

COOPERATIVE BANKS IN THE CONTEXT OF SERVICING LOCAL COMMUNITIES IN POLAND

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Purpose: The aim of the studies was to identify the characteristics of local government units in Poland that chose to have their primary bank accounts conducted by cooperative banks.

Design/methodology/approach: The studies encompassed communes from six voivodeships displaying significant differences in the conditions and traditions of cooperative banking development (annexations) and population density. A total of 1,116 communes were analyzed. The main data sources for the analysis and inference were the official websites of the analyzed units, Statistics Poland's Local Data Bank, and the online map platform Google Maps. Structure indicators, descriptive statistics methods, and the Classification and Regression Tree (C&RT) method were used to analyze the empirical material.

Findings: The analyses enabled the identification of the characteristics of the communes served by the cooperative banking sector. The findings confirmed the dominant role of the cooperative sector in communes with the smallest populations and local budgets. A significant determinant of communes' reliance on cooperative banking services was the percentage of inhabitants employed in agriculture. Communes with a higher proportion of agricultural workers more frequently had their budgets serviced by cooperative banks.

Research limitations/implications: The conducted research allowed for a deeper understanding of the analysed research problem relating to the factors that determine the choice of the organisational form of a bank serving a commune.

Practical implications: The results obtained are important for the management staff of cooperative banks. Having information about the factors that determine the choice of a bank serving the municipal budget, they can design financial products that meet the expectations of this customer segment.

Social implications: Socially, they contribute to strengthening the positive image of the cooperative banking sector among various stakeholders (consumers, agricultural producers, municipal authorities).

Originality/value: The results obtained in the conducted research enrich the existing scientific achievements of management and quality sciences as well as economics concerning the identification of the current features of communes that determine the choice of the type of bank (cooperative bank/commercial bank) by the commune.

Keywords: bank cooperative, banking services, commune, commune budget.

Category of the paper: Research paper.

1. Introduction

Cooperative banking in Poland has a long and rich tradition, with the first cooperative banks established on Polish soil as early as the second half of the 19th century. Their purpose, similar to those in Western Europe, was to provide financial services and engage in social activities, mainly for the benefit of their members and the local communities in which they operated (Greve, 2002). During the period of annexations, these aims included fighting against usury and exploitation, as well as efforts to maintain and increase Polish estate by promoting entrepreneurship in agriculture, Polish crafts, and trade (Orzeszko, 1998; Paluch et al., 2022).

In the interwar period, much like during the annexations, credit cooperatives provided services to various population groups, with members from diverse backgrounds (farmers, clerks, merchants, workers). Beyond economic activities, credit cooperatives were also engaged in various endeavors to promote educational and civilizational progress in the communities where they operated (Szambelańczyk, 1997).

During the command economy period, Polish credit cooperatives underwent forced transformations to integrate them with the entities and principles of the socialist economy (Szambelańczyk, 2006). When evaluating the post-war development of banking cooperatives in Poland, it should be noted that despite these measures, the sector of cooperative banks remained a permanent feature of the Polish banking system and experienced systematic, albeit sometimes hindered, development. Local cooperative banks provided credit funds to improve the efficiency of agricultural farms and offered financial services to other players in the food economy operating in their areas (Orzeszko, 1998; Golik, 2002).

After 1989, the cooperative banking sector underwent a massive transformation accompanied by organizational changes. Following a sudden revival of their activity at the beginning of the political transformation and a subsequent systemic crisis (which saw the number of banking cooperatives decrease by nearly two-thirds), the cooperative banking system regained its position at the start of the 21st century and became competitive (Szambelańczyk, 2006). The advantage of cooperative banks over commercial entities lay mostly in their deep understanding of the needs of the communities they served. However, today's customer expectations, especially those of younger generations, combined with technological changes and new distribution channels for financial services implemented by commercial banks, pose

new challenges to cooperative banks. As most cooperative banks are unable to handle these challenges on their own, strong associating banks have a vital role to play in this segment of the Polish banking sector.

Cooperative banks continue to play a significant role in local communities today. They make up the largest network of banks in Poland. According to data from the National Association of Cooperative Banks, at the end of 2023, there were 492 cooperative banks operating in Poland. Of these, 10 were stand-alone banks, while the remaining were members of two associations: Bank Polskiej Spółdzielczości SA (307 entities) and Spółdzielcza Grupa Bankowa SA (175 entities) (Lista..., 2024). Present-day cooperative banks have offices in both large cities and small communes, providing access to financial services for enterprises and individuals even in the smallest towns across the country, thus fostering financial inclusivity (Lal, 2019). Numerous studies show that banks operating according to cooperative principles are often the only financial institutions within a dozen or several dozen kilometers (Płonka et al., 2023; Szafrńska, 2023). They are becoming particularly significant for local communities as commercial banks systematically reduce the number of their branches and focus more on developing electronic distribution channels for financial services (in the second half of 2023 alone, the number of bank branches in Poland decreased by 63, or 1.25%).

Cooperative banks serve a range of functions in the areas where they operate: a stimulating function by offering credits to fund various purposes, a structural function (e.g., transformations in the agrarian structure due to preferential credits), and a social function (forging ties among members, i.e. bank customers, enhancing credibility, and promoting a positive image) (Giagnocavo et al., 2012; Jones et al., 2016). Another function is advisory, which involves promoting innovation, entrepreneurship, and cooperation in developing investment business plans. Other significant functions include the educational function, which promotes financial literacy, and the servicing function, which involves providing financial services to individual customers, farmers, entrepreneurs, and local government units (Jiménez-Hernández et al., 2018).

