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Corporate Philanthropy in Shaping the Financial Efficiency of Cooperative Banks in Poland – Empirical Research

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Corporate Philanthropy in Shaping the Financial Efficiency of Cooperative Banks in Poland – Empirical Research

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ABSTRACT

The aim of the study is to establish and analyze the relationship between expenditure on corporate philanthropy and financial performance of cooperative banks in Poland. The study covered 70 cooperative banks, where the level of expenditure on social activities was above the average in the sector. The research was carried out using the Generalized Method of Moments for the years 2013–2020. Studies have shown positive importance of corporate philanthropy in shaping financial efficiency. The research also indicated a significant shift in the time between spending on social activities and the financial results obtained. The obtained results indicate an area that has not been thoroughly analyzed: the impact of spending on social activities in the context of shaping the financial efficiency considering time shifts. This knowledge may result in more intentional creation of the efficiency policy by management, considering corporate philanthropy, Corporate Social Responsibility, or the introduction of appropriate regulatory changes for the assessment of financial institutions by responsible entities.

JEL classification: A13, G41, M14, G21

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1. INTRODUCTION

In the first and second decades of the 21st century, discussions on the essence of the functioning of enterprises in the economy intensified in world markets. Changing consumer expectations and legislation is placing increasing emphasis on the protection of human rights and the environment, which forces companies to respond to the question of whether they are to be focused solely on profit maximization or their actions should take into account the subjective element of a human being and their needs, including non-business ones. Simultaneously, it is important that combining market orientation and focusing on achieving social goals requires enterprises to efficiently manage their resources, taking into account the implementation of social missions (Bruder, 2021). It is also worth noting that despite global crises, corporate philanthropy has significantly maintained its momentum as a growing phenomenon of global importance (Gautier and Pache, 2015).

In literature, we can observe the focus on voluntary actions related to the transfer of funds to individuals or non-governmental organizations, and combining business and social activities in such a way that they create value and increase the company's efficiency (Bruton, Ahlstrom and Obloj, 2008). In the context, in literature, one can find examples of research indicating a connection between interest in the implementation of social activities and the desire to improve the financial efficiency of enterprises.

Research on the relationship between corporate philanthropy carried out by companies and the rate of return on their stock shares (Ferrell, Liang and Renneboog, 2016), financial efficiency (Lins, Servaes and Tamayo, 2017) and financial risk (Kim, Li and Li, 2014) does not lead to unambiguous conclusions (Wu and Shen, 2013).

In addition, as indicated by researchers, an important element of research on the impact of social activity on the effectiveness of banks is the consideration in the analysis of sub-components used to measure social activity, such as environmental, social, and governance, because, in their opinion, they may have a different significance for the development of banks' financial performance of banks (Wu and Shen, 2013). From the perspective, corporate philanthropy, defined as the practice of organizations donating resources and funds to support social and environmental causes (Smith, 1994), is also undergoing a significant transformation. In recent years, there has been a growing awareness of interconnections between corporate philanthropy and Environmental, Social, and Governance (ESG) principles.

ESG represents a set of criteria that assess an organization's performance in three key dimensions: environmental sustainability (E), social responsibility (S), and ethical governance (G). The principles have gained importance as frameworks for evaluating long-term sustainable development and ethical corporate practices (Aluchna, Roszkowska-Menkes and Kamiński, 2022). Investors, consumers, and stakeholders now perceive ESG factors as fundamental indicators of an organization's commitment to responsible business practices. Therefore, ESG factors should be considered when making decisions by financial institutions.

Nonetheless, research conducted by the European Banking Authority (EBA) indicated that among the key factors motivating banks to adopt sustainable development strategies there are ethical considerations, perceived business opportunities, and the demands of customers and investors. Significant motivations are also related to new risk factors and expected regulatory changes (Coleton et al., 2020). According to Marcinkowska (2022), ESG factors must be incorporated into the management of financial institutions, regardless of the institutions' perception of sustainable development issues and their willingness to engage in them.

At the same time, one of the least frequently analyzed is one of the most important examples of combining business and social activities in their functioning, locally operating financial institutions (McKillop et al., 2020). It is a special type of enterprise due to the Rochdale principles, included in the operating strategy of the type of enterprise, which impose on cooperatives the obligation to conduct social and cultural activities for their members, their families, and the local social environment (Tremblay, Hupper and Waring, 2019). They also unequivocally indicate that the activity should not only be incidental to the conducted economic activity, aimed at satisfying the economic needs and interests of its members, but should be parallel (Rand and Nowak, 2013). However, we do not know how locally operating financial institutions implement the postulates in practice because so far, there has been little research on their social activity (Taylor and Goodman, 2020). The research area of financial institutions focuses mainly on the financial efficiency of the institutions without paying special attention to their social dimension (Ferreira, 2021) and, as Belasri, Gomes and Pijourlet (2020) indicate, the analysis of such a complex institution what a bank is, requires a multidimensional approach that also takes into account social activity. Moreover, some research is fragmentary and usually involves a review of the literature in the area in question. There is little empirical research linking financial and social spheres, especially in terms of the differentiation of the level and scope of social banking activities depending on their financial effectiveness (Aramburu and Pescador, 2019).

