protection [Deluga 2014, p. 101]. The correct structure of funds, an appropriate level of financial liquidity and in particular access to funding sources are among the key problems of every entity involved in business activity [Skowronek-Mielczarek 2005, p. 153]. However, in the case of agricultural farms, the high level of financial support to agriculture is related to the specific nature resulting primarily from the attributable accumulation potential. Agriculture is a sector characterised with low capital generation potential and as a result it is not able to stimulate financial progress in the resources it holds. Additionally, production cycles in agriculture are long which requires the commitment of capital in advance with an extended period of waiting for returns. The slow capital flows in the sector results from low rates of return while the high capital consumption results in a burden of fixed costs. Those factors increase the risk of the activity which is closely related to the imbalance of sales and price levels and the extent of vulnerability to the adverse effects of inflation [Marcysiak, Marcysiak 2009, 119]. It is also worth mentioning the non-existence of a tax shield for financial expenses in individual farms [Felczak 2015, p. 84]. Such specific nature of operating activities of agricultural enterprises determines their financial decisions [Zawadzka, p. 620].

The abundance of funding instruments is not directly converted into economic practical operations. The potential to acquire capital is subject to multiple factors [Bień 2005, p. 7]. Agricultural farms that are involved both in production and investment activities, constitute a conglomerate of features of households and production enterprises. In course of the operations resulting from their status, they have to keep taking decisions as to which funding sources they will resort to with each project - both in current production and in their investment plans. The people who manage the enterprise refer to funding structures which is compliant with the specific hierarchy of funding sources [Felczak 2015, p. 83]. In this context, self-financing remains the core funding source which is closely related to holding their own capital [Marcysiak, Marcysiak 2009, s. 120], resulting from positive results on operations to support continued business [Filip et al. 2014, p. 98]. Internal capital as a matter of principle may be treated as perpetual funding or minimum as long-term funding. Its prevailing part in funding agriculture, it supports lower dependence of the sector on the environment [Marcysiak, Marcysiak 2009, p. 120]. On the other hand, the business of agricultural farms is funded from external sources. Poland's accession to the European Union had offered farmers opportunities to look for different funding of investments and to diversify their sources of income [Bogusz, Kielbasa, p. 14]. In that context, special support is provided by funds disbursed as direct payments to farmers within the Common Agricultural Policy in the European Union. Every year, about 1.4 million farmers

apply for such payments. By the end of 2014, the disbursements amounted to PLN 97 billion. [Deluga 2014, p. 105].

In case of insufficient income, the managers of agricultural farms look for other safe and inexpensive forms to finance their activities [Felczak 2015, p. 90]. One of the funding methods that is commonly used by farmers are bank loans. Bank loans help generate income, stimulate and support restructuring [Marcysiak, Marcysiak 2009, p. 120]. It is worth stressing that financing of investments in agricultural farms is largely with loans and the conditions relating to interest rates and repayments are developed adequately to the specific character of agriculture. This refers primarily to agricultural loans also termed as preferential loans [Czerwinska-Kayzer 2002, p. 72]. Although such loans generally fall into the category similar to the notion of “loans”, they are characterised with specific features such as longer tenor, collateral to the loans with means of production and the risk resulting from low profitability of agriculture [Siudek 2008, p. 40].

Agricultural loans are a product that is offered by cooperative banks that know the local environment and the local social and economic conditions.

THE ROLE OF COOPERATIVE BANKS IN FINANCING AGRICULTURE

Innovative and effective financial institutions operating on a local scale perform an important role in the process of overcoming financial obstacles resulting from structural transformations in agriculture. Cooperative banks occupy a key position among such entities as they have adequate know-how and products that are suitable to the needs formulated by farmers [Wasilewski, Mądra 2009, 480]. Cooperative banks operating in Poland may be perceived as relatively small lending institutions pursuing a specific mission which is manifested in the context of their legal form as well as the role they play in the market of financial services [Szambelańczyk, Mielnik 2006, p. 4].

