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THE DISTRIBUTIONAL IMPACT OF LOCAL BANKING.
EVIDENCE FROM THE FINANCIAL AND SOVEREIGN-DEBT CRISES

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The distributional impact of local banking. Evidence from the financial and sovereign-debt crises.

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Abstract

This paper investigates whether local cooperative banks mitigated income inequality in Italian municipalities after the two main crises that characterized the European landscape between 2008 and 2015, i.e. the financial and sovereign-debt crises. Estimation results reveal that, although in the post-crisis periods income inequality increased, this increase was lower in municipalities with at least one cooperative bank branch. The same result, that is a mitigation of income inequality, is not found for non-cooperative banks. Also the size of the cooperative banking system mattered after the crises: where cooperative banks extended more loans and collected more deposits income inequality was lower. The distributional impact of cooperative banks after the two crises was particularly relevant in small municipalities, and where the level of industrial and financial development was higher.

Keywords: Cooperative banking; income inequality; financial development; financial crisis; municipalities.
JEL codes: G21, O15, D63.

1 Introduction

During the last decades, due to the financial and sovereign-debt crises, and the recession following the COVID pandemic, growing income inequality and poverty within major advanced economies have become issues of primary relevance in the academic and policy debate (Piketty, 2015; Milanovic, 2022; The Economist, 2022). The literature has identified three main channels whereby economic crises may affect income distribution (Mussida and Parisi, 2020). First, by increasing interest rates,

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limiting credit availability and reducing financial flows across regions and countries, financial crises may cause the erosion of savings. Second, the austerity measures to be implemented after a crisis may limit income support and other welfare provisions, thus widening economic inequality and even pushing the poverty rate higher. Third, low aggregate demand may reduce incomes and real wages, thus promoting job losses and unemployment. Figure 1 shows the evolution of the Gini index in the country examined in this paper, i.e. Italy, between 2003 and 2019. As expected, income inequalities substantially increased after both the financial downturn, started in 2008, and the sovereign debt crisis, exploded in 2012.

There is wide evidence that well-functioning financial systems can foster economic growth and mitigate poverty and income inequality at the local level (King and Levine, 1993; Beck and Levine, 2004; Calcagnini et al., 2019; Ayyagari et al., 2020). By reducing asymmetric information, which is usually larger for the poor, financial intermediaries improve the allocation of funds towards this segment of the population with significant consequences on their educational levels and entrepreneurial opportunities (Guiso et al., 2004; Beck et al., 2010; D'Onofrio et al., 2019). Among financial institutions, local cooperative banks are the most efficient in producing such effects, at least in more advanced countries (Coccorese and Shaffer, 2021; Minetti et al., 2021). Because of the reduced size and capillary distribution in small municipalities, cooperative banks are the primary funding providers for households and SMEs. By relying on relationship lending and providing a wide set of financial and non-financial services, these banks are likely to create strong connections with the community where they operate, thereby reducing asymmetric information problems and improving financial inclusion (Angelini et al., 1998; Ferri et al., 2014; 2019). Perhaps even more relevant, cooperative banks pursue different goals from other financial institutions. First, their commitment to support local communities favors the reinvestment of a significant portion of their profits back into the territory. Second, anecdotal evidence shows that cooperative banks actively engage in the financing of disadvantaged borrowers and of small and social entrepreneurial activities. On the household side, they disproportionately fund mortgages to young couples and individuals with precarious jobs; on the firm side, cooperative banks participate largely in the public guarantee fund for SMEs, sustaining small entrepreneurial initiatives that could otherwise remain unfunded, such as women-led firms and social cooperatives (Minetti et al., 2021).

The aim of this paper is to contribute to this strand of research by investigating whether, due to their specific nature and orientation, cooperative banks can mitigate income inequality after a crisis period. To this end, we analyze Italian municipal data on income distribution and presence of cooperative banks during and after the two main crises that characterized the European landscape between 2008 and 2015, i.e. the financial and sovereign-debt crises. We exploit very detailed data coming from four main sources: (i) the Department of Finance of the Italian Ministry of Economics and Finance, from which we hand-collected and elaborated income data; (ii) the private statistical database of Federcasse, the Italian federation of cooperative banks, which provides municipal-level information about the distribution of cooperative bank branches, as well as data on the amount of extended loans and deposits; (iii) the Italian National Statistics Office (Istat) and (iv) the Statistical Bulletin of the Bank of Italy, from which we got conditioning information at the municipal level.