Issues related to social activities conducted by cooperative banks are particularly important because of their importance in the European banking sector (Clark, Mare and Radić, 2018). The average share of the institutions in domestic markets in Europe increases year by year, exceeding 23% (*World Cooperative Monitor – Report 2021, 2022*), and in Austria, Germany, and Finland, it exceeds 30% (*The Co-operative difference: Sustainability, Proximity, Governance, 2021*). They also have a significant share in the market of loans and deposits for the SME sector, which is related to the fact that the banks are much smaller entities than commercial banks (Clark, Mare and Radić, 2018) and because of their specificity, they are also an important link in mitigating the effects of monetary tightening (Ferreira, 2021) and in the development of local markets. Moreover, the financial situation of cooperative banks is crucial for households, small and medium-sized enterprises, and farmers, as they are often important providers of financial services in rural areas and small towns (Kozłowski, 2016). They are also examples of financial institutions directly involved in the functioning of local markets and communities through active social activities. The aim of the study is to establish and analyze the relationship between expenditure on corporate philanthropy and financial performance of cooperative banks in Poland. Therefore, recognizing the importance of cooperative banks' social activity is an important issue, both in theory and practice, and the key value in this regard is the answer to the question of whether this activity strengthens or weakens the financial efficiency of the entities.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Previous analyses of the banking sector mainly concerned quantitative data analyses or changes in the legal regulations of this part of the market (Mare and Gramlich, 2021). Nevertheless, a cooperative bank is both a bank and a cooperative; therefore, it is a good example of an institution that should not be perceived solely through the prism of financial efficiency in the strict sense because it is at the same time an element of modern financial markets and an integral part of local communities.

In literature, one can find a variety of studies indicating motives for undertaking corporate philanthropic activities by enterprises, among which three basic trends can be distinguished. The first concerns altruistic motives, they are inspired by social awareness and altruism, and their main goal is to improve social welfare, even if it has little or no impact on a company's profits (Sánchez, 2000). The second trend concerns the social pressure exerted on organizations

resulting from certain expectations on the part of stakeholders legitimizing the functioning of a given organization (Gao, 2011). The third trend indicates that such activities are undertaken because of the benefits the enterprise can obtain (Ji, Tao and Deng, 2021). Among them, we can distinguish the enhancement of brand reputation and recognition (Pan et al., 2018); increasing customer loyalty and trust (Pivato, Misani and Tencati, 2007), strengthening the market position and strategic potential (Porter and Kramer, 2003), establishing political connections (Su and He, 2010) and improving financial efficiency (Belasri, Gomes and Pijourlet, 2020). An example of entities affected by the three trends may be cooperative banks, which, as entities strongly associated with communities and local markets, often operate under environmental pressure. The environment, perceiving them as cooperatives, puts a lot of pressure on undertaking social activities for their benefit, but cooperative banks, as financial entities, should also consider the financial goal of increasing the efficiency in their activities. Keeping this in mind, the following hypothesis is formulated:

H1: The social activity of a financial institutions contributes to the increase of its financial efficiency.

A manifestation of social activity carried out by cooperative banks supports local social initiatives by spending funds for social purposes. The expenses are referred to as corporate philanthropy, which has been gaining importance in recent years and has been the subject of numerous studies (Zhang, Chen and Mo, 2016; Christou, Hadjielias and Farmaki, 2019; Li et al., 2021). Despite the many available studies, the issue is still not fully explored and requires further research (Zhang, Chen and Mo, 2016). According to literature, corporate philanthropy consists of activities resulting from voluntary commitment to the good of others or to the common good by providing funds, goods, or services (Li et al., 2021). Therefore, the activities are perceived as a manifestation of altruism resulting from goodness, and are not aimed at obtaining additional benefits. However, studies available in literature suggest that activities related to social activity undertaken by enterprises are not only altruistic, but are also motivated by the desire to obtain tangible benefits (Ji, Tao and Deng, 2021). It is worth noting that the activities have an impact not only on the society and environment in which the company operates, but also on the organization itself that undertakes the activities (Chen and Lin, 2015).

In literature, one can find examples of research on the relationship between corporate philanthropy and effectiveness of companies; however, as has already been noted, results are not unequivocal. Some studies indicate that corporate philanthropy has a positive impact on companies' financial efficiency of companies (Su and Sauerwald, 2018), while other studies indicate that the relationship is negative or insignificant (Masulis and Reza, 2015). The discrepancies may result from a different approach to conducting research. Because cooperative banks are obliged to undertake social activities, it is worth considering the extent to which the activities affect their financial effectiveness and whether the interaction between business and social activities changes over time, as in the case of factors such as liquidity or bank asset growth, whose impact on bank efficiency is lagged (Alabbad and Schertler, 2022).

Profit maximization can be a primary motivation for corporate executives to engage in corporate philanthropy, in accordance with the perspective of enlightened self-interest. In the view, corporate philanthropy becomes part of the profit maximization equation by creating goodwill and enhancing the company's image and reputation (Baumol, 1970; Galaskiewicz, 1985; Stendardi, 1992; Shaw and Post, 1993; Abzug and Webb, 1996). It is expected that such actions will enhance the company's performance. Many CSR strategies suggest that company profitability can be a fundamental motivation for philanthropic activities (Gautier and Pache, 2015).

Accordingly, the following hypothesis is formulated:

H2: Financial efficiency in a given year is significantly dependent on the expenditure on social activity in preceding years.