Many researchers note a certain specificity in the functioning of cooperative banks. In most European countries, a relational banking model, or a similar model, can be distinguished in cooperative banking. Compared to the transactional model, this type of banking is characterized by a higher proportion of deposits from and credits granted to individuals and farmers, higher quality credit portfolios, and positive customer ratings for service quality (Kata, 2009; Beck et al., 2014; Ayadi et al., 2016; Fiordelisi et al., 2023). Some researchers even classify cooperative banks as niche banks that satisfy the financial needs of a specific demographic group (Lang et al., 2016). Often, these banks operate in areas with less developed financial infrastructure, thus contributing to the reduction of financial exclusion (Kata, 2009).

To create conditions that enable cooperative banks to effectively fulfill their functions for the benefit of local communities, it is essential to identify the characteristics of the communes that choose to have their primary accounts serviced by these banks. This perspective has not yet been explored. However, it is crucial, particularly in the context of addressing various local issues such as improving the financial situation of households, stimulating entrepreneurial activity within the local community, reducing unemployment in the local market, developing and upgrading infrastructure, protecting the environment, and implementing projects aimed at economic and social revival.

The analysis of the collected material should provide answers to the following research questions:

1. Does the number of inhabitants of a commune determine the type of bank that provides budget services to the commune in Poland?
2. Does the number of people employed in agriculture in a given commune affect the type of bank (cooperative/commercial) that maintains the basic account for the local government unit?

The article begins with an introduction in which the choice of the topic is justified. The next part of the study is a literature study on the subject. Then, data sources and research methods were presented. The next section presents the research results and discussion. Finally, the conclusions resulting from the analysis are presented.

2. Literature review

Local government units, while fulfilling their statutory tasks, must rely on an intermediary that provides comprehensive financial services to them. These services are not limited to cashier service but also include, among other things, credit and deposit products, servicing the issuance of local government securities, and professional advice in handling the financial resources and municipal assets of the local government unit.

Currently, municipal banks, which were owned by local government units and established specifically to provide financial services to them, no longer operate in Poland. Local government units now choose financial intermediaries from among the operational branches of commercial banks or cooperative banks willing to cooperate. It should be noted that cooperative banks currently dominate in servicing local government units, particularly smaller ones in rural areas.

Cooperative banks hold a unique position in the financial services market, functioning both as banks and cooperatives. Consequently, they are classified as social enterprises, combining two key attributes: entrepreneurship and social character (Siudek, 2011). To operate effectively as banks, they must place significant emphasis on the type and quality of their financial services and how they provide them. To survive and grow, they must strive to achieve business objectives that may not always align with their mission, while simultaneously pursuing social objectives. These social objectives include forging lasting relationships with their members and customers and promoting local development. Achieving this balance is challenging, given the constant pressure on cooperative banks to prioritize commercial activity over their social mission (Alken, 2005).

It should be emphasized that the position of cooperative banks in the markets they serve depends not only on their economic and social relationships with local government units but also on their usefulness to potential non-institutional customers—those whom they are mission-driven to serve (Wierzbicki, 2016).

Cooperative banks conducting business activities must remember that a bank's success is measured not only by its ability to attract customers but also by maintaining long-term cooperation with them through high-quality services. This long-term cooperation, especially with local government units, should not be based solely on financial aspects. Both local government units and cooperative banks should prioritize the local community, aiming to conduct activities that promote local development. For cooperative banks, such activities should go beyond allocating part of their profits to support various local initiatives, such as cultural and sporting events or initiatives promoting local economic development. By undertaking these tasks, cooperative banks not only demonstrate their commitment to the local community but also strengthen their positive image within the area. It is important to emphasize that by providing services to residents of small towns, who often have limited access to comprehensive financial services, cooperative banks help reduce financial exclusion among local community members. In engaging in these activities, typically in environments with relatively low revenue potential, cooperative banks prioritize the interests of the local community over profitability. Local government units should consider this when choosing a financial institution to serve them. Beyond financial costs, they should also consider the history of cooperation, the level of trust in individual banks, and the benefits that selecting a particular institution will bring to the local communities. Ensuring the presence of socially responsible and robust local banks, typically cooperative banks, is crucial. These banks, with their many years of service to the local community, understanding of its needs, and knowledge of its financial possibilities, can offer a range of financial services that meet the community's expectations at reasonable prices (Giagnocavo et al., 2012).

According to Z.R. Wierzbicki (2016), local government units and cooperative banks should aim to form alliances to foster mutual development, as well as the development of local communities and enterprises within their sphere of influence. In practice, cooperation between a cooperative bank and a local government unit should extend beyond typical bank-customer relationships and the financial services specific to this type of customer.

At this point, it is worth noting that all cooperative banks are obliged to act in a manner that preserves the good image of the entire cooperative banking sector. The bankruptcy of several cooperative banks, particularly Podkarpacki Bank Spółdzielczy (which serviced 35 local government units), has led to local government units being more cautious in their dealings with cooperative banks.

It should also be highlighted that local government units cannot ignore the fact that cooperative banks' individual customers, i.e., their stakeholders, primarily consider the following factors when selecting a bank: convenient location, quality of customer service, and social activity (Nowacka, 2018). Cooperative banks place more emphasis on social activity compared to commercial banks.

