INCOME INEQUALITY AND THE LOCAL BANKING SYSTEM: A CASE STUDY BASED ON ITALIAN DATA

Carmelo Algeri *, Paola Brighi **, Stefano Cenni ***, Valeria Venturelli ****

* *Corresponding author,* Department of Management, University of Bologna, Bologna, Italy
Contact details: Department of Management, University of Bologna, Via Capo di Lucca 34, 40126 Bologna, Italy
** Department of Law "Cesare Beccaria", University of Milan, Milan, Italy
*** Department of Management, University of Bologna, Bologna, Italy
**** Marco Biagi Department of Economics, University of Modena and Reggio Emilia, Modena, Italy

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Abstract

Income inequality is one of the key indicators used to measure social and economic disparities (among households and businesses) in a given area. This study analyzes the impact of the local banking system on income inequality in the municipalities of an Italian region situated in the center-north of the country, a dynamic and economically prosperous area. To this end, it employs a dynamic panel data model, estimated using the system generalized method of moments (GMM) estimator, to address the issue of endogeneity and ensure unbiased inferences. The investigated region represents a significant case study, as its banking system has undergone profound changes. The results of this analysis, based on municipal-level data, suggest that an increase in credit provision tends to reduce income inequality, while the accumulation of wealth in the form of deposits exacerbates it. Furthermore, the physical presence of credit cooperative banks (CCBs) and their relationship lending approach emerge as key factors in mitigating inequality. The closure of bank branches, in fact, could heighten social disparities. In terms of economic policies, the study concludes that access to credit, along with a banking system based on a relationship-based model such as that of the CCBs, is effective in promoting inclusive territorial development.

Keywords: Income Inequality, Banking System, BCCs, Emilia-Romagna

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1. INTRODUCTION

Income inequalities represent one of the main indicators of social and economic disparities within a society. Since such inequalities affect various aspects of citizens' lives and the overall dynamics of the country, the issue has always been widely debated and has remained a matter of great importance on policymakers' agendas.

Banking strategies play a pivotal role in addressing income inequality. Financial inclusion — defined as improved access to financial products and services — promotes financial intermediation, which drives economic growth and reduces social disparities (Ozili et al., 2023). By ensuring access to financial services at the local level, individuals can enhance their quality of life, launch small businesses, and integrate into the formal economy. Banks that design financial products tailored to the needs of low-income groups foster the inclusion of disadvantaged populations, thereby contributing to a more equitable income distribution (Quaglio, 2023). In addition, the expansion and development of the banking system, particularly through increased credit provision, play a significant role in reducing income inequalities (Coccorese & Dell'Anno, 2024). Greater banking efficiency and higher financing volumes accelerate local economic growth, improving income, employment, and entrepreneurial opportunities, all of which positively impact income equality (Bernini & Brighi, 2018; Minetti et al., 2021; Coccorese & Shaffer, 2021). These benefits are particularly pronounced when lenders are small, geographically close to borrowers, or operate in a decentralized manner, allowing for stronger credit relationships. In such contexts, where the relationship lending model prevails, significant equity gains can be observed (Banfi & Pampurini, 2023). Lastly, competition and regulation within the banking sector also influence income distribution. Increased competition among banks tends to improve credit access for lower-income groups, thereby reducing income inequalities (Beck et al., 2007). Moreover, financial stability, achieved through prudent regulatory policies, helps mitigate the economic impact of financial crises, reducing the adverse effects of shocks on income distribution (Adrian & Shin, 2010; Pacelli et al., 2022).

Credit cooperative banks (CCBs) operate on the principle of mutuality, aligning the interests of the bank with those of the community (Fiordelisi et al., 2023). Their governance follows the "one person, one vote" rule. They must allocate at least 70% of their annual net profits to legal reserves and designate a portion of the annual net profits to mutual funds for the promotion and development of cooperation. Any portion of profits not allocated according to these guidelines, and not used for the revaluation of shares, assigned to other reserves, or distributed to members, must be dedicated to charitable or mutual purposes (Legislative Decree No. 385/1993[1]). CCBs specify their territorial area of competence in their statutes, and the municipalities within this area of competence must be geographically contiguous (Circular No. 285/2013 and amendments[2]).