Estimation results indicate that, although income inequality increased after the two crises, this increase was lower in municipalities characterized by the presence of cooperative bank branches. More specifically, in municipalities with at least one cooperative bank branch, the Gini index after the financial crisis was 3.1% lower than in municipalities without branches of cooperative banks. This amounts to about 8% of the average Gini index in the sample. The mitigating effect of cooperative banks was even larger after the sovereign-debt crisis. In this period, Italian municipalities characterized by the presence of cooperative bank branches experienced a reduction of the Gini index of more than 8.5%, in comparison to municipalities without cooperative bank branches. This amounts to about 21% of the average Gini index in the sample. The same results do not hold when we consider other types of financial institutions, namely non-cooperative banks. This implies that it was not the level of banking development that mattered for the mitigation of income inequality after the two crises, but the specific nature and orientation of cooperative banks. Also the size of the cooperative banking system played a role in the post-crises periods. Where cooperative banks extended more loans and deposits income inequality after the two crises was lower.

The analysis then turns to investigate the channels through which cooperative banks can impact on income distribution after a crisis period. In particular, guided by the predictions of previous literature and by anecdotal evidence on the activities promoted by cooperative banks, we focus on some factors that may be affected by the cooperative banking system and that are likely to

shape income distribution at the municipal level: urbanization, industry structure (measured by the number of local productive units), and financial development (proxied by the amount of deposits and loans extended to firms and families). The results suggest that the distributional impact of cooperative banks after a crisis period is particularly significant in those municipalities that are small, and where the level of industrial and financial development is higher.

In providing this evidence, we contribute to two main strands of the current literature. First, we add to the literature on banking development and income inequality, and more specifically to the studies investigating the effect of local banks on income distribution. In particular, we complement the evidence provided by D'Onofrio et al. (2019), Minetti et al. (2021) and Coccorese and Dell'Anno (2022), which use Italian regional data to show that, in normal periods, local banking development is effective in mitigating income inequality. In this paper, by using more detailed private information about not only the presence of cooperative banks, but also the amount of deposits and loans extended in each municipality, we investigate the distributional effect of local banks after a crisis period. While the presence of bank branches may measure the availability of financial services in the municipality, bank deposits and loans may be considered proxies of financial inclusion and access to credit. Hence, the adoption of all these variables is very helpful to get some insights about the mechanisms driving the distributional impact of cooperative banks in a post-crisis period. Moreover, the use of municipal data allows us to capture cooperative banks' behavior, which usually has a very local impact and may not be observed at more aggregated levels of analysis. To the best of our knowledge, we are the first highlighting the ability of local banks to help the recovery after a crisis period through the mitigation of income inequality and poverty. Second, we contribute to the more general studies on the real effects of cooperative banks. More specifically, we contribute to Ferri et al. (2014; 2019), which indicate that local banks mitigated credit restrictions during the last financial crisis for firms operating in European regions. Moreover, we add to the work of Coccorese and Shaffer (2021), which show that cooperative banks are associated with greater local economic performance.

Investigating the distributional impact of cooperative banks is particularly relevant in the Italian context. As the stock market capitalization is still rather low, the Italian financial system is dominated by the banking sector and firms strongly rely on banks for external financing (Minetti

et al., 2021). Most importantly from our perspective, among banks, a crucial role is played by cooperative ones. As reported by Becchetti et al. (2016), in 2010, cooperative banks accounted for about one third of deposits, loans, and branches of the whole Italian banking system.

The remainder of the paper is organized as follows. Section 2 reviews the current literature on the finance-inequality nexus and the role played by the cooperative banking system. Section 3 presents the data and the methodology used to perform the empirical investigation. Section 4 discusses the main findings. Section 5 concludes.

2 Related literature

In order to provide a better understanding of the distributional impact of cooperative banks after a crisis period, in this section we briefly review the current literature on the finance-inequality nexus (2.1) and discuss the role of cooperative banks in the financial system both during normal and crisis times (2.2).