Many cooperative banks conduct their activities within the bounds of the local market, i.e., the commune, powiat, or, at best, the entire voivodeship. Conducting business activity across the whole country requires initial capital at the level of the minimum capital of commercial banks (Ustawa..., 2000). However, it should be stressed that many cooperative banks that meet the statutory capital requirements are organizationally unable to conduct such activities. Moreover, by operating nationwide, a cooperative bank loses its local character, and its relationships with customers change. On the other hand, when operating in a small area, these banks have limited capabilities to attract more customers. However, they have the opportunity to get to know their potential customers much better and adapt their offerings to individual needs. This approach does not allow them to maximize profits but enables them to continue their activities, establish lasting relationships with customers, and fulfill the social objectives included in their mission statements.

Thus, the local character of cooperative banks can be largely shaped by existing legal regulations and the banks' compliance with the principle of regionalization. One can therefore assume that this character is related to territoriality, defined as the ability and inalienable right to operate within one's own territory while retaining full legal and economic independence (Siudek, 2007).

It should be stressed that, contrary to claims by some authors, the local character of cooperative banks does not only involve servicing a specific area where the organization of local community life centers around a single urban center (Jakubowska, 2009; Żółtowski, 2011). The local character of a bank should also be viewed through the prism of its engagement with the local community it serves and its ability to meet the individual needs of its customers (Kata, 2009).

Traditionally, the customers of cooperative banks mainly consist of their members, representatives of the local community, farmers, small and medium-sized enterprises (SMEs), local institutions, and local government units.

Cooperative banks place great importance on cooperating with local government units and related entities such as healthcare institutions, public utility enterprises, and schools, which are typically reliable customers. Their financial activities are strictly governed by existing legal regulations (Ustawa..., 1990, 2009), ensuring stability, predictability, openness, and transparency. Through long-term cooperation with these institutional customers, cooperative banks not only secure stable revenues but also contribute to achieving social goals aligned with the bank's mission. Moreover, servicing such institutions enables cooperative banks to enhance their position in the local financial market and expand their customer base to include employees and customers of these institutions. When serving members of the local community, cooperative banks must recognize that their most valuable assets, alongside financial resources, are loyal customers with whom they have established long-term relationships.

The view expressed by W.L. Jaworski (2002), two decades ago, that in the competitive arena, only those cooperative banks with strong support from local (commune) governments and the local community can survive in the market, still holds true. To achieve this, cooperative banks must adhere to the regional principle, focusing on becoming banks for communes and poviats. Their role should be to retain funds accumulated by these local entities for local development and prevent their transfer to other regions of the country or abroad (Jaworski, 2005).

However, it should be stressed that for cooperation between a cooperative bank and a local government unit to be beneficial for both parties, the bank needs to have a product offer tailored to the needs of the local government unit. It should also be capable of ensuring comprehensive and effective fulfillment of the unit's financial requirements and granting it the status of a strategic customer of the bank (Korenik, D., Korenik, S., 2007).

The topic of cooperation between cooperative banks and local government units represents an important issue that has not been thoroughly studied. In the literature, isolated studies can be found, but these do not encompass the majority of cooperative banks operating in the market. An example of such research is that conducted by J. Przybylska and A. Jakubowska.

J. Przybylska (2008) conducted a study among 140 cooperative banks, each of which serviced local government units. The findings revealed that 92.2% of the serviced local government units were communes (with 57.8% being rural communes), 7.6% were poviats, and 0.71% were cities with poviat rights. It is noteworthy that 21.4% of the analyzed banks serviced one local government unit, 17.8% serviced two local government units, and 16.4% serviced three local government units. The bank servicing the most units had 20 local government clients.

In a survey conducted by A. Jakubowska (2015) regarding the cooperation between selected banks operating in the Silesian Voivodeship and local government units, 89.47% of cooperative banks and 36.67% of commercial banks reported engaging in such cooperation. It should be noted that cooperative banks reported cooperating with rural and urban-rural communes, whereas commercial banks reported cooperating with urban communes with over 40 thousand residents and cities with poviats rights with up to 100 thousand residents.

The fact that a cooperative bank services one or multiple local government units indicates significant differences in the sizes of cooperative banks. Small cooperative banks, which offer mainly basic deposit-credit products and cashier services, aim to cooperate only with local government units from their immediate area (communes, poviats). In contrast, large cooperative banks are inherently universal banks; they compete with commercial banks by offering a broader range of services and aim to service many local government units across a larger area (multiple poviats or a voivodeship). It should also be emphasized that only strong cooperative banks are capable of adapting to evolving forms of customer service, including modern product offerings and technological solutions.

It is also worth highlighting that A. Jakubowska and A. Grabowska-Powaga, based on studies conducted among Silesian banks and local government units, found that the following factors had the biggest impact on a bank's cooperation with a local government unit: mutual trust (banks – 92.3%, local government units – 94.6%), customization of offerings (banks – 87.2%, local government units – 81.1%), willingness of the bank to negotiate (banks – 85%, local government units – 73%), quality of communication (banks – 79.5%, local government units – 89.2%), and willingness of the local government unit to negotiate (banks – 64.1%, local government units – 81.1%) (Jakubowska, Grabowska-Powaga, 2015).

The literature review indicates that while cooperation between cooperative banks and local government units significantly impacts their efficient operation, this topic has not been thoroughly examined. Therefore, comprehensive studies are needed to address this research gap.

Based on the analysis of the literature on the subject, as well as in the context of the main aim adopted in the article, the following research hypotheses were accepted for verification:

- H1: Cooperative banks dominate in servicing the smallest municipalities in terms of number of inhabitants and with lowest budgets.
- H2: Local government units characterized by a high share of population employed in agriculture are mainly served by cooperative banks.