CCBs maintain a strong connection with their local communities, providing financial services tailored to the needs of economically disadvantaged areas and contributing to a more equitable distribution of income. They often step in where larger banks have withdrawn, continuing to serve roles that have been progressively abandoned. Additionally, their strategic decisions tend to influence other nearby banks of the same type, generating spatially correlated effects (Algeri et al., 2022, 2023). CCBs have demonstrated their importance in the national and European banking landscape through the economic benefits they provide to the communities they serve. Their credit policies and focus on financial stability (Ayadi et al., 2010; Beck et al., 2013) have helped reduce the negative impacts of economic cycles and supported local economic development (Migliorelli, 2018; Nguyen, 2019; Agostino et al., 2023). Additionally, their mutualistic model has proven effective in promoting financial inclusion and addressing income inequalities (McKillop & Wilson, 2011). During the financial and sovereign debt crises, CCBs played a significant role by expanding their networks and maintaining lending activity, which contributed to reducing inequality in the municipalities they served (Peruzzi et al., 2023).

Over the past two decades, CCBs, along with the rest of the banking sector, have faced several significant challenges. First, the need to balance efficiency and competitiveness with local community focus has led to a 60% reduction in the number of CCBs due to mergers and restructuring (Love & Martínez Pería, 2015). On one hand, the process of mergers and acquisitions may increase efficiency; on the other hand, they can exacerbate the erosion of the cooperative model that traditionally supports small businesses and households (Coccorese & Ferri, 2020). Second, the rise of digital technologies and artificial intelligence (AI) has driven a shift from physical branches to online channels, often resulting in branch closures. This trend, particularly pronounced in wealthier areas, has heightened regional inequalities (Galardo et al., 2021; Torriero, 2023). CCBs have sought to address this by adopting digital tools while maintaining their relational and proximity-based service models to support local communities. Finally, the financial and sovereign debt crises tightened credit risk management, particularly for small banks reliant on relationship lending to serve small and medium-sized enterprises (SMEs) (Cotugno et al., 2013; Bolton et al., 2016). Stricter European Union (EU) regulations and enhanced supervisory controls have increased operational complexity, prompting many banks to centralize within banking groups to achieve economies of scale and scope (Pacelli et al., 2022).

This contribution aims to explore the relationship between structural and operational changes in the banking system — specifically, credit provision, deposit activity, and the growth rate of bank branches — and their impact on income inequality levels.

The empirical analysis focuses on the Emilia-Romagna region, an economically dynamic area with

[1] https://www.gazzettaufficiale.it/eli/id/1993/09/30/093G0428/sg

[2] Branches can be established in municipalities that are not included in the territorial competence area if specifically indicated in the bank's statute. In this case, the bank's territorial competence extends to the municipality where the branch is located and to the neighboring municipalities. For the opening of branches, the following conditions must be met: a) in the new municipality and the neighboring municipalities, the bank must have established a network of relationships with customers residing or operating there, and must have collected at least 500 memberships from new members; b) the bank must comply with mandatory prudential requirements on an individual basis; c) the organizational structure and internal control system of the bank and the cooperative banking group to which it belongs must be adequate, considering the risks associated with the different characteristics of the new areas of operation (Circular No. 285/2013 and amendments — https://shorturl.at/buhCN).

a highly diversified banking system, including large national and international banking groups, as well as local CCBs affiliated with the ICCREA Group (formerly *Istituto Centrale delle Casse Rurali ed Artigiane*) and Cassa Centrale Group, the two main cooperative banking groups in Italy, which act as parent organizations for affiliated CCBs.