3. RESEARCH METHODS

3.1. Research sample

Banks differ from each other not only in terms of organizational and legal forms, management methods, ownership, and capital structure but also in terms of business goals (Dilger, Konter and Voigt, 2017). However, increasingly all financial institutions attempt to combine strategic objectives related to maximizing shareholder value with corporate social responsibility. They focus on maximizing value for a larger and more diverse group of stakeholders representing different interests, such as environmental concerns, as well as markets and local communities. They are less inclined to pursue short-term profit maximization and instead prioritize maintaining a stable and sustainable level of profitability, which is a necessary condition for ensuring the bank's continuity, security, resources for further development, and simultaneous achievement of non-financial goals. To maintain comparability of banks, we selected cooperative banks whose level of spending on social activities during the years 2013–2020 was above the arithmetic average of the amount of expenditure on social activities in the studied group. In the way, the analyses included banks actively involved in social activities, and their level of expenditure was not classified as incidental or marginal. According to a state dated December 31, 2020, 70 banks met the above condition, they constituted nearly 13.21% of all cooperative banks operating in Poland and the share in total assets of whole sector reached 16,87% as of the date of the analysis. The analysis was limited to 2013–2020 due to the occurrence of emergencies in 2021–2022, such as the COVID-19 pandemic or Russia's aggression against Ukraine, which could significantly distort the results of the analysis.

Analyses were conducted using dynamic panel models (Arellano and Bond, 1991) to explain selected measures of financial efficiency of cooperative banks. It made it possible to determine the factors influencing efficiency of banks, taking into account the time shifts between expenditure on social activities and the resulting financial benefits, as well as the elimination of the causal effect, the occurrence of which could lead to erroneous conclusions (Leszczensky and Wolbring, 2022). Dynamic models were estimated using the Generalized Method of Moments (GMM), which enables the model parameters to be estimated directly from the moment conditions.

3.2. Dependent variables

Profitability of total assets was used as the main measure of the efficiency of cooperative banks, which made it possible to compare the results of cooperative banks considering the entire scope of their activities and to eliminate the effect related to the diversification of the structure and size of equity (Li et al., 2021). Returns on total assets were calculated as the ratio of net income to total assets in general (Ramzan, Amin and Abbas, 2021). Additionally, to verify durability of the results (proxy variable), the rate of return on equity (ROE) [%] was used, which was calculated as the quotient of the net financial result (net income) and bank equity (total equity) (Finger, Gavious and Manos, 2018). The inclusion of ROE as an additional measure of the effectiveness of a cooperative bank allows for the omission of the risk related to the bank's off-balance sheet activities, which may be included in the ROA (Nizam et al., 2019), as well as the recognition of the bank's financial security level, which is a derivative of its equity (Folorunsho Monsuru and Adetunji Abdulazeez, 2014).

3.3. Independent and moderating variables

Expenditure on corporate philanthropy (CP) was the key explanatory variable that was used in the model and it was the sum of expenditure of a cooperative bank over a period of one year on all kinds of bank subsidies for investments and social projects, the recipients of which are members of local communities (Idasz-Balina et al., 2020). Such an approach to spending on social activities

was included in research on the long-term effects of banks' social activities and to eliminate one-off donations for social purposes resulting from random events (Li et al., 2021). Thus, the natural logarithm of the sum of expenses of a cooperative bank on social activities during the calendar year (L_CP) was used as an independent variable. The use of such an approach made it possible to include in the research the factors related to the impact of the size of the cooperative bank on the value of funds allocated to social activities. Larger entities tend to be more active in taking up social activities than smaller entities.

The natural logarithm of the number of supported community initiatives within corporate philanthropy (L_NSI) is used as a proxy variable for social activity. The variable indicates the scope of social activity and its potential range in the local environment, which is particularly important for cooperative banks operating in local markets (Idasz-Balina et al., 2020).

Due to the nature of the research and the probability of delays in the impact of variables determining the social activity of cooperative banks on their financial efficiency, one-year ($t-1$) and two-year ($t-2$) delays were taken into account.

3.4. Control variables

In the study, control variables were used, which can impact the functioning of the bank and its financial efficiency.

Loan growth (L_G) leads to an increase in income and interest commissions in a bank, which translates into an increase in its efficiency with a simultaneous decrease in the total capital ratio that determines the level of the bank's financial security (Abedifar, Molyneux and Tarazi, 2018).

Deposit growth (D_G) also affects bank profitability and security. This is due to the fact that deposits are the main source of obtaining funds by banks, which then charge the risk on their own account, and the cost of obtaining them affects the level of interest costs that are the basis for determining the bank's financial efficiency (Nizam et al., 2019).

Total capital ratio (TCR) determines the level of financial security of a bank because the ratio shows whether the bank is able to cover the minimum capital requirement for credit, operational, and other risks with its own funds; the higher the value of the ratio, the greater the security of the bank's shareholders, which, as indicated by Paroush and Schreiber (2019), translates into a bank's financial efficiency, with a simultaneous negative correlation between the level of the capital ratio and ROA and ROE.

The non-performing loans (NPL) ratio measures a bank's exposure to the risk of loans and credits that are out of date as well as the quality of its borrowers. This ratio is particularly important for the level of a bank's financial efficiency because its low quality translates into a direct decrease in the level of financial efficiency and a decrease in the bank's financial security (Kil, Ciukaj and Chrzanowska, 2021).

The number of members of a cooperative bank (L_NBM) determines its ownership structure, which is the main mechanism of corporate governance (de Haan and Vlahu, 2016). However, research shows that a concentrated ownership structure may play a significant role in shaping financial results of economic entities. The ownership structure is particularly important in the case of cooperative banks, which, owing to their specific nature resulting from the cooperative nature of their activities, may significantly affect local markets and communities. Moreover, research indicates that ownership structure may have a significant impact on bank efficiency of banks (Huang, 2020).