3. Methods

The provision of banking services to local governments has been less explored compared to services offered to commercial enterprises. This is due to local governments' slower adoption of modern banking solutions and the legal framework within which they operate. Until recently, communes primarily utilized traditional banking products such as bank accounts, credits, acceptance of deposits, execution of withdrawals, and term deposits. However, financial institutions now offer local governments a wide range of innovative financial services, including virtual accounts, prepaid cards, assistance in issuing municipal bonds, and advice on financing structures and investment implementation models.

The market for servicing commune budgets has been developing systematically. From 1999 to 2022, the revenues of communes (excluding cities with poviats rights) increased by 431.1%, while their spending rose by 434.5%. Cities with poviats rights saw even greater increases during this period, with revenues and spending rising by 468.4% and 473.9%, respectively. Adjusted for inflation, the real total revenue of communes and cities with poviats rights increased by 166.3%, while spending increased by 168.5%. This represents a 2.7-fold increase in this market (Bank..., 2023). The dynamic growth attracts the interest of banking institutions, leading to increased competition between cooperative banks and commercial banks.

The aim of the study was to identify the characteristics of local government units that opted to have their primary accounts serviced by cooperative banks. The research was conducted in communes located in voivodeships with notable differences in terms of conditions and traditions related to the development of cooperative banking (annexations) and population density:

- high population density: Little Poland Voivodeship (former area annexed by Austria), Mazovia Voivodeship (Congress Kingdom of Poland, former area annexed by Russia),
- medium population density: Great Poland Voivodeship (former area annexed by Prussia), Subcarpathian Voivodeship (former area annexed by Austria),
- low population density: Warmia-Masuria Voivodeship (former area annexed by Prussia), Podlaskie Voivodeship (former area annexed by Russia).

In total, 1,116 communes were analyzed. The study to identify banks servicing communes, banks, and through telephone interviews (dependent variable: type of bank servicing a primary account of the local government unit). The population of banks servicing communes was classified into five groups:

- commercial banks (1),
- cooperative banks operating independently (2),
- cooperative banks affiliated with Bank Polskiej Spółdzielczości SA (3),
- cooperative banks affiliated with Spółdzielcza Grupa Bankowa SA (4),
- Bank Gospodarstwa Krajowego (5).

To identify the characteristics differentiating the analyzed communes, data from Statistics Poland's Local Data Bank (averaged for the period 2018-2021) (Bank...,2023) and Google Maps (first half of 2023) were utilized. The analysis included variables describing a commune's economic potential, location, and banking infrastructure saturation. Predictors were selected based on literature review and reduction reasoning. The economic potential was assessed using the following characteristics (notations used in modeling are indicated in brackets):

- commune size measured by the number of inhabitants (COMMUNE SIZE),
- commune's attractiveness to the bank measured by the level of total revenue (COMMUNE'S REVENUE),
- commune's wealth measured by its revenue per capita (COMMUNE'S WEALTH),
- population density (POPULATION DENSITY),
- number of unemployed individuals per 1000 people of working age (UNEMPLOYMENT LEVEL),
- number of economic entities per 1000 people of working age (INHABITANTS' ENTREPRENEURSHIP),
- number of individuals working in agriculture per 1000 people of working age (EMPLOYMENT IN AGRICULTURE),
- total migration balance for the period 2018-2021 per 1000 inhabitants (MIGRATION).

Variables describing commune type and its location:

- commune type (TYPE),
- location within voivodeship (VOIVODESHIP),
- whether the commune borders a city or includes one (BORDERS A CITY),
- distance to a city with over 100,000 inhabitants (DISTANCE FROM A BIG CITY),
- travel time to a city with over 100,000 inhabitants (LARGE CITY TRAVEL TIME).

Variables describing the local banking infrastructure:

- number of bank branches within the commune (NUMBER OF BANKS),
- whether the bank servicing the budget has an office within the commune (BUDGET SERVICING BANK),
- whether there is a cooperative bank operating within the commune (COOPERATIVE BANK),
- whether there is a commercial bank operating within the commune (COMMERCIAL BANK),

- whether there is a SKOK credit union operating with the commune (SKOK credit union),
- number of cashpoints (CASHPOINTS),
- cashpoint of a commune-servicing bank (CASHPOINT OF A SERVICING BANK).

To address the question regarding the characteristics of communes opting to have their budgets serviced by specific groups of banks, the Classification and Regression Tree (C&RT) method, a tool in Data Mining (Statistica®), was employed. This method facilitates the discovery of dependencies and patterns within large datasets (Dacko et al., 2023). An essential step in constructing the classification tree model (C&RT) was defining parameters to assess its quality and prevent excessive model complexity. During the development of the Classification and Regression Tree method (C&RT), the following assumptions were made:

- the costs of misclassifications will be equal,
- the goodness of fit will be evaluated using the Gini measurement,
- the stopping rule will prune on misclassification error,
- terminal nodes will consist of at least 10 observations,
- the quality of the obtained results will be assessed using V-fold cross-validation with $V = 10$.

For the purpose of the analyses, the communes were classified based on their characteristics using quartile division, with the following descriptive categories assigned to the different groups: very high, high, moderate, low.

4. Results and Discussion

The analysis of the local conditions affecting banks that service commune budgets was conducted based on various criteria: type of local government unit, commune location, budget and wealth level, number of inhabitants, population density, and the proportion of the population employed in agriculture.