Cooperative banking is the oldest form of cooperative activity in Poland. In its initial phase of development, it was only a social movement focusing on counteracting to economic exploitation of the poorest social classes [Szambelańczyk, Mielnik 2006i, p. 16]. The beginnings date back to the 18th century when the first self-assistance organisations were set up by serf peasants - like the organisation “Zakładka na sprzężaj” established in Pabianice in 1715 providing interest-free loans to peasants [Krzyżanowski 2015, p. 99]. In 1819 Stanisław Staszic set up the “Society of Hrubieszów to provide mutual support in times of disaster”. The institution survived for almost 150 years. The dynamic development of cooperative movement in Polish land was in the last decades of the 19th century. In 1861 Towarzystwo Pożyczkowe dla Przemysłowców miasta Poznania [Lending Association for Industrialists in the City of Poznań] was set up. Afterwards,

in Wielkopolska a number of lending cooperatives were set up with such representatives as priests Augustyn Szamaczewski and Piotr Wawrzyniak [Jeziński, Leszczyńska 2003, p. 37]. In Galicia, Franciszek Stefczyk was a pioneer of cooperative banking who set up the first cooperative of the kind in Czernichów. In the area under Russian rule, the first bank was established in Warsaw in 1870 under the name of “Kasa Pożyczkowa Przemysłowców Warszawskich” [Credit Union of Industrialists in Warsaw] [Skrobot 1999, p. 18]. The development of credit cooperative was stopped with the outbreak of World War I. After the war, in 1920, the Parliament approved an act on cooperatives to regulate the rules of its operation. In 1935, the cooperative movement was consolidated. As a result, “Związek Spółdzielni Rolniczych i Zarobkowo-Gospodarczych” [Union of Agricultural and Economic Cooperatives] was established. Further developed of cooperative banking was interrupted by World War II. In 1948, with decree on banking reform, a reform of banking was implemented. Two years later, savings and credit cooperatives were transformed into communal cooperative credit unions. At that time, 1255 such unions were established. In 1957 the Union of Savings and Credit Cooperatives was set up. Another reform occurred in 1975. As a result, Bank Rolny, Centralny Bank Rolny and Centralny Związek Spółdzielni Oszczędnościowo-Pożyczkowych were merged which resulted in the establishment of a state-cooperative Bank Gospodarki Żywnościowej (BGŻ), with 54% shares held by the State Treasury and 46% shares held by savings and credit cooperatives. BGŻ took over the functions of the incorporated entities and became the head office for finances, organisation and audit to the cooperatives incorporated in it [Bieńkowski 2003, p. 96 – 97].

After the systemic transformation of 1989, Poland’s sector of cooperative banking continues to be restructured all the time in order to get aligned to market economy and since 2004 to the requirements of EU legislation [Garbowski, Skorwider 2012, p. 67]. Now, cooperative banks operate in an increasingly competitive environment which is comprised of commercial banks, cooperative savings and credit unions and other financial service institutions [Szambelańczyk, Mielnik 2006, p. 4] which makes them keep facing new development challenges [Garbowski, Skorwider 2012, p. 67]. It should further be stressed that the credit institutions operating as cooperatives largely compete against each other, developing similar services addressed to the same customer segment [Golec, Kulig 2015, p. 145].

Now a majority of cooperative banks operate primarily locally, servicing individuals, farmers as well as small and medium-sized enterprises and craftsmen, offering mainly such services as transfers, deposit taking and lending [Szambelańczyk, Mielnik 2006, p. 4]. Another important aspect is that as a result of their operating strategies they are perceived as intermediaries of EU funding that is transferred in compliance with the principles of investment programs supporting rural areas. The fact that a vast majority of cooperative banks are located outside large

agglomerations contributes to a situation that their employees know their customers thus generating trust and they are better aware of risks related to lending [Kot-Zacharuk 2011, p. 267].

The advantage of cooperative banks versus commercial banks in financing agriculture was material for years. Banks with such profile are focused on satisfying the farmers' needs by being well aware of the local environment and social and economic conditions of rural communities. Farmers, in particular the older generations, are quite a conservative group of buyers of financial services, they manifest major caution when contracting bank loans. Therefore, they have more trust in institutions operating locally that form a part of the landscape they know. Also younger people who run farms appreciate the effects of financial leverage to support them in generating better economic results and they become the core customers of cooperative banks [Wasilewski, Mądra 2009, p. 480]. On the other hand, continuous problems with the adaptation of cooperative banks to market economy requirements that in the early years of the transformation process contributed to errors in lending, an aspiration by cooperative banks to gain the status of universal banks [Kot-Zacharuk 2011, p. 268] as well as increasingly competitive offers of commercial banks that resulted in a decreased share of those entities in the banking market. After 2000, the growth rate of balance sheet total, deposits or loans in the sector of cooperative banks was faster than the growth rate in the banking sector; however, their share was out of proportion vis-a-vis the distribution potential of cooperative which has not been transformed in a noticeable way in the recent years [Szambelańczyk 2012, p. 34].