Location of a bank (LOC) is also important for its ability to generate financial results (Degl'Innocenti, Matousek and Tzeremes, 2018). In the case of cooperative banks, which mainly operate in local markets, it was important to take into account the level of urbanization of the area in which they operate. Therefore, banks were grouped according to the area in which they operated, i.e. rural areas [value 1 assigned], rural-urban [value 2 assigned] and urban [value 3 assigned], in accordance with the Regulation of the Council of Ministers of November 14, 2007 on the introduction

of the Nomenclature of Territorial Units for Statistical Purposes (NTS) at the NTS-5 level of detail. The location of a bank (LOC) is also important for its ability to generate financial results. In the case of cooperative banks, which mainly operate in local markets, it is important to consider the level of urbanization of the area in which they operate. Therefore, banks were grouped according to the area in which they operated, that is, rural areas, rural–urban areas, and urban areas.

In addition to the above-mentioned variables, a variable related to the macroeconomic situation is also used. It reflects the conditions under which cooperative banks operated during the research period. The variable determined the growth of gross domestic product (GDP), which was included in the analyzes due to the fact that it is one of the most important external factors influencing the functioning of banks, and the so far conducted studies have shown that the activity of banks is sensitive to gross domestic product change (Dietrich and Wanzenried, 2014). Shi et al. (2021) also showed that GDP growth has a positive impact on banks' financial efficiency due to the increased demand of enterprises for external financing and the low risk of customer insolvency in good economic times.

Table 1 presents descriptive statistics for the study population, and Table 2 presents the Pearson linear correlation matrix between the analyzed variables. The results indicate validity of the selection of variables for assessing the impact of social activity on the efficiency of cooperative banks.

Table 1
Descriptive statistics

Variable	Mean	Median	Standard deviation	Minimum	Maximum
ROE (%)	7.220	7.140	2.520	0.980	15.500
ROA (%)	0.883	0.868	0.340	0.151	1.950
CP (PLN thousand)	79.900	56.000	67.200	13.900	494.000
NSI (number)	78.300	67.000	58.000	3.000	365.000
L_G (%)	4.310	2.100	7.290	−17.800	38.300
D_G (%)	6.600	5.770	8.470	−20.900	45.100
TCR (%)	16.500	15.200	4.330	10.100	37.500
NPL (%)	4.680	3.720	3.810	0.181	28.500
NBM (number)	2200	1750	1750	149	9760
GDP (%)	3.030	3.800	2.440	−2.500	5.400

Source: Author's calculation.

Table 2
Correlation matrix

	ROE	ROA	L_CP	L_NSI	L_G	D_G	TCR	NPL	L_NBM	LOC	GDP
ROE	1.0000										
ROA	0.7508***	1.0000									
L_CP	0.0674*	0.05439*	1.0000								
L_NSI	−0.0088	−0.1348***	0.4590***	1.0000							
L_G	0.0766**	0.0184	−0.0300	0.0038	1.0000						
D_G	−0.0159	−0.1065***	0.0003	0.0609**	0.5903***	1.0000					
TCR	−0.0684**	0.3174***	−0.2018***	−0.1210***	−0.0588*	−0.0322	1.0000				
NPL	−0.2529**	−0.2271***	0.1750***	0.0874**	−0.1154***	−0.0279	−0.1894***	1.0000			
L_NBM	−0.1131***	−0.2447***	0.2208***	0.3630***	−0.0286	−0.0091	−0.2270***	0.0582*	1.0000		
LOC	−0.1358***	−0.0461	0.1256***	0.1581***	−0.0294	−0.0182	−0.0077	0.0612*	0.2995**	1.0000	
GDP	0.0846**	0.0388	0.0065	0.0360	0.2493***	0.3742***	−0.0190	−0.0511	−0.0042	−0.0022	1.0000

Significance level at: * 10%, ** 5%, *** 1%.

Source: Author's calculation.

The analysis of the Pearson linear correlation coefficients (Schober, Boer and Schwarte, 2018) between financial efficiency and the explanatory variables adopted for the study showed that ROA and ROE were significantly correlated with L_CP, TCR, NPL, and L_NBM. Additionally, in the case of ROA, apart from the variables mentioned above, L_NSI and D_G were significant, and L_G, LOC, and GDP were important for ROE. It indicates that effectiveness of cooperative banks depends on many factors that strictly determine their activities in organizational, financial, and social areas. It is worth paying attention to the correlation between expenditures on social activities (L_CP) and other variables. The results indicated that the level of the expenses was strongly correlated with the bank's financial security level (TCR), asset quality (NPL), the number of bank members (L_NBM), and its location. The number of supported initiatives (L_NSI) was strongly correlated with the same factors as expenditure on social activities (L_CP); however, the change in deposits (D_G) was also significant. Therefore, it can be concluded that hypothesis 2 was confirmed.