The analysis of the banking infrastructure indicates that no bank was operating in 105 local government units (9.4%) participating in the study. It should be noted that while this was not an issue in urban communes, it was a marginal problem in urban-rural communes (1%). In rural communes, however, this problem was identified in 14.4% of local government units. In 97.2% of urban communes, there is at least one cooperative bank operating, and in 95.5%, there is a commercial bank branch. For urban-rural communes, these figures were 97.6% and 67.2%, respectively. The worst situation was recorded in rural communes, where cooperative banks operated in 84.3% of the analyzed local government units, while commercial bank branches operated in only 12.4% (see Table 1). This illustrates that residents of rural communes,

along with their local authorities seeking direct banking services within their area, can typically find such services available at cooperative banks. In contrast, commercial banks show more interest in providing customers access to electronic distribution channels for financial services rather than expanding their network of physical branches. Consequently, local governments in rural communes more frequently opt to cooperate with local partners such as cooperative banks for their financial service needs.

Local government units constitute a crucial customer group for cooperative banks. Servicing such customers can significantly impact both their financial standing and their perception by local residents. This is exemplified by SGB-Bank SA, which, together with 175 cooperative banks, forms the Spółdzielcza Grupa Bankowa and cooperates with 220 local government units (Banki..., 2023). Another associating bank in Poland, BPS SA, also offers banking services tailored for local governments on behalf of itself and its associated cooperative banks.

Table 1.
Banking infrastructure in communes by type

Specification (location within the commune)	Communes by type			
	urban	rural	urban-rural	In total
	number of communes			
Number of communes in the group	112	708	296	1116
Lack of bank branches	0	102	3	105
At least one cooperative bank branch	109	597	289	995
At least one commercial bank branch	107	88	199	394
Budget-servicing bank branch	107	577	278	962
Lack of a cashpoint	0	100	4	104
Cashpoint of a bank servicing commune budget	109	563	277	949

Source: own work, n = 1116.

In the analyzed group, 86.2% of local government units used financial services provided by banks with an office within the territory of the commune. It should be noted that in urban communes, 4.5% of local governments used the services of banks without an office in the commune, while in urban-rural communes, this figure was 6.1%. These local government units chose such institutions for financial services out of preference, not necessity. The situation differed in rural communes, where 18.5% of local governments used services of a bank without an office within their territory. It is important to emphasize that for 14.4% of rural communes, this was due to the lack of bank branches within their territory, whereas only 4.1% chose to do so freely for budget servicing.

The analysis revealed significant disparities in the development of banking infrastructure across the analyzed voivodeships. The most favorable situation was observed in Podlaskie Voivodeship, where every analyzed commune had at least one cooperative bank operating, and 40.7% of local government units also had a branch of a commercial bank. In over 99% of communes in this voivodeship, banking services were available from institutions with offices within their territory. A positive situation in terms of banking infrastructure was observed in

the Little Poland and Masovia Voivodeships, where only 5.5% and 7.6% of communes, respectively, lacked bank offices. However, Subcarpathian and Warmian-Masurian Voivodeships faced more challenges, with 15.6% and 19.8% of local governments respectively lacking access to banking services within their commune's territory. It is important to highlight that local authorities, regardless of voivodeship, generally prefer to collaborate with banks that have offices within their commune. Across all analyzed voivodeships, over 95% of local government units opted for local banks for budget servicing. Notably, the highest trust in local banks was observed in Subcarpathian Voivodeship, where every commune preferred cooperation with a local bank, typically a cooperative bank operating within the commune's territory.

The level of a commune's budget does not have a definitive impact on banking infrastructure. The number of commercial bank offices increases with the commune's revenue, being the lowest in communes with low revenue (7.9%) and the highest in those with very high revenue (81%). This significant difference indicates that commercial banks prioritize servicing wealthier areas, focusing primarily on maximizing profits. However, it should be noted that large commercial banks, despite not having offices in most Polish communes, are still interested in servicing local governments.

It should also be noted that wealthier communes often seek business partners outside their area to service their budgets, even when local banks are available. The highest number of such cases was observed in communes with very high (6.1%) and high (5.4%) revenue, while the fewest cases occurred in communes with moderate (3.9%) and low (2.2%) revenue. This suggests that an increase in the commune's budget may motivate authorities to look beyond their territory when selecting a bank to service their budget. Consequently, some wealthier local governments may place less emphasis on strengthening ties with local financial institutions.

The number of inhabitants significantly impacts banking infrastructure (Table 2). Communes with a "very high" population are not affected by the lack of banking establishments. Similarly, this issue only slightly affects communes with a high population (2.36%). However, it is more noticeable in communes with a low (10.8%) and moderate (10.2%) population. The number of inhabitants in communes does not have as significant an impact on the infrastructure of cooperative banks as it does on the infrastructure of commercial banks. It should be stressed that cooperative banks operate in over 89% of communes. These banks operate in 88.6% of communes with a low population and in 100% of communes with a very high population.

Table 2.*Banking infrastructure in communes by commune size measured by the number of inhabitants*

Specification (location within the commune)	Communes by the number of inhabitants*			
	low	medium	high	very high
	number of communes			
Number of communes in the group	702	255	127	32
Lack of bank branches	76	26	3	0
At least one cooperative bank branch	622	221	120	32
At least one commercial bank branch	114	135	113	32
Budget-servicing bank branch	603	212	116	31
Lack of a cashpoint	83	21	0	0
Cashpoint of a bank servicing commune budget	584	215	118	32

* average number of commune inhabitants for the period 2018-2021: low (< 10,000 people), medium (10,000-20,000 people), high (20,000-50,000 people), very high (> 50,000 people)

Source: own work, n = 1116.