Notwithstanding the increasingly competitive environment of cooperative banks, GUS statistics for 1999-2009 and the results of surveys held in 2009 in cooperative banks and operational branches of commercial banks in south-east Poland, show that the cooperative banking sector continues to be ranked first in lending to individual agricultural farms and its share in such financing account for 60% on the average [Kata 2010, p. 97 – 98].

EFFECTS OF LOANS FROM KRAKÓW COOPERATIVE BANK CONTRACTED BY AGRICULTURAL FARMS IN MAŁOPOLSKA - AUTHOR'S STUDIES

The analysis covers 312 agricultural farms borrowing from Kraków Cooperative Bank in Małopolska in 2000-2014. The area of the farms was from 3.8 to 108.3 ha. The diversification in relation to the type of contracted loan and the owner's education level is presented in table 1. Those and any subsequent results are average values for each year in the analysed period.

Table 1: Average farm area related to the loan contracted and owner's education level

Type	farm area in ha						Overall
	a	b	c	d	e	f	
Land	18.0	16.1	17.6	12.9	24.4	101.2	31.7
Structures	15.0	18.5	25.4		40.0	64.2	32.6
Machinery	22.4	29.8	25.0	27.2	25.6	42.9	28.8
means of production	8.7	9.7	7.7		39.1		16.3
Overall	16.0	18.5	18.9	20.0	32.2	69.4	28.1

Legend – level of education: a – primary, b – secondary, c - tertiary, d - primary agricultural, e - secondary agricultural, f - tertiary agricultural

The table shows that farm owners with tertiary education who contracted a loan were running farms that were minimum double the size of other farms. Those farmers ran the largest farms who contracted loans to purchase land. At the same time, none of them declared a loan contracted to purchase means of production.

A relationship between the number of farms with the same categories (type of loan and owner's education) is presented in table 2. We can see that the largest number (over 10%) of such farms spend the loans on purchasing means of production with their owners having primary education.

Table 2: Number of farms versus the loan type and owner's education

Type	% of the farm number						Overall
	a	b	c	d	e	f	
Land	4.5	3.9	3.2	4.7	3.5	1.4	21.1
Structures	4.2	4.7	5.8		2.9	3.0	20.6
Machinery	4.0	3.6	4.1	6.1	5.7	4.9	28.5
means of production	10.2	8.4	6.8		4.4		29.7
Overall	22.9	20.6	19.9	10.8	16.4	9.4	100.0

The author’s research, covering the data for 2000-2014 and not presented in the table, shows that it was farmers’ own capital that was the funding source of agricultural farms in Małopolska. The enquired farmers declared that over 80% of income generated by them came from their farms. In line with the data of Kraków Cooperative Bank, farmers in the reviewed group contracted loans at that time in the average amount of PLN 108,298. Loans destined for construction and modernisation of farms accounted for the largest percentage share of borrowing (14%). The average value of investments at agricultural farms in case of loans for construction and

modernisation was PLN 289,044. Loans to purchase machinery accounted for 8.8% of all loans in the average amount of PLN 117,101. Loans to purchase land accounted for 6.1%. The average amount was PLN 68,434. Loans to purchase means of production accounted for the smallest share in overall lending (3.4 %) with the average amount of PLN 22,904. The borrowers' own contribution amounted to 20% of the contracted loans that was due to the lenders' internal requirements and regulations concerning the assessment of creditworthiness.

The highest loans were granted to farms ran by farmers with tertiary agricultural education (PLN 231,872) and tertiary education (PLN 126,082). There was also a large group of people applying for loans who ran agricultural farms and had secondary education and who were granted loans in the average amount of PLN 92,906. The smallest group of borrowers of Kraków Cooperative Bank were made up by persons with primary education who in the reviewed period were granted loans in the average amount of PLN 60,380. The average area of the analysed farms whose owners applied for loans was 21.9 ha, including land owned by them - 15.7 ha and leased land - 6.2 ha. The differentiation of the size of farms applying for loans was large. The largest agricultural farm had the area of 108 ha. The smallest area of an analysed farm was 3.5 ha - the owners of such small farms accounted for a small group of borrowers who were not much interested in economic and production development of their farms. From the perspective of cooperative banks, such agricultural farms were not very reliable. They were not creditworthy to be able to repay the loan without generating production that would guarantee repayment of the loan. Such small farms generate their income primarily from non-agricultural activity, accounting for over 80% of the income of the entire farm.