2.1 Financial development and income inequality

Financial markets and institutions perform critical functions in the economic systems. They reduce transaction costs and asymmetric information, and favor the hedging and sharing of risk, thus promoting an efficient allocation of financial resources (King and Levine 1993; Beck and Levine 2004). The theoretical literature has identified different channels through which well-functioning financial markets and intermediaries can mitigate income inequality. First, financial development, by improving financial inclusion, may allow low-income individuals to invest in education (Galor and Zeira, 1993; Aghion and Bolton, 1997; Galor and Moav, 2004). Second, by mitigating asymmetric information problems, banks may decrease collateral requirements and borrowing costs, thus promoting entrepreneurship and new firm creation (Banerjee and Newman, 1993). Third, the development of the financial system may alter the distribution of income through an increased labor demand by firms, which may benefit low-income employees (Beck et al., 2010).

The empirical literature has broadly tested these theoretical predictions. Using data for 49 developed and developing countries for the period 1947-1994, Li et al. (1998) provide evidence that

financial development significantly reduces income inequality. Clarke et al. (2006) further confirm this result by investigating the relationship between financial development and income inequality for a sample of 83 countries over the period 1960-1995. The authors find that inequality reduces when the efficiency of the financial system increases. By extending the time period until 2005 and analyzing 72 countries, Beck et al. (2007) show that banking development strongly decreases income inequality and disproportionately raises the income of the poorest quintile of the distribution. Recently, some studies have also performed country-level analyses, which allow to reduce the risk of omitted variables bias. Beck et al. (2010) report that the bank deregulation in the U.S. tightened the income distribution by increasing incomes in the lower tail. More closely related to our paper, D'Onofrio et al. (2019), by analyzing Italian provinces in 2001-2011, show that banking development mitigates income inequality in relatively advanced areas by affecting geographical mobility and population density. Similar results are found by Coccorese and Dell'Annno (2022), which examine the income distribution in Italian provinces in more recent years.

Among financial intermediaries, cooperative banks are found to be the most effective in alleviating income inequality in advanced countries (Minetti et al., 2021). In the following subsection, we discuss the specificity of these banks and we review the main empirical studies on the impact of cooperative banks on the real economy during normal and crisis periods.

2.2 The specificity of cooperative banks

Cooperative banks differ from other credit institutions under several dimensions (Ferri et al., 2014; Fiordelisi and Mare, 2014; Becchetti et al., 2016). First of all, their ownership is not transferrable, it is limited to individual equity shares, and it is redeemable only at the nominal value. Moreover, since cooperative banks are locally based and have close ties with the community they serve, cooperative banks' members are also the banks' main customers. Second, in terms of control and governance structure, the main characteristic of cooperative banks is the "one-member one-vote" rule, regardless of the amount of capital owned. This implies that members cannot accumulate votes by underwriting new shares. Finally, and most importantly from our perspective, cooperative banks aim to maximize their members' value, as well as the economic growth of the territory where they operate, by offering products and services along with the distribution of profits.

From a theoretical point of view, the goals and characteristics of cooperative banks may have some potential advantages. The small size and the local orientation of these banks should reduce informational asymmetries between lenders and borrowers (Petersen and Rajan, 1994; Berger and Udell, 1995). In fact, credit institutions taking part in the life of a community may develop relationships that could allow them to garner information that would be costly for outsiders. A bank operating in a small community, owned and/or managed by community members, may take advantage of this information in its lending activity, thus improving access to credit and reducing income inequality. Berger et al. (2004) confirm the existence of a comparative advantage of small banks in lending to informationally opaque borrowers. By engaging in relationship lending, small local banks accumulate proprietary information through contacts over time with the firm, its suppliers and customers, and its local community, by improving its access to credit. Some studies confirm this idea and find that large banks allocate a much lower portion of their assets to SME loans than do small banks and that the ratio of SME loans to assets declines after large banks are involved in M&As (Peek and Rosengren, 1998; Strahan and Weston, 1998). Using sectoral data, Cannari and Signorini (1997) suggest that the availability of credit in Italy is larger for cooperative banks' customers than for comparable pools of borrowers.