Meanwhile, physical branches of commercial banks are present in only 35.3% of the analyzed communes. Branches of commercial banks operate in 16.2% of communes with a low population, 52.9% of communes with a moderate population, 88.98% of communes with a high population, and 100% of communes with a very high population.

Communes with low, moderate, and high levels of entrepreneurship among inhabitants are equally likely to lack access to banking services within their territory. This problem is minimal only in communes where inhabitants exhibit a very high level of entrepreneurship. Cooperative banks do not prioritize this criterion when developing their branch networks. Branches of cooperative banks are located in 87.8% of communes with a low level of entrepreneurship and 92.1% of those with a very high level. This is arguably due to the fundamental aim of cooperative banks, which is to provide their members with access to banking services at a reasonable price, rather than focusing on profit or the development of entrepreneurship. This is not the case with commercial banks. The study found that communes with higher levels of entrepreneurship among inhabitants have a better-developed network of commercial bank branches. Such branches operate in 14.7% of communes with a low level of entrepreneurship, 15.8% of communes with a moderate level, 40.1% of communes with a high level, and 70.6% of communes with a very high level of entrepreneurship. This may be because individuals with higher levels of entrepreneurship seek financial partners capable of offering comprehensive financial services, including modern and innovative banking products, which are typically provided by commercial banks.

It cannot be stated categorically that the level of employment in agriculture has a direct impact on banking infrastructure. The study showed that in communes with low and very high levels of employment in agriculture, the inhabitants were least likely to lack access to banking services within the territory of the commune (Table 3).

Table 3.*Banking infrastructure in communes by level of employment in agriculture*

Specification (location within the commune)	Communes by level of employment in agriculture*			
	low	medium	high	very high
	number of communes			
Number of communes in the group	279	279	279	279
Lack of bank branches	11	39	33	22
At least one cooperative bank branch	259	234	244	258
At least one commercial bank branch	226	87	46	35
Budget-servicing bank branch	250	225	235	252
Lack of a cashpoint	5	38	36	25
Cashpoint of a bank servicing commune budget	257	218	228	246

* level of employment in agriculture measured by the number of people working in agriculture per 1000 working-age people: low (<134.1), medium (134.1-266.4), high (266.4-401.7), very high (>401.7).

Source: own work, n = 1116.

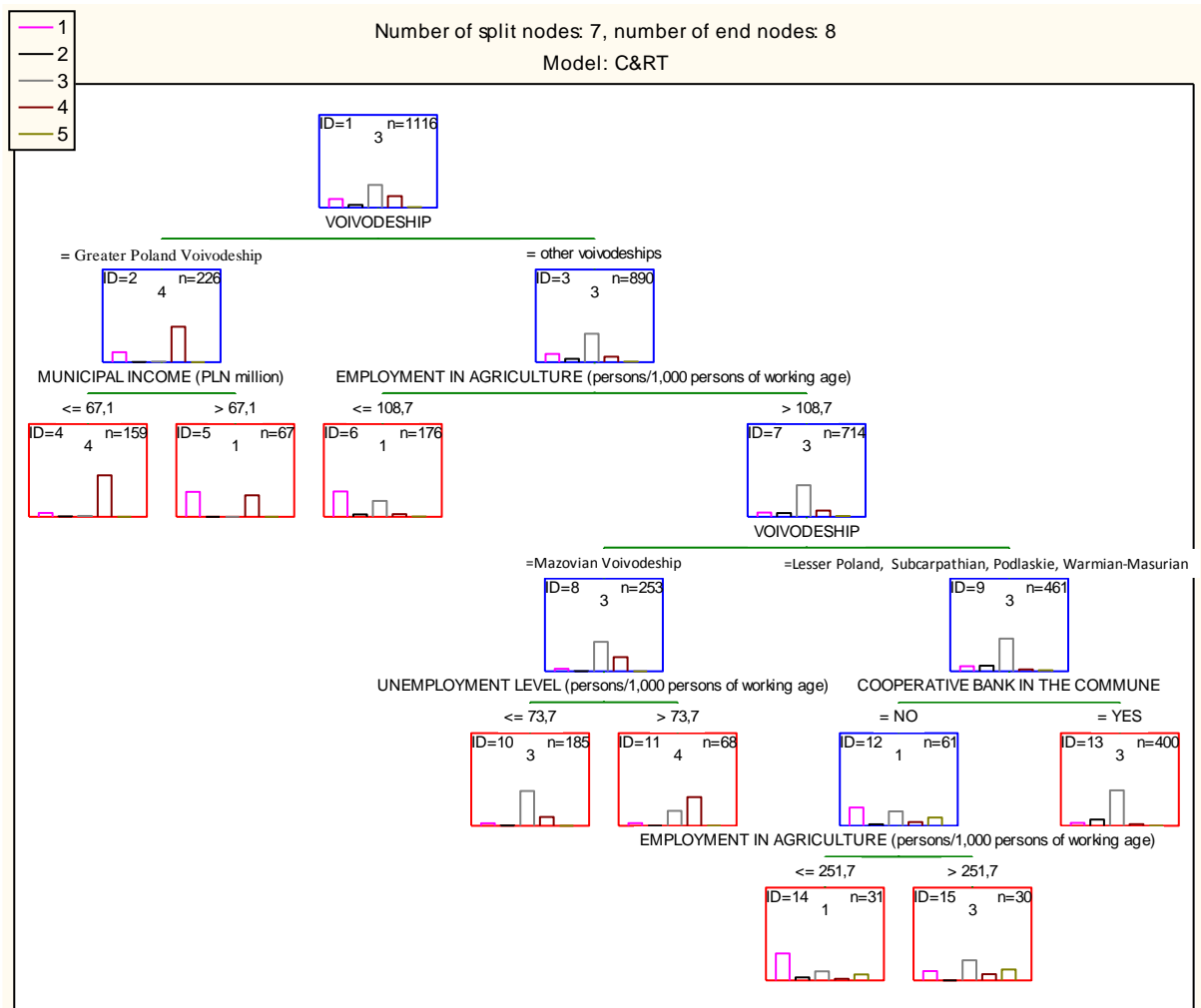
The study found that in 14% of communes with a moderate level of employment in agriculture and in 11.8% of communes with a high level of employment in agriculture, there were no bank branches. It is worth noting that although farmers are the main customers of cooperative banks, such banks mainly operated in communes with a low level of employment in agriculture (92.8%) and a very high level of employment in agriculture (92.5%). In the case of commercial banks, it was found that as the level of employment in agriculture increased, banks' interest in servicing such communes decreased. This is confirmed by the fact that commercial bank branches operated in 81% of communes with a low level of employment in agriculture, in 31.2% of communes with a moderate level of employment in agriculture, in 16.5% of communes with a high level of employment in agriculture, and in 12.5% of communes with a very high level of employment in agriculture.