Despite a nationwide decline in bank branches, the Emilia-Romagna region maintains extensive banking coverage. In 2023, 90% of municipalities had at least one branch, compared to the national average of 59%. Between 1999 and 2023, the number of branches in the region decreased from 69 to 49 per 100,000 inhabitants, still exceeding the national average decline, which fell from 48 to 35 (Bank of Italy, 2024). The investigated region is distinguished by its high added value and entrepreneurial dynamism. At the end of 2023, the region's household net wealth, excluding financial liabilities, reached €988 billion (€223,000 per capita), well above the national average of €177,000. Key sectors such as advanced mechanics, automotive, agri-food, fashion, and hospitality drive its economy, supported by strong research and development infrastructure, including prestigious universities and research centers. These factors foster innovation and attract investment, making this region a hub for talent and economic growth. However, significant internal inequalities persist. Urban and industrialized areas are more prosperous, while rural and mountainous zones often face marginalization. This contrast makes the Emilia-Romagna region an ideal case study for analyzing how financial institutions influence income inequalities across diverse geographic areas.

The structure of this paper is as follows. Section 2 reviews the main literature on the relationship between banking systems and income inequality. Section 3 presents the data sources and the econometric methodology employed in this study. Section 4 discusses the empirical results and their implications. Finally, Section 5 concludes with a summary of the findings, a discussion of policy implications, and suggestions for future research directions.

2. LITERATURE REVIEW

Income inequality has become a major issue worldwide, affecting both developed and developing countries and leading to extensive research into its causes and solutions. A key area of focus is the role of banks and the financial sector in shaping income distribution. As central intermediaries in the financial system, banks influence income inequality through their lending practices, the accessibility of financial services, and their impact on economic growth.

The theoretical relationship between banks and income inequality is complex and multifaceted. One perspective suggests that financial development, aided by banks, can reduce income inequality by expanding access to credit and financial services. According to Galor and Zeira (1993), when low-income individuals gain access to credit, they can invest in education and entrepreneurial ventures, resulting in higher incomes and a more equitable distribution of wealth. This view posits that banks can level the economic playing field by alleviating credit constraints faced by the poor.

Empirical evidence supports this perspective to some extent. Beck et al. (2007) conducted a cross-country analysis and discovered that financial development disproportionately benefits the poor by stimulating economic growth and enhancing access to financial services. Their findings indicate that countries with more developed banking sectors tend to exhibit lower levels of income inequality. Similarly, Clarke et al. (2006) found that financial intermediation developments are associated with reductions in income disparities, reinforcing the idea that banks can positively contribute to income distribution. Finally, Neaime and Gaysset (2018) demonstrate that when banks expand credit to underserved communities, income inequality tends to decrease.

Other theoretical frameworks and empirical studies suggest a more nuanced relationship. Greenwood and Jovanovic (1990) propose an inverted U-shaped relationship between financial development and income inequality. In the initial stages of financial development, the benefits may primarily accrue to the wealthy, who have better access to financial markets and the necessary collateral for loans, potentially leading to an increase in income inequality. As the financial system matures and banking services become more widespread, income inequality may begin to decline. Furthermore, de Haan and Sturm (2017) discuss how banks may favor wealthier clients due to lower risk profiles, potentially widening the income gap.

Credit market imperfections further complicate this relationship. Stiglitz and Weiss (1981) emphasize that information asymmetries between borrowers and lenders can result in credit rationing, where banks are reluctant to lend to individuals perceived as high-risk — often those with lower incomes and little collateral. This situation limits the ability of low-income individuals to invest in opportunities that could enhance their economic standing. Banerjee and Newman (1993) argue that such credit constraints perpetuate income inequality by preventing the poor from engaging in profitable investments and entrepreneurship. More recently, Delis et al. (2024) demonstrated that credit constraints faced by small business entrepreneurs can lead to significantly different future income trajectories compared to those who are not constrained. Their findings indicate that the Gini index decreases (indicating a tighter income distribution) for accepted applicants and increases (indicating a wider income distribution) for rejected applicants. These results support the idea of a negative relationship between finance and inequality, as proposed by Greenwood and Jovanovic (1990).

Access to credit remains a critical mechanism through which banks influence income inequality. Banks often enforce strict lending criteria and require substantial collateral, which many low-income individuals cannot provide. This exclusion from credit markets hampers their ability to invest in education, start businesses, or absorb financial shocks, thereby reinforcing existing income disparities. Beck and Demirgüç-Kunt (2008) stress that easing these credit constraints is essential for improving income distribution and promoting inclusive economic growth.