3.5. Model specification

Preliminary data analysis made it possible to propose an empirical model that defines the impact of social activity on a bank's financial efficiency using the dynamic nature of the interactions between the elements. The model is expressed as follows:

$$ROA_{it} = \gamma ROA_{i,t-1} + \beta_1 L_CP_{i,t0} + \beta_2 L_CP_{i,t-1} + \beta_3 L_CP_{i,t-2} + \beta_4 L_G_{i,t0} + \beta_5 D_G_{i,t0} + \beta_6 TCR_{i,t0} + \beta_7 NPL_{i,t0} + \beta_8 L_NBM_{i,t0} + \beta_9 LOC_{i,t0} + \beta_{10} GDP_{i,t0} + \varepsilon_{i,t}$$

$$ROE_{it} = \gamma ROE_{i,t-1} + \beta_1 L_CP_{i,t0} + \beta_2 L_CP_{i,t-1} + \beta_3 L_CP_{i,t-2} + \beta_4 L_G_{i,t0} + \beta_5 D_G_{i,t0} + \beta_6 TCR_{i,t0} + \beta_7 NPL_{i,t0} + \beta_8 L_NBM_{i,t0} + \beta_9 LOC_{i,t0} + \beta_{10} GDP_{i,t0} + \varepsilon_{i,t}$$

To assess durability of the estimation results, two subsequent models were estimated, considering proxy variables.

$$ROA_{it} = \gamma ROA_{i,t-1} + \beta_1 L_NSI_{i,t0} + \beta_2 L_NSI_{i,t-1} + \beta_3 L_NSI_{i,t-2} + \beta_4 L_G_{i,t0} + \beta_5 D_G_{i,t0} + \beta_6 TCR_{i,t0} + \beta_7 NPL_{i,t0} + \beta_8 L_NBM_{i,t0} + \beta_9 LOC_{i,t0} + \beta_{10} GDP_{i,t0} + \varepsilon_{i,t}$$

$$ROE_{it} = \gamma ROE_{i,t-1} + \beta_1 L_NSI_{i,t0} + \beta_2 L_NSI_{i,t-1} + \beta_3 L_NSI_{i,t-2} + \beta_4 L_G_{i,t0} + \beta_5 D_G_{i,t0} + \beta_6 TCR_{i,t0} + \beta_7 NPL_{i,t0} + \beta_8 L_NBM_{i,t0} + \beta_9 LOC_{i,t0} + \beta_{10} GDP_{i,t0} + \varepsilon_{i,t}$$

where i denotes the next bank among all analyzed banks (N), t specifies the year of the analysis in the entire research period (T), $t0$ is the current period, $t-1$ data delay by one year and $t-2$ data delay by two years. Parameters γ and β represent the regression coefficient in the estimated function between the explanatory variables and the bank's efficiency level, and $\varepsilon_{i,t}$ denotes the remainder of the model.

4. EMPIRICAL MODELS ANALYSIS AND DISCUSSION

Tables 3 and 4 present the empirical model of the financial efficiency of cooperative banks measured with ROA, taking into account two variants of the variable defining the social activity of cooperative banks. The first model uses the level of expenditure on the bank's social activity (L_CP), taking into account the time shifts (Table 3), while in the second model, the number of social initiatives supported by the bank (L_NSI) was used as a measure of social activity (L_NSI), also considering the time shift between the bank's operation and its effects (Table 4).

Table 3
Impact of corporate philanthropy (CP) on banks' ROA

Variable	Coefficient	Standard error	p-value
ROA($t-1$)	0.19352	0.07821	0.01340**
L_CP(t_0)	0.01326	0.03810	0.72790
L_CP($t-1$)	0.01063	0.03229	0.74190
L_CP($t-2$)	0.05888	0.02659	0.02680**
L_G	0.00356	0.00231	0.12340
D_G	0.00004	0.00004	0.33500
TCR	0.02437	0.00544	<0.0001***
NPL	-0.01212	0.00482	0.01190**
L_NBM	-0.00173	0.01900	0.92730
LOC	-0.01106	0.03296	0.73730
GDP	0.00196	0.00218	0.36930

Significance level at: * 10%, ** 5%, *** 1%.

Statistical test for estimated model: Test for AR(1) errors: $z = -2,46302$ [0,0138], Test for AR(2) errors: $z = -1,47205$ [0,1410], Sargan over-identification test (18) = 177,924 [0,0000], Wald (joint) test: Chi-square (11) = 1378,14 [0,0000].

Source: Author's calculation.

Table 4
Impact of corporate philanthropy (NSI) on banks' ROA

Variable	Coefficient	Standard error	p-value
ROA($t-1$)	0.22682	0.07153	0.00150***
L_NSI(t_0)	0.00989	0.02602	0.70370
L_NSI($t-1$)	-0.01390	0.02147	0.51730
L_NSI($t-2$)	0.05559	0.02939	0.05860*
L_G	0.00276	0.00238	0.24610
D_G	0.00005	0.00004	0.29670
TCR	0.02397	0.00561	<0.0001***
NPL	-0.01085	0.00473	0.02190**
L_NBM	0.00367	0.02225	0.86890
LOC	-0.00988	0.03280	0.76330
GDP	0.00335	0.00206	0.10380

Significance level at: * 10%, ** 5%, *** 1%.

Statistical test for estimated model: Test for AR(1) errors: $z = -2,58948$ [0,0096], Test for AR(2) errors: $z = 1,36605$ [0,1719], Sargan over-identification test (18) = 160,217 [0,0000], Wald (joint) test: Chi-square (11) = 1465,27 [0,0000].

Source: Author's calculation.

Four variables were found to be significant in the first model. The first variable determines profitability of total assets of a cooperative bank from the previous year (ROA($t-1$)), the increase of which in the previous year positively contributed to increased efficiency in the current year, because banking activity is closely related to the bank's effectiveness and, in many cases, constitutes the basis for creating the equity of a cooperative bank necessary to develop lending and ensure its financial security. The second variable determines expenditure on social activities

of a cooperative bank from two years before the year of analysis ($L_CP(t-2)$). It means that the expenses incurred for social purposes by the examined cooperative banks two years earlier contributed to increased effectiveness in the current year. Therefore, it can be assumed that increasing spending on social activities by cooperative banks will contribute to a further increase in their financial efficiency, as measured by ROA, and the delay in the effect of the expenses was as long as two years. Thus, cooperative banks striving to increase profitability of total assets should pay attention to the level, scope, and continuity of their social activities. However, attention should be paid to the law of diminishing the efficiency of subsequent expenditures, which is associated with the need to exercise moderation to support subsequent social activities.