Changes noted in their agricultural income was the anticipated effect of borrowing by farmers running agricultural farms in Małopolska who were in the studied group. It turned out that in the analysed sample practically all farms generated an increase of agricultural income by the average of 118.4%. The largest growth occurred among farmers who contracted loans to purchase machinery (126%), while the lowest - among borrowers investing in buildings (113.4%). Additionally, as a result of loans contracted from Kraków Cooperative Bank, agricultural farms recorded a growth of production that is directly translated into the borrowers' income levels that were underlying the contracted loans. The value of production of the analysed agricultural farms grew by 112.9% with the largest growth among farmers contracting loans for buildings (116.3%) while the lowest growth was among farmers who contracted loans to purchase machinery (109.2%). As a result of financing of the business and investments of agricultural farms with loans granted by Kraków Cooperative Bank, changes were also noted in the level of production costs which positively contributed to the financial results generated by farms. Increased investments in means of production translated into a reduction of the related costs which in turn contributed to increased revenues. Increased costs by 95.5% occurred in case of investment

loans for the construction or modernisation of farmsteads which is due to the high capital consumption of such investments.

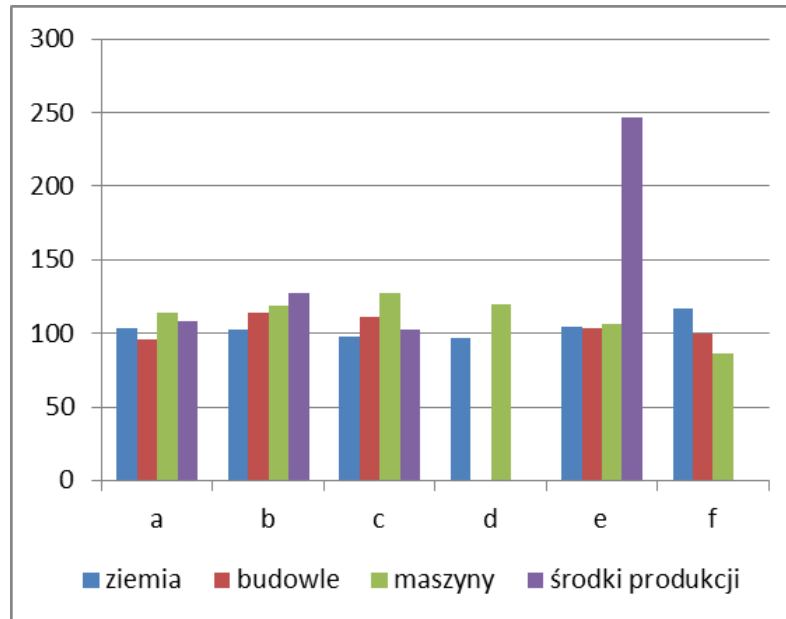
Changes in economic effectiveness of farms were reviewed with an analysis of selected economic ratios in order to obtain a reliable image of the effects of financing the business of selected agricultural farms by Kraków Cooperative Bank. The ratios included: production profitability ratio, relative cost amounts, production profitability, direct surplus, ROA, long-term debt and total income.

The production profitability ratio shows the extent to which revenues from production cover expenses. The ratio is calculated as follows: $\text{profitability ratio} = \text{production}/\text{expenses} \times 100$ [Krupa, Witkowicz, Jacyk 2016, p. 47]. Changes to the ratio in the reviewed period are specified in table 3 and chart 1. The higher the ratio, the higher profitability of production. A vast majority of the analyses agricultural farms was characterised with a production profitability ratio over 100%. The average value of the profitability ratio was 114.4% which means that production profitability was high for the analysed group of people who contracted loans (chart 1). The highest changes occurred in case of loans destined for means of production, in particular among farmers with education level detailed in item e (...) - the average value was 247%