To identify the characteristics that differentiate the analyzed population of communes based on the type of bank entrusted with budget servicing, interactive C&RT trees were used. The developed tree model consists of 7 splitting nodes and 8 terminal nodes (Figure 1). The proportion of misclassifications was 32%, which was considered a good and satisfactory result for exploration purposes. The first splitting criterion was location, separating the communes located in Greater Poland Voivodeship, where banks associated with Spółdzielcza Grupa Bankowa predominate. The second largest group of banks servicing commune budgets were commercial banks. The next split resulted in two terminal nodes (No. 4 and 5). This time, the tree chose the level of budget revenue as the splitting criterion, indicating that the likelihood of choosing a commercial bank for budget servicing was much higher if the commune had a higher budget. Communes with revenue not exceeding PLN 67.1 million per annum were primarily serviced by cooperative banks associated with SGB S.A.¹

¹ Choosing a cooperative bank other than one from the group SGB S.A. was very difficult as in Greater Poland Voivodeship there are only 2 banks in the group BPS.

In other voivodeships, the primary criterion for identifying communes serviced by commercial banks was a low proportion of people working in agriculture. Communes where less than one-tenth of working-age inhabitants were employed in agriculture showed a significantly higher likelihood of choosing a commercial bank (node No. 6). This preference was predominantly observed in urban communes and suburban areas bordering large agglomerations.

In the case of 714 communes where employment in agriculture exceeded 108.7 individuals per 1000 working-age people, location again emerged as the most important criterion for differentiation. In Masovian Voivodeship, with higher unemployment levels in a commune, there was an increased likelihood of choosing a cooperative bank from the SGB group (node no. 11). Conversely, when unemployment levels were below 73.7 individuals per 1000 working-age people, cooperative banks from the BPS group were chosen more frequently (node no. 10). This trend likely stemmed from the fact that cooperative banks in communes with higher unemployment rates were often associated with SGB. In the remaining four voivodeships, the likelihood of choosing a commercial bank increased when the commune lacked an office of a cooperative bank and employment in agriculture was below 251.7 individuals per 1000 working-age people. Conversely, when a commune had a cooperative bank branch or when more than one-fourth of working-age people were employed in agriculture, the commune budget was most often serviced by a cooperative bank, typically belonging to the BPS group.



* Dependent variable bank type: 1 – commercial bank, 2 – independent cooperative bank, 3 – cooperative bank associated with BPS, 4 – cooperative bank associated with SGB, 5 – Bank Gospodarstwa Krajowego. A list of predictors was included in methodological notes. ID - branch number.

Figure 1. Model of interactive C&RT tree for the variable: bank type.

Source: own work.

An additional feature of C&RT trees is their ability to generate a predictor importance ranking. This is significant because many predictors may not appear in the graph but are strongly connected with the choice of a bank servicing the commune budget (Table 4).

Table 4.*Selected characteristics of the predictors used in the analysis*

Characteristic (predictor)	Features of the characteristic	Importance of predictors
Voivodeship	Lesser Poland Voivodeship, Mazovian Voivodeship, Subcarpathian Voivodeship, Podlaskie Voivodeship, Warmian-Masurian Voivodeship, Greater Poland Voivodeship	1.00
Employment in agriculture (people/1000 working-age people)	min.: 0 max.: 1306 ² average: 288.4	0.87
Commune size (number of inhabitants)	min.: 1447 max.: 1823365 average: 15287	0.84
Commune revenue (PLN million/year)	min.: 9,2 max.: 18816,6 average: 99.1	0.84
Population density (people/km ²)	min.: 4 max.: 3987 average: 211	0.75
Cashpoint within the commune	yes or no	0.62
Commune type	city with poviat rights; urban commune; rural commune; urban-rural commune	0.58
Local entrepreneurship (number of entities with REGON/1000 working age people)	min.: 53.9 max.: 500.7 average: 143.1	0.57
Commercial bank branch in the commune	yes lub no	0.57
Commune's wealth (per capita own revenue (PLN))	min.: 862 max.: 7294 average: 2097	0.48
SKOK credit union in the commune	yes or no	0.45
Unemployment rate (unemployed individuals per 1000 working age people)	min.: 9,0 max.: 186.9 average: 50.0	0.43
Whether the commune includes a city or borders a city	yes or no	0.37
Travel time to a large city (minutes)	min.: max.: average	0.28
Cooperative bank branch in the commune	yes or no	0.21

Source: own work.