Financial inclusion initiatives aim to tackle these challenges by broadening access to banking services for underserved populations. Demirgüç-Kunt and Levine (2009) highlight that increasing the availability and usage of financial services can empower low-income individuals to save, invest, and

manage risks more effectively. Beck et al. (2015) discuss how leveraging technology can facilitate access to financial services in remote or underserved areas, potentially mitigating income inequality.

Targeted lending programs and support for SMEs can also help reduce income inequality. SMEs are vital for job creation and economic diversification, and banks can play a significant role by providing them with access to credit. Ayyagari et al. (2007) emphasize that supporting SMEs through tailored financial products can stimulate economic growth and offer employment opportunities, particularly for low-income individuals.

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Financial technology (FinTech) has emerged as a key driver of financial inclusion and socioeconomic development, leveraging technologies such as blockchain, AI, and big data to deliver financial services to underserved populations. Recognized as both a financial innovation and a tool for inclusivity, FinTech aligns with the United Nations Sustainable Development Goals (SDGs) by reducing poverty and inequality and promoting economic growth. The COVID-19 pandemic further accelerated the adoption of FinTech, with digital payments and mobile transfers playing a critical role in sustaining livelihoods during the crisis. However, FinTech also poses challenges, including risks to financial system stability, potential harm to marginalized groups, and the danger of digital exclusion. Unequal access to infrastructure and financial literacy, particularly among women, rural populations, and the elderly, exacerbates these concerns (Sant'Anna & Figueiredo, 2024).

Despite its potential, the relationship between specific FinTech innovations and financial inclusion remains inconclusive and warrants further investigation. On one hand, some studies suggest that advancements in digitalization are contributing to reduced income inequality, particularly in high-income countries (Demir et al., 2022; Cruz-Garcia & Peiró-Palomino, 2023). On the other hand, the literature emphasizes that reduced branch density exacerbates inequality in areas with limited credit alternatives. Physical branches play a crucial role in providing proximity and access to soft information, which significantly influences credit availability (Nguyen, 2019). While digital banking has made notable strides, the impact of branch closures is only partially offset by these advancements (Chakravarty, 2006; Petersen & Rajan, 2002). This underscores the persistent importance of traditional banking infrastructure in ensuring equitable financial access.

Recent studies affirm the importance of bank branches for credit provision to low-income households and small firms (Nguyen, 2019; Bonfim et al., 2021). Across various analyses, a consistent finding is that improved physical access to formal financial services enables households to stabilize consumption, make productivity-enhancing investments, and shield themselves from economic shocks. Evidence also suggests that bank branches contribute to reducing inequality, particularly in high-income regions (D'Onofrio et al., 2019; Valdebenito & Pino, 2022; Barra & D'Aniello, 2024). However, not all findings support this trend. Jauch and Watzka (2016) argue that while financial development can promote growth and investment, it may also intensify inequality through rent extraction and unequal access to resources. They underscore the necessity of redistributive policies to mitigate these adverse effects. Similarly, Altunbaş and Thornton (2019), using a quantile regression approach on data from 121 countries (1980–2015), find that financial development generally worsens income inequality. Their analysis reveals nuanced outcomes across income groups: it increases inequality in both high- and low-income countries but reduces it in upper-middle-income countries. Additionally, Fu et al. (2021) identify a U-shaped relationship between income inequality and financial development in a provincial analysis of China, indicating that inequality first decreases and then increases as financial development progresses. Lastly, Ni et al. (2022), employing a dynamic overlapping generations model, demonstrate that while financial openness enhances capital efficiency and market power through deregulation, it ultimately exacerbates income inequality.

The relationship between income inequality and banks is complex, shaped by various factors, including the rise of financial digitalization. While banks can play a pivotal role in reducing income inequality by expanding access to financial services and fostering economic participation, they can also exacerbate disparities if access remains unequal. Given the mixed and often contradictory findings in the literature on the impact of the banking system on income inequality, this study aims to contribute to the existing research by offering additional empirical evidence in this area.