Table 3: Changes to the production profitability indicator

Type	Changes to the production profitability indicator						Overall
	a	b	c	d	e	f	
Land	103.4	102.6	98.0	96.9	104.3	116.9	103.7
structures	95.6	113.6	110.7		103.6	99.7	104.6
machinery	113.7	118.5	127.4	120.2	106.6	86.4	112.1
means of production	108.4	127.2	102.6		247.0		146.3
Overall	105.3	115.4	109.7	108.5	140.4	101.0	114.4

Chart 1: Changes to the production profitability indicator



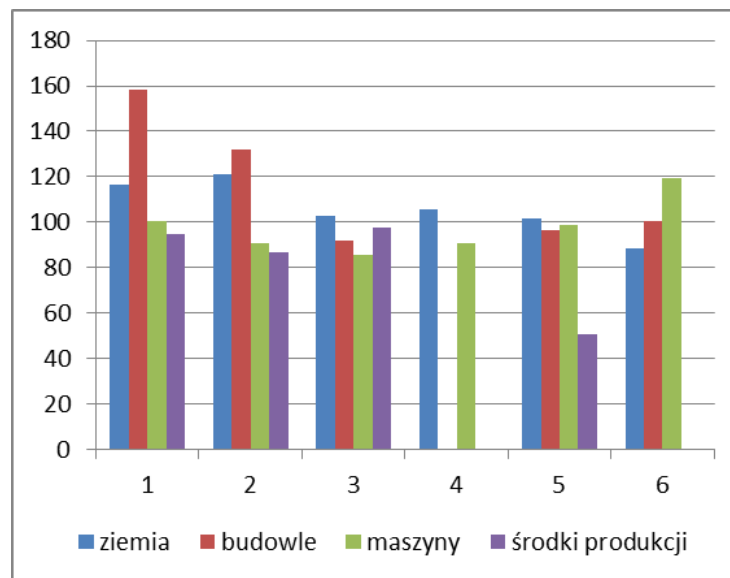
Source: Author's research

Another selected ratio is the relative cost amount ratio which shows the relation between costs and production value or costs per production unit to the price. On that basis, it is possible to determine the coverage percentage of costs of the price of specific production. The lower the ratio versus the number of 100, the higher the profitability of production. A lower relative cost amount ratio is evidence of a better organisation of agricultural production and more effective of farming [Wrzaszcz 2012, p. 291]. The relative cost amount ratio of the analysed farms was at the average level of 101.4% which means low profitability of production. The relative cost amount ratio was higher than 100 in case of loans contracted for construction (115.7%) and land (105.9%) which are investments characterised with high capital consumption. It was the highest (158%) in case of loans contracted by farm owners with primary education. In case of purchases of machines and means of production, there was no major drop of relative cost ratios that amounted to 97.6% and 82.3% respectively (chart 2) and table 4.

Table 4: Change of the relative cost ratio

Type	Change of the relative cost ratio						Overall
	a	b	c	d	e	f	
Land	116.4	120.9	102.7	105.5	101.8	88.3	105.9
structures	158.2	131.9	91.7		96.6	100.3	115.7
machinery	100.4	90.5	85.8	90.6	98.6	119.5	97.6
means of production	94.6	86.5	97.7		50.4		82.3
Overall	117.4	107.5	94.5	98.1	86.8	102.7	101.4