The consequences of cooperative banks presence in terms of economic growth and income distribution have been shown by Coccorese and Shaffer (2021) and Minetti et al. (2021). By focusing on the Italian context in the period 2001-2011, the two papers highlight a positive impact of cooperative banks on real economic outcomes, such as employment, firms' growth rates, income inequality and poverty. The aim of this paper is to contribute to this strand of literature by investigating whether cooperative banks can be more effective than other financial intermediaries in shaping income distribution and mitigate inequality and poverty after a crisis. The available evidence indicates that cooperative banks protected more their borrowers at the peek of the global financial crisis. Ferri et al. (2019) show that, because of their reliance to relationship lending and the use of soft information, local banks did not cut credit to their borrowers during the crisis, as instead done by other types of financial intermediaries. The intention to protect and sustain the community where they operate and their ability to reduce information asymmetries also in periods of high uncertainty, like a financial turmoil, make cooperative banks more likely to promote the recovery after a period of

crisis.

3 Data and empirical methodology

3.1 Dataset and measurement

The data used in the empirical analysis come from four main sources: (i) the Department of Finance of the Italian Ministry of Economics and Finance; (ii) the private statistical database of Federasse, the Italian federation of cooperative banks; (iii) the Italian National Statistics Office (Istat); and (iv) the Statistical Bulletin of the Bank of Italy. More specifically, we first hand-collected and elaborated data from the municipality-level database on tax revenue compiled by the Italian Ministry of Economics and Finance. Then, we got information about the presence of cooperative bank branches, the amount of bank loans and deposits in the Italian municipalities from Federcasse, and conditioning information from the Italian National Statistics Office and the Statistical Bulletin of the Bank of Italy (see Table 1, for the definition and the source of all variables). Since municipal-level data of income distribution were not available, we computed them starting from the income data. We downloaded from the Department of Finance website the spreadsheets on the distribution of taxable income for each of the 8056 Italian municipalities over the 2008-2015 period. For each municipality and each year, we had the frequency and the average income of 8 income classes.

Starting from this information we computed the indicators used in the inequality literature. First, we derived the Gini coefficient of income distribution from the Lorenz curve. The Gini coefficient is equal to 0 if everyone has the same income, and it is equal to 1 if a single individual receives the income of the entire municipality. Hence, larger values of the Gini indicator imply greater income inequality. Then, as alternative measure of income distribution, we examine the ratio between the incomes of those at the 90th percentile and those at the 10th percentile. Finally, we consider two inverse measures of poverty, given by the logarithm of incomes of those at the 10th and 25th percentiles.

Following the literature on local banking development and economic growth, we use different measures of local banking structure. First, to study the impact of the presence of local banks on income inequality, we use a dummy variable that takes the value of one if there is at least

one cooperative bank branch in the municipality, and zero otherwise (*Cooperative bank branches*). Then, in order to investigate whether the size of the cooperative banking system plays a role, we consider the amount of loans (*Cooperative bank loans*) and deposits (*Cooperative bank deposits*) of cooperative banks in the municipality. The same variables are also computed for non-cooperative banks. While the presence of cooperative and non-cooperative bank branches may measure the availability of financial services in the municipality, bank deposits and loans may be considered proxies of financial inclusion and credit availability. Hence, the adoption of all these variables may be useful to get some preliminary insights about the mechanisms driving the distributional impact of cooperative banks in a post-crisis period.

Finally, as conditioning information, we use a comprehensive set of municipal-level control variables. From the Istat database we drew information about the population size, the distribution of the population among different age classes, the number of productive units, and the number of tax payers. Moreover, from the Statistical Bulletin of the Bank of Italy, we got data on the municipal number of bank branches.

It is important to stress here that the use of municipal data, the most disaggregated level available from official sources, allows us to reveal patterns in the dynamics of income distribution potentially masked by greater aggregation. This issue is particularly relevant in analyzing cooperative banks, which, as discussed in the previous section, usually operate and produce effects at a very local level.