This study explores the interplay between banking system dynamics — such as credit provision, deposit activity, and the reduction of branch networks — and income inequality, aiming to identify the conditions under which banking activities can either aggravate or alleviate income disparities. By deepening the understanding of these relationships, this research provides valuable insights to inform policies designed to promote a more inclusive financial system.

3. RESEARCH METHODOLOGY

The analysis of the relationship between the banking system and income inequality integrates data from multiple sources. Information on the structure of the banking system, including the number of branches, loans, and deposits by type of bank, was obtained from the Bank of Italy and Federcasse. Data on household and small business income conditions were sourced from the Ministry of Economy and Finance (MEF). Recognizing that income inequality is also shaped by external factors, such as the geographical features of the area and the civic engagement of its residents, additional data were drawn from the Italian National Institute of Statistics (ISTAT) for the former and the Institute for Environmental Protection and Research (*Instituto Superiore per la Protezione e la Ricerca Ambientale* — ISPRA) for the latter. The data were collected at

the municipal level, resulting in a dataset encompassing 330 municipalities in Emilia-Romagna for the period 2012–2021. The year 2012 was selected to begin the analysis after the debt crisis, while 2021 was chosen as the endpoint due to the availability of income data from the MEF for the most recent fiscal year, albeit with a one-year delay. Specifically, the fiscal conditions of citizens for 2021 were assessed by the Fiscal Agency in 2022 and made publicly available at the end of 2023.

This study aims to evaluate the impact of the banking system, particularly the extensive closure of bank branches over the past 15 years, on income inequality at the local level. To achieve this, the analysis utilizes a two-step generalized method of moments (GMM) model (Arellano & Bover, 1995; Blundell & Bond, 1998). To ensure valid and unbiased inferences while addressing the issue of endogeneity, a robust system GMM (SYS-GMM) estimator based on a forward orthogonal transformation is employed (ordinary least squares and fixed effects models often produce biased and inconsistent estimates in the presence of endogeneity). The equation model is as follows:

$$gini_{i,t} = \alpha + \beta gini_{i,t-1} + \tau\, \Delta branches_{CCBs\,i,t-1} + \varphi \Delta branches_{other\ banks\,i,t-1} + \zeta loans_{CCBs\,i,t-1} + \rho loans_{other\ banks\,i,t-1} + \varsigma deposits_{CCBs\,i,t-1} + \xi deposits_{other\ banks\,i,t-1} + \delta taxpayers_{i,t-1} + \theta \Delta population_{i,t-1} + \sigma civic\ propensity_{i,t-1} + k municipality\ size_{i,t-1} + (\nu_i + \varepsilon_{i,t}) \quad (1)$$

where, i represents the municipality and t denotes time, while ν_i and $\varepsilon_{i,t}$ are the two components of the error term.

The computation of the Gini coefficient involves analyzing the cumulative distribution of the income variable under study. By ordering the data in ascending order and calculating the cumulative share of the variable and the population, the Gini index captures the degree of deviation from perfect equality. This mathematical approach provides a concise and standardized way to assess inequality across different contexts and time periods.

The formula outlined below encapsulates this step-by-step computation, emphasizing its foundation in cumulative distributions and their relative disparities. Specifically, for an income variable (y) measured across (N) individuals, the data is arranged in ascending order. The proportion of y accumulated by the first i individuals (i = 1, 2, …, N) is then determined, along with the proportion of individuals for whom ($y \le y_i$). The following quantities are defined:

$$Y = \sum_{k=1}^{N} y_i\,;\ p_i = \frac{1}{Y}\sum_{k=1}^{i} y_i\,;\ q_i = \frac{i}{N} \quad (2)$$

where, $Y = \sum_{k=1}^{N} y_i$ represents the total sum of y; p_i represents the fraction of y accumulated up to class i; and q_i represents the fraction of individuals up to class i. Thus, the Gini coefficient index is expressed as:

$$gini = \left[1 - \sum_{i=1}^{N-1} (p_i - p_{i-1})(q_i - q_{i-1})\right] \quad (3)$$

Gini coefficient is a widely used measure of income or wealth inequality within a population. It quantifies the dispersion of a variable, such as income, among individuals or households. The coefficient ranges from 0, representing perfect equality (where everyone has the same share of the variable), to 1, representing maximum inequality (where one individual holds all the wealth or income).