Moreover, the model includes a variable specifying the TCR level, the increase of which, in accordance with the estimated model, resulted in an increase in the bank's financial efficiency measured by ROA. It was due to the fact that increases TCR, on the one hand, indicated an increase in the bank's financial security, and at the same time was associated with an increase in its efficiency, which resulted from the fact that the bank had a stable capital base, thanks to which it could increase lending, which was the main source of its revenues. Therefore, in the case of cooperative banks, it is important to find a point at which the bank achieves a satisfactory level of effectiveness with an acceptable level of financial security. Another important variable included in the model determining NPL also had a direct and negative impact on ROA. It means that cooperative banks should limit their operating costs and credit risk, that is, factors directly affecting their net financial results and profitability of total assets. The record of the variable as a destimulant may indicate that cooperative banks should focus their activities more on granting high-quality loans and that they need to have a high-quality loan portfolio. It is also important that when using a proxy variable L_NSI to determine the impact of social activity on ROA, the obtained results indicate the significance of the number of social initiatives supported by the bank for two years earlier ($L_CP(t-2)$) and the same variables as in the case of the model for ROA estimated using L_CP , that is, TCR and NPL. Thus, it confirms the importance of social activity in shaping profitability of cooperative banks, and the impact shifted in time, as social activities undertaken in a given year resulted in an increase in ROA after two years.

Table 5 presents the model of efficiency of a cooperative bank expressed in return on equity (ROE), using the adopted set of control variables and expenditure on social activity (L_CP). The results showed the statistical significance of the five variables. The first variable was the ROE level from the year before the analysis period. The next variable concerned social activity expenditure two years before the analysis period, similar to the ROA model. The model also included a variable determining increased deposits, the impact of which on the level of ROE was positive, meaning that when a bank increased its deposit base, its asset profitability improved. It was due to the fact that cooperative banks, based on customer deposits obtained at low cost resulting from the low level of interest rates on the market, could use them to grant loans or invest in securities that generated income for the bank at a level exceeding their capital acquisition costs. It should be emphasized that increasing the deposit base without the bank's lending and investment activities enabling the use of collected deposits would lead to a decrease in the bank's efficiency by generating excessive costs associated with their acquisition. NPL was another significant variable in shaping the ROE. It indicates that lending activities by cooperative banks should be associated with limiting credit risk, which negatively affects ROE and ROA. The last variable in the model concerned the number of members of the cooperative bank (L_NBM), the increase in which contributed to the increase in ROE. It was due to the fact that a greater number of members of the cooperative bank contributed to the growth of the bank's capital, which could constitute the basis for the development of the bank's lending activity and improvement of its financial security by strengthening the bank's capital base. Thus, it allows banks to increase lending while maintaining their current level of capital requirements.

Table 5
Impact of corporate philanthropy (CP) on banks' ROE

Variable	Coefficient	Standard error	p-value
ROE(t-1)	0.18908	0.07841	0.01590**
L_CP(t0)	0.47376	0.34148	0.16530
L_CP(t-1)	-0.34633	0.30085	0.24970
L_CP(t-2)	0.67572	0.31691	0.03300**
L_G	0.01697	0.02031	0.40340
D_G	0.00088	0.00039	0.02450**
TCR	0.04310	0.03227	0.18160
NPL	-0.15313	0.04159	0.00020***
L_NBM	0.38278	0.16192	0.01810**
LOC	-0.43336	0.28830	0.13280
GDP	0.02867	0.02250	0.20250

Significance level at: * 10%, ** 5%, *** 1%.

Statistical test for estimated model: Test for AR(1) errors: $z = 2,62228$ [0,0087], Test for AR(2) errors: $z = -0,729455$ [0,4657], Sargan over-identification test (18) = 169,295 [0,0000], Wald (joint) test: Chi-square (11) = 1475,22 [0,0000].

Source: Author's calculation.

In the course of the study, the ROE model was also estimated with using the number of supported social initiatives (L_NSI) as a measure of the social activity of cooperative banks. The results of the model estimations are presented in Table 6. In the model, as in the case of the ROE model estimated with the use of L_CP, the following were significant: ROE level last year, increase in deposits (D_G), asset quality (NPL), and the number of bank members (L_NBM). It confirms the significance of the impact of the variables on the profitability of cooperative banks' equity. Additionally, the variable determining GDP, which had a positive impact on ROE, turned out to

Table 6
Impact of corporate philanthropy (NSI) on banks' ROE

Variable	Coefficient	Standard error	p-value
ROE(t-1)	0.23052	0.07140	0.00120***
L_NSI(t0)	0.17515	0.27575	0.52530
L_NSI(t-1)	-0.41896	0.20356	0.03960**
L_NSI(t-2)	0.91362	0.32953	0.00560***
L_G	0.01005	0.02027	0.62010
D_G	0.00085	0.00040	0.03120**
TCR	0.04618	0.03345	0.16740
NPL	-0.13760	0.03958	0.00050***
L_NBM	0.39007	0.18729	0.03730**
LOC	-0.40223	0.29300	0.16980
GDP	0.04627	0.02141	0.03060**

Significance level at: * 10%, ** 5%, *** 1%.