Table 1 reports the definitions and sources of the variables employed in the empirical analysis. Table 2 displays summary statistics. The figures reveal that the average income inequality, measured by the Gini index, is equal to 0.397. The table also shows that 33.1% of the Italian municipalities have at least one branch of a cooperative bank, that the average amount of loans at the municipal level from cooperative banks is 52 million euro, while the average amount of deposits is 39 million euro. In comparison to cooperative banks, other banks appear to be more present in the Italian territory, with 66% of Italian municipalities hosting at least one non-cooperative bank branch. Figure 2 displays a map of the Italian municipalities by the presence of cooperative bank branches (Figure 2a) and the value of the Gini coefficient (Figure 2b) in 2011. As can be noted, northern municipalities have both the highest presence of cooperative bank branches and the lowest value of

the Gini index.

3.2 Econometric specification

To estimate the impact of cooperative banks on income inequality after the financial and sovereign debt crises in Italian municipalities, we employ a difference-in-differences (DID) estimation technique. More specifically, our baseline model is as follows:

$$\begin{aligned} Y_{it} = \alpha_1 + \beta_1 Cooperative\_bank\_branches_{it} + \gamma_1 Post\_crisis_t \\ + \delta_1 Cooperative\_bank\_branches_{it} \times Post\_crisis_t + X_{it} + \mu_i + \mu_t + \epsilon_{it} \end{aligned} \tag{1}$$

where Y_{it} is the Gini coefficient in municipality i at time t; $Cooperative\_bank\_branches_{it}$ is a dummy variable equal to one if there is at least one cooperative bank branch in municipality i at time t, and zero otherwise; $Post\_crisis_t$ is a dummy variable equal to one in the two years following the financial and sovereign debt crises (i.e. in 2010-2011 and 2014-2015), and zero otherwise (2008-2009 and 2012-2013); X_{it} is the vector of municipal level control variables; μ_i and μ_t are municipality and time fixed effects; ϵ_{it} is the error term. In additional regressions, we also consider the impact of non-cooperative banks on income inequality after the two crises by adding the dummy variable $Other\_bank\_branches_{it}$, that is equal to one if there is at least one non-cooperative bank branch in the municipality, and zero otherwise, and the interaction term $Other\_bank\_branches_{it} \times Post\_crisis_t$.

Figure 3 shows the evolution of the growth rate of GDP in Italy between 2003 and 2019. As can be noted, in the years of the two crises, i.e. 2008-2009 and 2012-2013, the growth rate was strongly negative. On the contrary, in the post-crisis periods, the GDP was characterized by a positive, albeit low, rate of growth.

4 Results

4.1 Local banks and income inequality after the crises

The baseline results on the distributional impact of cooperative banks in the aftermath of the financial and sovereign-debt crises are presented in Table 3. In Panel A, we focus on the financial crisis; in Panel B, we look at the sovereign-debt crisis. The results in column (1) reveal a negative relationship between the presence of cooperative bank branches in the municipality and the Gini index after the financial crisis. The coefficient of the interaction term (*Cooperative bank branches* × *Post-crisis*) is negative and statistically significant and suggests that in those municipalities with at least one cooperative bank branch, the Gini index after the financial crisis was almost 3.1% lower than in municipalities without branches of cooperative banks. This amounts to about 8% of the average Gini index in the sample. By contrast, the same relationship is not found when we focus on the presence of other (non-cooperative) banks (column 2). In this case, the coefficient of the interaction term is negative but not statistically significant at conventional levels. These results are confirmed when we consider both the presence of cooperative and other bank branches (column 3). Also in this case, the existence of at least one cooperative bank branch in the municipality is negatively associated with the Gini index after the financial crisis, while the effect produced by other banks remains non-significant. Regarding the role played by cooperative banks after the sovereign-debt crisis, estimation results are consistent with the ones on the financial downturn. As shown in columns (4) and (6), the presence of cooperative bank branches in the municipality is negatively associated with the level of income inequality after the crisis. The coefficient of the interaction term is negative and statistically significant and indicates that Italian municipalities characterized by the presence of cooperative bank branches experienced a reduction of the Gini index of more than 8.5%, in comparison to municipalities without cooperative bank branches. This amounts to about 21% of the average Gini index in the sample. On the contrary, when we consider other types of banks, regression coefficients reveal a slightly contradictory finding. The coefficient of the interaction term is negative and statistically significant when other banks are considered alone (column 4), but it turns out to be non-significant at conventional levels when included together with the cooperative bank branches dummy (column 6).