The most important predictor turned out to be commune location. Consequently, the choice of a bank to service the commune budget is often local. As mentioned earlier, 95.15% of local governments chose a bank operating within the territory of their commune when given the option. A cooperative bank's affiliation with one of the two main banking groups is often local and historically determined, leading to the formation of specific clusters. Location was followed by characteristics describing commune structure (employment in agriculture, number of inhabitants, population density). These characteristics largely determine the attractiveness of a given commune for a bank. The next characteristic in the ranking is commune revenue. Generally, it is evident that the more attractive a commune is, the higher the probability that a commercial bank will be chosen to service the budget.

Local governments of communes, along with individual customers and small to medium-sized enterprises (SMEs), constitute an important market segment for cooperative banks (Kraemer-Eis et al., 2014). This is attributed to their sheer number and the significant financial resources that flow through the accounts of the banking institutions servicing them, which are utilized by communes to fulfill their own tasks as well as those commissioned to them.

² During the agricultural census, non-working age people may have been classified as working in agriculture.

The study identified characteristics that differentiate communes in terms of the legal form of bank chosen to service their budget: commune location and the number of people employed in agriculture. Cooperative banks more frequently serviced basic accounts for communes located far from large urban centers, less affluent communes, and those with a high proportion of people employed in agriculture, typically urban-rural and rural communes. These findings confirm previous research indicating that these types of communes are the primary customers of cooperative banks in the segment of local government units (Przybylska, 2008).

One reason for this is that cooperative banks in Poland, due to historical factors, are primarily situated in small and medium-sized cities as well as rural areas. During the centrally controlled economy period, farmers and rural residents could only access services provided by cooperative banks (Kulawik, 2002). Moreover, according to the legislation of that time, cooperative banks were exclusively authorized to provide financial services to agriculture, rural populations, and cooperative associations (e.g., farmers' cooperative associations) (Juszczak, 2023).

The situation changed during the initial period of the market economy. Commercial banks, previously predominantly located in urban areas, expanded their operations to rural areas and began servicing agricultural populations, thus competing with cooperative banks. However, they later shifted their strategy to concentrate on expanding their branch networks in cities. This trend of commercial banks withdrawing from rural areas also occurred in other countries undergoing systemic transformations. According to G. Van Empel (2001), this was due to the high costs associated with establishing bank branches in rural areas and the lack of expertise among commercial bank staff to serve rural customers effectively. Additionally, as highlighted by R. Kata (2011), large commercial banks showed little interest in adapting to local specificities. Consequently, modern cooperative banks have expanded their services beyond their traditional focus on the agricultural sector, now offering a diverse range of services that include banking products for local government units.

An important predictor was the size of the commune, measured by the number of inhabitants. The analysis indicates that as the number of inhabitants increases, the proportion of communes serviced by commercial banks also rises. Among communes with the lowest number of inhabitants, cooperative banks serviced 90% of local government units, whereas in communes with the highest number of inhabitants (cities), the proportion serviced by cooperative banks dropped to under 50%. The study shows that commercial banks provided basic servicing of commune budgets in the analyzed capital cities of voivodeships. Although cooperative banks operate within these metropolises, their equity capital levels do not enable them to meet the financial needs of large communes, such as providing overdraft facilities where the credit amount exceeds the value of the cooperative bank's equity capital. These limitations, stemming from the necessity to manage banking risks, present barriers to the expansion of cooperative banks in Europe as well (Groeneveld, 2015). Other studies confirm

that the level of equity capital and the value of assets determine a bank's business model (Borgioli et al., 2013).

5. Conclusions

The cooperative banking sector, which has operated in a competitive environment for many years, is seeking an appropriate business model. Given certain historically determined limitations, it strives to find a suitable market niche and tailor its banking products accordingly. Facing strong competition from commercial counterparts, cooperative banks focus on market segments that remain unfilled or have not attracted commercial banks due to their business strategies.

Significant differences in economic development across Poland result in variations in commune size, banking market size, and socio-economic characteristics of local governments. Commercial banking has primarily developed in urbanized, densely populated areas with intensive economic activity.

In contrast, cooperative banks, rooted in rural environments, naturally target customers in these areas. The present study confirmed the dominance of the cooperative banking sector, particularly in communes with the smallest populations and lowest budgets. The presented research results therefore allow the acceptance of the first hypothesis (H1).

The second hypothesis (H2) was also accepted. An important factor determining the use of cooperative banks by communes was the proportion of the population employed in agriculture. Communes with higher agricultural populations more frequently chose cooperative banks for budget servicing.

Due to capital requirements related to risk management, cooperative banks, with their small balance sheets, face significant barriers to competing, particularly in extending credits to large economic units. Consequently, they are often pushed out by better-capitalized commercial banks, mainly in larger cities where major enterprises are headquartered. Rural areas and smaller towns constitute a banking market segment where cooperative banks find it easier to break through and expand.

The cooperative banking sector should leverage its strong local roots to strengthen its market position in rural areas and capitalize on opportunities related to servicing communes and local development processes. EU structural funds, which support previously disadvantaged and peripheral areas, offer significant growth and expansion opportunities for these banks. Increased operations will inevitably lead to bank mergers and further concentration in this sector. This should be viewed not as a threat to the status quo but as a chance to maintain competitiveness, survive, and develop.

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