Statistical test for estimated model: Test for AR(1) errors: $z = -2,85184$ [0,0043], Test for AR(2) errors: $z = -0,374757$ [0,7078], Sargan over-identification test (18) = 169,295 [0,0000], Wald (joint) test: Chi-square (11) = 1540,58 [0,0000].

Source: Author's calculation.

be significant in the model. It means that the improvement in the economic situation contributed to an increase in the profitability of banks' equity. In periods of economic boom, the demand for external financing sources increases, especially in the sector of small and medium-sized enterprises, which constitute an important group of customers for cooperative banks. It translates into an increase in the volume of loans granted by banks, which, while maintaining an appropriate level of quality, contributes to an increase in its financial results. What is really important is that the model also included two variables concerning the social activity of cooperative banks, and as in the case of the previous models, their impact shifted over time. In the model, the number of supported social initiatives from two years ago ($L_NSI(t-2)$) and one year before the analysis period ($L_NSI(t-1)$) was significant, while the influence of $L_NSI(t-2)$ was positive for ROE, and $L_NSI(t-1)$ was negative. However, regression coefficients for $L_NSI(t-2)$ were more than twice as high as those for $L_NSI(t-1)$, indicating that the time shift between the social activities undertaken by cooperative banks was delayed.

The results indicate that financial institution aiming to improve their financial efficiency, in addition to conducting basic banking activities related to granting loans and accepting deposits, should support the social activities that are part of the cooperative profile of the banking sector. It is worth emphasizing that excessive increase in spending on social activities may have a weaker or even negative impact on the financial efficiency of cooperative banks due to the law of decreasing marginal efficiency, and the fact that in order to successfully carry out the activity, cooperative banks must primarily conduct basic banking activities, which significantly shapes the level of financial efficiency of cooperative banks. Therefore, an important element of the banks' activities should be to find a balance between the implementation of the social mission and the pursuit of increasing financial efficiency at an acceptable level of risk. Nevertheless, the study showed that the activity of cooperative banks in financial support for social activity in their local environment generally favors an increase in their financial efficiency, which indicates the desirability of further tightening relations and cooperation with local communities. Therefore, it was found that hypotheses 1 and 2 were confirmed. The results of the study are consistent with those of other studies on the factors determining financial efficiency of banks. In the developed proprietary models, the level of TCR appears to be very important, as its growth positively influences ROA in general. Similar results have been obtained in previous studies by Bouzgarraiu et al. (2018), Rumel and Waschniczek (2016) and Bertay et al. (2013). It confirms that the appropriate level and structure of a cooperative bank's capital are necessary elements for shaping the growth of its ROA. The study also indicated significance of NPL, the increase of which contributes to the decline in the ROA and ROE, which is also indicated by the research conducted by Petria et al. (2015). In the developed models, D_G was also significant as it had a positive effect on ROE growth. The direction of the relationship between the factors was also indicated by Rachdi (2013). To increase their profitability, banks must effectively use the accumulated funds. The number of bank members (L_NBM) also appears among the important explanatory variables in the models developed for the ROE. The increase in the variable contributed to the improvement of the ROE by increasing banks' equity, which formed the basis for conducting lending activities (Huang, 2020). Moreover, in the model for ROE, GDP turned out to be significant, as its increase resulted in an increase in ROE in the cooperative banks surveyed. As emphasized by Kuc and Teplý (2022), the relationship is caused by the relationship between enterprises' need for financial resources in the form of loans and the economic cycle. Thus, an improvement in the economic situation leads to an increase in the profitability of the capital of cooperative banks.

In the ROE and ROA models for the analyzed banks, the variables determining the social activity of cooperative banks (L_CP and L_NSI) also turned out to be of key importance. The results obtained are partially consistent with those of other studies on the impact of social activity on banks' financial efficiency (Orlitzky and Shen, 2013). Similar results were obtained by Djalilov et al. (2015), who pointed to the existence of a positive relationship between banks'

social activity and ROE and ROA. Nizam et al. (2019), Belasri et al. (2020), and Tran et al. (2020) also confirmed that the social activity of banks has a positive effect on the return on equity (ROE), return on total assets (ROA), bank's interest income (NII), and interest margin (NIM). Moreover, in the literature, one can find studies indicating the existence of a negative relationship between social activity and the effectiveness of banks (Oyewumi, Ogunmeru and Oboh, 2018) and studies indicating no such relationship (Masulis and Reza, 2015).

Our study introduced a new element to the discussion in the field of assessing the impact of social activity on the effectiveness of banks, which considers time shifts between expenditure on social activity and the resulting effects. This may partially explain the variation in the results obtained thus far by other researchers who have not conducted such analyses. Our study shows that it may be an important aspect in the context of managing financial institutions and assessing their financial effectiveness.

5. ROBUSTNESS ANALYSIS

To increase credibility of our conclusions, a robustness test was performed using stepwise regression for the generalized method of moments (GMM) (Dahir et al., 2019). It was to confirm the significance of the results obtained and eliminate the potential problem of endogeneity resulting from the degree of corporate philanthropy being conditioned by the financial results of a bank. Table 7 shows the estimation results. They confirmed the significance of all the variables that were important in the developed models determining the relationship between CP and CF.