Among the explanatory variables at the municipal level related to the banking sector, we consider the ratio between the volume of loans and the population as of December 31 of each year, differentiated by bank type ($loans_{CCBs}$ and $loans_{other\ banks}$), the ratio between the volume of deposits and the population as of December 31, also divided by bank type ($deposits_{CCBs}$ and $deposits_{other\ banks}$), and finally, the growth rate of branches, differentiated between CCB branches ($\Delta branches_{CCBs}$) and other bank branches ($\Delta branches_{other\ banks}$). These variables capture access to credit, savings capacity, and the physical presence of the bank, which are key factors for income distribution within a municipality, as they influence the economic opportunities and social mobility of individuals and families.

The control variables include: the ratio between the number of taxpayers and the population as of December 31 ($taxpayers$), the population growth rate ($\Delta population$), the percentage of waste collection separated as a proxy for civic sense at the municipal level ($civic\ propensity$), and finally, the natural logarithm of the municipality's area ($municipality\ size$). Factors such as the ratio between taxpayers and the population indicate the level of economic participation, while demographic growth affects a territory's ability to distribute resources and services fairly. Civic propensity, measured by waste separation, represents the degree of cooperation and social cohesion, elements that help reduce inequalities. Lastly, the geographic size of the municipality is essential for understanding the challenges in the fair distribution of services, with significant implications for access to economic opportunities. Overall, these variables explain the processes that generate or reduce inequalities.

4. RESULTS AND DISCUSSION

Tables 1 and 2 provide the descriptive statistics for the variables used in the empirical analysis, along with the correlation matrix.

Table 1. Descriptive statistics

Variable	*Mean*	*Std. dev.*	*Min*	*Max*
$gini$	0.378	0.030	0.287	0.570
$loans_{CCBs}$	2.346	3.370	0	23.248
$loans_{other\ banks}$	11.922	10.130	0	70.181
$deposits_{CCBs}$	2.394	3.600	0	22.848
$deposits_{other\ banks}$	13.551	8.790	0	81.679
$\Delta branches_{CCBs}$	-0.002	0.060	-0.693	0.693
$\Delta branches_{other\ banks}$	-0.042	0.130	-1.099	1.281
$taxpayers$	0.769	0.040	0.664	1.080
$\Delta population$	-58.028	150.13	-2.396	57
$civic\ propensity$	60.795	19.600	5.910	96.080
$municipality\ size$	3.948	0.720	1694	6.483

Note: The number of observations is 2,540 for all variables.
Source: Authors' elaboration based on Bank of Italy, MEF, and ISTAT data.

Table 2. Correlation matrix of the variables

Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
(1) gini	1										
(2) $loans_{CCBs}$	0.055*	1									
(3) $loans_{other\ banks}$	0.244*	0.018	1								
(4) $deposits_{CCBs}$	0.018*	0.899*	-0.034	1							
(5) $deposits_{other\ banks}$	0.297*	-0.079*	0.686*	-0.099*	1						
(6) $\Delta branches_{CCBs}$	-0.005*	-0.048*	-0.012	-0.049*	-0.001	1					
(7) $\Delta branches_{other\ banks}$	0.002*	-0.056*	-0.044*	-0.061*	-0.043*	0.087*	1				
(8) taxpayers	0.073*	-0.081*	-0.211*	-0.057*	0.050*	-0.013	0.028	1			
(9) $\Delta population$	-0.232*	-0.047*	-0.354*	-0.048*	-0.346*	-0.008	0.047*	-0.05*	1		
(10) civic propensity	-0.002*	-0.052*	0.259*	-0.026	0.206*	0.007	-0.090*	-0.429*	-0.052*	1	
(11) municipality size	0.035*	-0.045*	0.129*	-0.026	0.137*	0.012	0.003	0.326*	-0.392*	-0.206*	1

*Note: * denotes significance at the 5% level or lower.*
Source: Authors' elaboration.