Chart 2: Change of the relative cost ratio



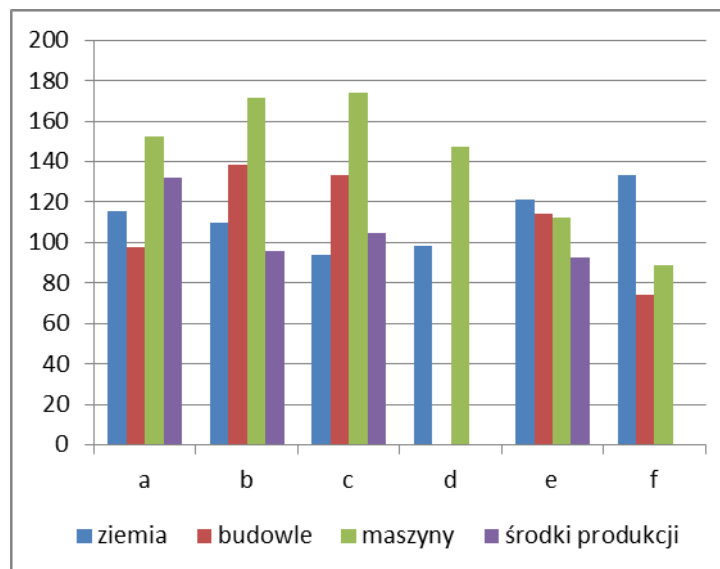
Source: Author's research

Another economic ratio that was reviewed during the analysis was the production profitability ratio showing the relation of profit to costs [Miształ 2015, p. 97]. It shows how many zlotys of profit are generated per 100 zlotys of expensed costs. The higher the ratio, the production is more profitable. All the reviewed farms generated positive production profitability ratios with the average value of 119%. The highest profitability was generated by farms whose owners were buying agricultural machinery (140.9%). However, it was much lower among farmers with tertiary education. Farms investing in means of production generated the lowest values (106%), (chart 3 and table 5).

Table 5: Changes to profitability ratio

	Changes to profitability ratio						Overall
	a	b	c	d	e	f	
Land	115.5	109.8	94.1	98.6	121.1	133.4	112.1
structures	97.9	138.7	133.2		114.4	74.2	111.7
machinery	152.2	171.4	173.8	147.0	112.2	88.6	140.9
means of production	132.2	95.7	104.4		92.7		106.2
Overall	124.5	128.9	126.4	122.8	110.1	98.7	119.1

Chart 3: Change to the profitability ratio



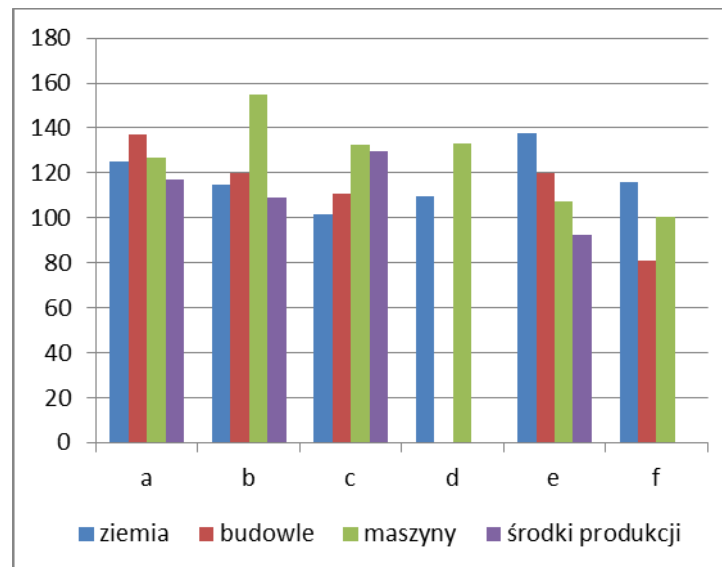
Source: Author's research

The next ratio is direct surplus which is the annual value of production generated from 1 ha of crops or one animal, net of direct production costs [Skarżyńska (ed.) 2006, p. 10]. Among the reviewed farms, direct surplus was also at a high level with the average value of 117.9%. The highest direct surplus was generated in case of loans for purchases of machinery. In that context, it was 125.9%, with the highest value (155.1%) generated by farmers with education level specified in item “b”. The lowest surplus was generated in case of farms investing in means of production (112.1%), in particular with those farmers who had education specified in item “e” – as little as 92.7% (table 6 and chart 4).

Table 6: Changes in direct surplus

Type	Changes in direct surplus						Overall
	a	b	c	d	E	f	
Earth	125.2	114.6	101.4	109.6	137.5	116.2	117.4
Structures	137.3	119.9	110.5		119.7	81.2	113.7
Machinery	126.9	155.1	132.5	132.9	107.4	100.4	125.9
means of production	116.8	109.3	129.5		92.7		112.1
Overall	126.5	124.8	118.5	121.3	114.3	99.3	117.9