Table 7
Robustness tests GMM step-wise regression

Variable	Model 1		Model 2		Model 3		Model 4	
	Coefficient	Significance level						
ROA(t-1)	0,42503	<0,0001***	0,45354	<0,0001***				
ROE(t-1)					0,2419	0,0001***	0,2677	<0,0001***
L_CP(t0)								
L_CP(t-1)								
L_CP(t-2)	0,05437	0,0006***			0,6337	0,0029***		
L_NSI(t0)								
L_NSI(t-1)								
L_NSI(t-2)			0,04757	0,0006***			0,4690	0,0154**
L_G								
D_G	-0,00625	0,0002***	-0,00643	0,0002***			-0,0263	0,0929*
TCR	0,01714	<0,0001***	0,01683	<0,0001***				
NPL	-0,01254	0,0016***	-0,01109	0,0027***	-0,1681	<0,0001***	-0,1530	<0,0001***
L_NBM					0,4256	0,0005***	0,4914	0,0001***
LOC								
GDP	0,01856	<0,0001***	0,01990	<0,0001***	0,0977	<0,0001***	0,1434	<0,0001***

Significance level at: * 10%, ** 5%, *** 1%.

Statistical test for estimated models: Model 1: Test for AR(1) errors: $z = 5,15632$ [0,0000], Test for AR(2) errors: $z = 0,743043$ [0,4575], Sargan over-identification test (19) = 165,366 [0,0000], Wald (joint) test: Chi-square (6) = 2395,65 [0,0000]; Model 2: Test for AR(1) errors: $z = -5,13587$ [0,0000], Test for AR(2) errors: $z = -0,788327$ [0,4305], Sargan over-identification test (19) = 163,782 [0,0000], Wald (joint) test: Chi-square (6) = 2732,23 [0,0000]; Model 3: Test for AR(1) errors: $z = -4,10823$ [0,0000], Test for AR(2) errors: $z = -0,69858$ [0,4848], Sargan over-identification test (19) = 166,749 [0,0000], Wald (joint) test: Chi-square (6) = 1495,31 [0,0000]; Model 4: Test for AR(1) errors: $z = -3,92027$ [0,0001], Test for AR(2) errors: $z = -0,468182$ [0,6397], Sargan over-identification test (19) = 166,39 [0,0000], Wald (joint) test: Chi-square (6) = 1538,24 [0,0000].

Source: Author's calculation.

in particular, the delayed impact of corporate philanthropy on the financial efficiency of cooperative banks yet also emphasized the importance of D_G , which was also significant for ROE in the performed robustness tests. Moreover, the GMM models indicate the significance of the dynamics of GDP, which occur in all the estimated models determining the financial efficiency of cooperative banks. The results indicate the accuracy of the applied methodological approach and durability of the obtained results.

6. CONCLUSIONS

Financial institutions, including banks try to fulfill their social mission by acting for the benefit of all their shareholders, undertaking tasks that other economic entities are not always interested in. The strength of the sector is often its individual approach to a client and its ability to build relationships. Therefore, in the era of sustainable development policies in global, national, or regional economies, our research can be a significant aspect that has not been analyzed before and can influence the shaping of, among others, a conscious sustainable development policy regarding the social activities of financial institutions. The study demonstrated the importance of social factors in shaping financial efficiency, which can be relevant for those managing financial institutions. Moreover, it indicates that in the case of expenses related to social activities, a common occurrence is a time shift associated with their occurrence of up to two years. Awareness of the time shift can lead to a more intentional construction of the bank's efficiency policy by the management, taking into account social activity, or the introduction of regulatory changes concerning cooperative banks in this regard. However, it should be emphasized that the probable excessive increase in spending on social activities can have a limiting impact on the financial efficiency of banks due to the law of decreasing effectiveness of subsequent financial expenditures. It is also important to note that corporate philanthropy is not the core banking activity and should not be treated as the basis for the functioning of financial institutions. Therefore, finding a good balance between the scope of social activities and the pursuit of increased financial efficiency with an acceptable level of risk should be an essential element of the activities of all financial institutions nowadays.

7. LIMITATIONS AND FUTURE RESEARCH DIRECTION

Although our study has shown its theoretical and practical significance, it has some limitations. The first is the limited scope of the study related to the geographic area covered.

As a result, the outcome of our study cannot be directly transferred to other regions; therefore, future research could focus on the impact of corporate philanthropy on the financial efficiency of financial institution, considering the conditions in different countries or regions. Another limitation concerns the narrowing of the analyses to the relationship between social activity and the effectiveness of cooperative banks, as shown in the literature. The activity also translates into other areas of the bank's activity and determines the impact of corporate philanthropy on such elements as the quality of management, the quality of customer relations, or liquidity or solvency of a bank, which could fill the gap in this respect. In addition, among the variables determining corporate philanthropy and financial performance, two measures were used to determine the level of spending on social activity (CP) and the number of supported initiatives (NSI), and two measures for cooperative bank financial performance (ROA, ROE) which, despite their frequent use by other researchers, have certain limitations. Therefore, future research could include an attempt to clarify the measures that allow for the measurement of corporate philanthropy in the financial sector or apply other methods of assessing financial performance. Our study also does not take into consideration the impact of financial crises, the COVID-19 pandemic or the

war in Ukraine on social activities undertaken by financial institutions, which could also be an interesting and valuable aspect for further consideration in the analyzed area.

8. AUTHOR CONTRIBUTIONS

Conceptualization: Marta Idasz-Balina; methodology: Marta Idasz-Balina, Rafał Balina; formal analysis: Marta Idasz-Balina, Rafał Balina; investigation: Marta Idasz-Balina, Rafał Balina; writing – original draft preparation: Marta Idasz-Balina, Rafał Balina; writing – review and editing: Marta Idasz-Balina, Rafał Balina, Adam Zajac, Krzysztof Smoleń; supervision: Marta Idasz-Balina, project administration: Rafał Balina

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