On average, the Gini index for municipalities in Emilia-Romagna is 0.378, slightly lower than the national average of 0.387. This suggests that, at the regional level, income inequality is generally less pronounced compared to the national average. However, it is important to consider the internal variability within the region, represented by a standard deviation of 3%, which reflects significant differences between municipalities. The coefficient of variation, calculated as the ratio of the standard deviation to the mean, helps to better understand the relative dispersion compared to the regional average. With a value of approximately 7.9%, this indicator suggests that, while the average Gini index for the region is relatively stable, there are significant variations among municipalities, indicating that in some areas, inequalities are more pronounced.

Between 2012 and 2021, loans and deposits in relation to the population in the municipalities of Emilia-Romagna showed volatility, especially for CCBs. CCB loans saw a 2.7% increase in 2013, followed by a constant decline until 2019, with a reduction of -29.05%. In 2020, there was a strong recovery (+42.33%), and a moderate growth of 3.66% in 2021. Loans from other banks experienced continuous declines between 2013 and 2018, with a maximum drop of -5.74% in 2018. After a slight increase in 2019 (+1%), another decline followed in 2020 (-5%), with stability in 2021. The volatility in CCB loans can be attributed to their close connection with local economies. The initial increase in loans in 2013 reflected a post-crisis stabilization phase, during which CCBs continued to support the local economy, while traditional banks adopted a more cautious approach to lending. The subsequent contraction until 2019 could be the result of a weakening local economy and lower credit demand.

CCB deposits in relation to the population showed significant growth, with an increase of 62.65% in 2020 and a further rise of 8.40% in 2021. Prior to 2020, growth rates were steady, with an average of 7.5%. Finally, deposits from other banks showed more stable growth, peaking at 11.60% in 2019 and continuing to rise until 2021, when there was an increase of 4.95%.

Between 2012 and 2021, the number of bank branches in the municipalities of Emilia-Romagna showed a significant decline, particularly pronounced for other banks. The total number of branches decreased steadily, with more notable reductions in 2017 (-6.79%) and 2021 (-6.46%). CCB branches saw a small increase in 2014 (+1.64%), but then declined, with the largest drops in 2016 (-3.02%) and 2017 (-2.40%). For other banks, the decline was more pronounced, with continuous reductions from 2016 to 2021, and negative peaks in 2017 (-7.51%) and 2021 (-7.53%). The decrease in the number of bank branches highlights the impact of cost rationalization strategies in the banking sector, with CCBs showing greater initial resilience compared to other banks.

The correlation matrix reveals distinct relationships among the variables in the analysis, emphasizing the interplay between banking activity, socioeconomic factors, and demographics. It also underscores the differing impacts of the physical presence of CCBs and other banks on income inequality.

To analyze the impact of banking and control variables on income inequality levels, we estimated an empirical model aimed at understanding whether and to what extent these factors influence income distribution. The primary objective is to verify the existence of a significant correlation between banking activity and presence and income disparities, while also considering the effect of socioeconomic and demographic variables. Through this model, we seek to identify which banking factors (loan provision, deposit collection, and number of branches) and which control factors play a determining role in increasing or reducing income inequality among municipalities in Emilia-Romagna. Table 3 presents the results of the estimated model.

Table 3. Empirical model (SYS-GMM model)

Variable	*Coefficients*
$gini_{i,t-1}$	0.6899*** (0.011)
$loans_{CCBs_{i,t-1}}$	-0.0011*** (0.000)
$loans_{other\ banks_{i,t-1}}$	-0.0001*** (0.000)
$deposits_{CCBs_{i,t-1}}$	0.0013*** (0.000)
$deposits_{other\ banks_{i,t-1}}$	0.0005*** (0.000)
$\Delta branches_{CCBs_{i,t-1}}$	-0.0142*** (0.002)
$\Delta branches_{other\ banks_{i,t-1}}$	0.0048 (0.001)
$taxpayers_{i,t-1}$	-0.0610*** (0.013)
$\Delta population_{i,t-1}$	-0.0001*** (0.002)
$civic\ propensity_{i,t-1}$	-0.0174*** (0.000)
$municipality\ size_{i,t-1}$	-0.0015** (0.001)
N	1,250
AR(1)	0.0080
AR(2)	0.1840
Hansen	0.6116

*Note: Robust standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01. Annual dummies and the constant are included in the regression model but not reported. The number of instruments is less than half the number of groups.*
Source: Authors' elaboration based on Bank of Italy, MEF, and ISTAT data.