Chart 4: Changes in direct surplus



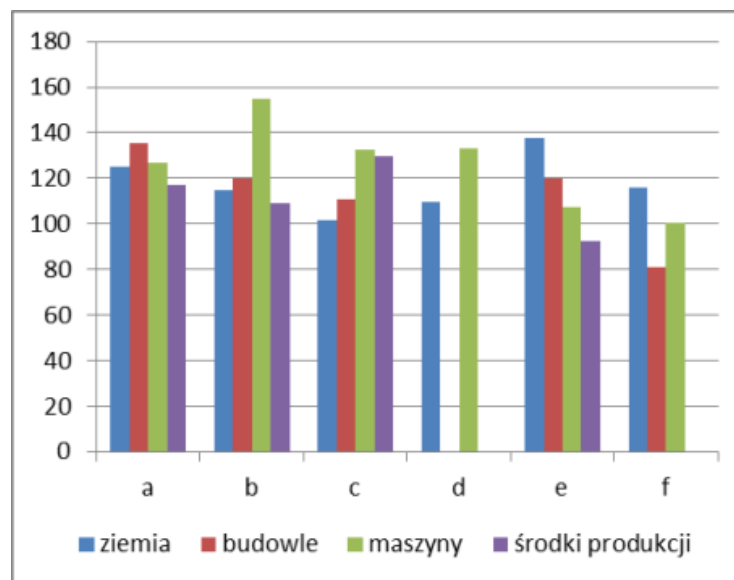
Source: Author's research

Another analysed ratio was return on equity or return on investment – ROA. It shows the level of net profit per one unit of farmers’ own capital committed to the farm [Gołębiowski, Tłaczała 2009, p. 207]. Changed to the ratio in the analysed farms show that the profitability remains at a level acceptable to lending banks. The average ROA was 117.9%, with the highest results in case of investments in machinery (125.9%). Changes apply to almost all the reviewed farms and are positive, evidencing a disadvantageous impact of loans (table 7 and chart 5). A disadvantageous result occurred with farms that spent loans on buildings by owners with tertiary education specified in item “f” and on means of production by owners with education level specified in item “e”.

Table 7: Changes to ROE

Type	Changes to ROE						Overall
	a	b	c	d	e	f	
Land	125.2	114.6	101.4	109.6	137.5	116.2	117.4
Structures	135.6	119.9	110.5		119.7	81.2	113.4
Machinery means of production	126.7	155.1	132.5	132.9	107.4	100.4	125.9
	116.8	109.3	129.5		92.7		112.1
Overall	126.1	124.8	118.5	121.3	114.3	99.3	117.9

Chart 5: Changes to ROE



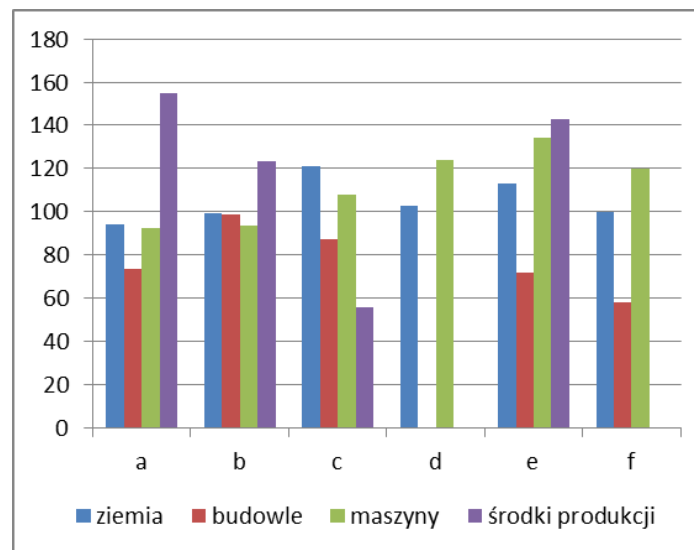
Source: Author's research

The analysis also covered the long-term debt ratio which shows the percentage value of internal capital of the enterprise that is financed with long-term liabilities. It is calculated by dividing long-term liabilities with own capital. The value of the long-term debt ratio should be between 50% and 100%. If the ratio exceeds 100%, an increased risk of insolvency occurs [Encyclopaedia of Gazeta Prawna]. Note was taken of changes to long-term debt. It turned out that all the loans granted to the reviewed entities were long-term loans while changes in growth of the loans in certain farms occasionally exceeded 100%. The situation resulted directly from increased lending levels. Changes to the long-term debt ratio was below 100% in case of loans to finance purchases of buildings (77.9%) and in case of farmers with education specified in item “c” and spending their loans to purchase means of production (table 8, chart 6).