From Table 3, it emerges that a higher volume of loans relative to the population tends to reduce the income gap, while greater wealth accumulation increases the level of inequality in the municipalities of Emilia-Romagna, regardless of the type of bank. This indicates that greater banking development helps reduce income disparities, in line with the findings of Coccorese and Dell'Anno (2024).

Our analysis also highlights that a reduction (growth) in the number of CCB branches is associated with an increase (decrease) in income inequality in the municipalities of the region, confirming the role of CCBs in reducing income disparities at the local level. These results are consistent with the findings of Minetti et al. (2021), who emphasize that the closure or reduction of CCB branches increases economic inequality, as it limits access to financial services in the areas where these banks operate.

Considering the effects of the control variables, we observe that greater demographic and economic growth helps reduce the level of inequality, although the impact is nearly negligible in the case of the population growth rate. Additionally, greater civic sensitivity translates into higher social cohesion, while belonging to larger municipalities tends to reduce income inequality. Finally, the analysis highlights the persistence of inequality levels over time, in line with the findings reported by Coccorese and Dell'Anno (2024).

We can, therefore, conclude that: 1) a greater presence of the cooperative credit system in the local banking sector reduces income inequality; 2) greater territorial wealth, reflected by an increase in bank deposits, is indicative of higher inequality; 3) greater demographic and economic growth helps reduce inequality; 4) greater civic sensitivity promotes social cohesion, contributing to a reduction in income disparities; 5) in larger municipalities, inequalities tend to be lower.

5. CONCLUSION

This study underscores the crucial role of the local banking system, particularly CCBs, in addressing income inequality at the municipal level in the Italian region of Emilia-Romagna. This region provides an ideal case study for this analysis due to its dynamic economy, diverse banking system, and marked internal disparities between urban and rural areas.

This study highlights the important role of local banking institutions, particularly CCBs, in reducing income inequality in the communities where they operate. The empirical results show that greater access to credit and the physical presence of CCB branches are key elements in promoting a more equitable income distribution.

This is particularly evident in a country where despite significant advancements in the digitalization of payment services — illustrated by online transfers comprising 90% of total transfers in 2023 — only 13% of banks offered online financing options to businesses. The volume of bank loans granted entirely through digital channels remained limited, representing just 6% of loans to households and less than 1% of loans to businesses (Bank of Italy, 2024). These findings support the hypothesis of this research: physical bank branches, along with the close relationships between firms and banks in loan agreements, continue to play a crucial role.

While the study offers robust evidence on the relationship between banking systems and income inequality, it is limited by its focus on a single Italian region. Furthermore, the analysis is constrained to the period between 2012 and 2021, potentially overlooking more recent developments and trends. This timeframe also includes the pandemic crisis, which accelerated the adoption of digital payments but did not diminish the critical role of local banking in providing lending support to households and SMEs at the regional level. The study partially accounts for the effects of the COVID-19 shock by incorporating temporal variables in the model. However, a broader temporal scope is required to fully capture the pandemic's long-term impact. According to the World Health Organization (WHO), the COVID-19 pandemic in Italy lasted from January 30, 2020, to May 5, 2023, and its full implications are likely to become clearer as more comprehensive data for this period become available.

Future research could expand the scope by conducting comparative studies across different regions or countries to validate and generalize the results. Investigating the interplay between traditional banking models and digital platforms offers another promising avenue. Additionally, exploring the long-term socio-economic impacts of bank branch closures and the potential role of non-traditional financial institutions could further enhance our understanding of income inequality dynamics. By addressing these elements, this conclusion provides a comprehensive summary of the study while setting the stage for broader discussions and further investigations into the critical role of banking systems in fostering equitable development.

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