Table 8: Changes to long-term debt ratio

Type	Changes to long-term debt ratio						Overall
	a	b	c	d	e	f	
Land	94.4	99.1	121.3	102.7	113.2	100.0	105.1
Structures	73.3	98.7	87.2		72.1	58.3	77.9
Machinery means of production	92.2	93.3	108.2	123.9	134.1	120.0	112.0
	155.1	123.6	55.6		142.9		119.3
Overall	103.7	103.7	93.1	113.3	115.6	92.8	103.3

Chart 6: Changes to long-term debt ratio



Source: Author's research

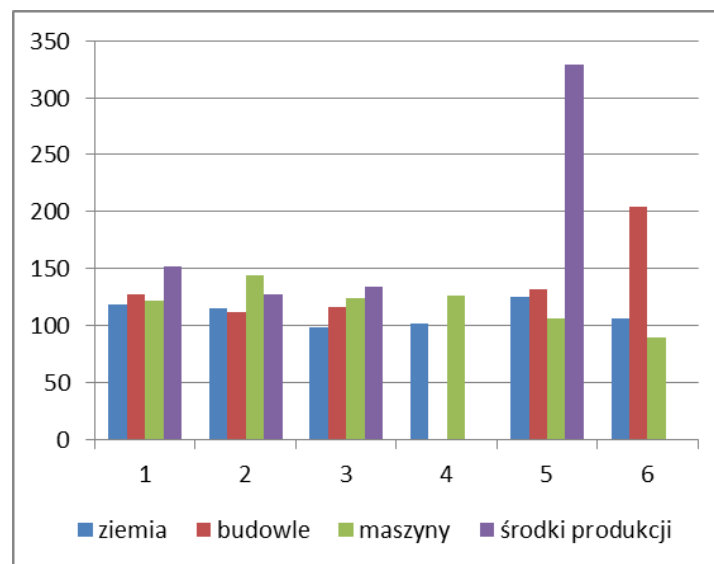
The last reviewed ratio was the total income ratio considered the main economic category used to assess the business of agricultural farms on the basis of which it is possible to assess the reasonableness of decisions taken by the owners. This is expressed as a positive difference between revenues from operations and costs of the operations [Nowak, Domańska 2014, p. 65]. For the purposes of the analysis, total income includes agricultural income, EU direct payments and income from outside farms. It has been proven that in all farms there was a growth of total income when the lending process was finished. The level of income growth in each group by types of loans was 134% on the average, reaching the value of 185.5% on case of loans to purchase means of production which was acceptable at creditworthiness assessment made by banks (table 9, chart 7). The effects of very advantageous changes to total income of farms occurred in case of loans to finance buildings by farmers with education level specified in item

“f” – almost double. In case of loans earmarked for means of production combined with the owner’s education level specified in item “e” – it was over threefold.

Table 9: Changes to total farm revenues

Type	Changes to total farm revenues						Overall
	a	b	c	d	e	f	
Land	118.9	115.2	99.1	101.9	125.2	106.2	111.1
structures	127.7	112.3	116.5		131.6	203.8	138.4
machinery	121.9	144.4	123.8	126.0	106.6	90.1	118.8
means of production	152.0	127.5	134.0		328.5		185.5
Overall	130.1	124.9	118.3	114.0	173.0	133.4	134.0

Chart 7: Changes to total farm revenues



Source: Author's research

The results of the author's research showed that financing of investments by farms in Małopolska subject to preferential terms and conditions offered by Kraków Cooperative Bank generated positive effects manifested in the form of advantageous production and economic results. Noticeable changes were recorded in a growing production level, translating into the level of financed income underlying repayments of the loans. The analysed economic ratios supported a conclusion that decisions to resort to external funding sources by farmers were characterised by a relatively good level of reasonableness.

SUMMARY

Cooperative banks are key institutions in the context of external financing of the activity of agricultural farms. The products offered by them are aligned to the farmers' needs and expectations, supporting their investments in further development and effective functioning in the competitive market. The conducted research showed that the contracting of preferential loans is combined with a number of benefits, positively impacting the production and economic effectiveness of agricultural farms. On the other hand, retention of customers involved in agricultural activity by cooperative banks requires facing of a number of challenges that include demographic changes, population migrations and growing expectations of customers.

It is not possible to rely on one ratio only to assess lending to agricultural farms is important news. Such an approach could restrict the Bank's operating profile and further on destabilise its activity.

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1. Act of 15 November 1984 on agricultural tax (Journal of Laws of 2016, item 61).
2. Act of 23 April 1964 - Civil Code (Journal of Laws of 2017, item 459).

List of charts

TOC