In Table 4, we try to understand whether, in addition to the presence of cooperative banks, also the size of the cooperative banking system at the municipal level matters for income distribution. Considering different measures of the cooperative banking system may allow us to get some preliminary insights about the mechanisms behind the distributional impact of cooperative banks. In fact, while the presence of cooperative bank branches may measure the availability of financial services in the municipality, the amount of deposits and loans extended to households and firms may be considered proxies of financial inclusion and access to credit, respectively. Hence, in this table, we replace the dummy *Cooperative bank branches* with two continuous variables: *Cooperative bank loans* and *Cooperative bank deposits*. In Panel A we report the results for the financial crisis, while in Panel B the focus is on the sovereign-debt crisis. As shown in columns (1)-(3), the amount of loans granted by cooperative banks in the municipality is negatively associated with the Gini index in the post-crisis period. The interaction term (*Cooperative bank loans* $\times$ *Post-crisis*) is negative and statistically significant. By contrast, the amount of loans extended by other (non-cooperative) banks is positively and significantly associated with our measure of income inequality after the financial downturn. The result is more imprecise when we measure the size of the cooperative banking system through the amount of deposits (columns 4-6). In this case, cooperative banks appear to significantly mitigate income inequality after the crisis only when we include in the regression both the amount of deposits of cooperative and other banks (column 6). Concerning the sovereign-debt crisis, the results reported in columns (7)-(12) suggest that the size of the cooperative banking system is negatively associated with the Gini index at the municipal level in the post-crisis period. This finding holds regardless of the variable used to measure the size of cooperative banks, i.e. *Cooperative bank loans* and *Cooperative bank deposits*. By contrast, only the amount of deposits of other banks appears to be negatively correlated with the level of income inequality after the sovereign debt crisis (columns 11-12).

Overall, these results point out a relevant distributional impact of cooperative banks in the aftermath of the financial and sovereign-debt crises. Both the presence of cooperative bank branches, and the amount of deposits and loans extended to households and firms are negatively associated with the Gini index in the post-crisis periods. Hence, by increasing the availability of financial services and credit, and by improving the level of financial inclusion in the territories where they

operate, cooperative banks can help the recovery after a period of crisis. As the same effect is not produced by other financial institutions, it appears that it is not the overall level of banking development that matters for the mitigation of income inequality after a crisis, but the specific nature and orientation of cooperative banks.

4.1.1 Other measurements

In Table 5, we estimate the distributional impact of cooperative banks after the two crises on a set of alternative measures. In Panel A, we consider the ratio between the incomes of those at the 90th percentile and those at the 10th percentile. The results are consistent with the ones provided for the Gini index: the presence of cooperative banks in the municipality is negatively associated with this alternative measure of income inequality after both crises. In addition, also the existence of other bank branches in the territory appears to be negatively associated with the dependent variable after the financial downturn and the sovereign-debt crisis. Then, in Panels B and C we estimate the impact of cooperative and other banks on the level of poverty in the municipality by looking at the logarithm of income of those at the 10th and 25th percentiles. Estimation results indicate that the presence of cooperative banks is positively associated with the income of those at the 25th percentile after the sovereign-debt crisis. By contrast, there is not any significant effect on the level of poverty after the financial crisis, or on the income of those at the 10th percentile. Regarding the distributional impact of other (non-cooperative) banks, the results reported in column (6) highlight that the presence of at least one non-cooperative bank branch is negatively associated with the income of those at the 10th percentile after the financial crisis. These findings suggest that, while non-cooperative banks are positively associated with our measures of poverty, the mitigation of income inequality by cooperative banks in the aftermath of the crises (especially the sovereign-debt one) was due to a slight increase in the level of income of the poor.

4.2 Heterogeneities

In this section, we aim at providing additional insights about the distributional impact of cooperative banks in a post-crisis period. In particular, guided by the predictions of previous studies and by the anecdotal evidence on the activities promoted by cooperative banks in Italy, we focus on three

main factors that may shape the relationship between local banks and income inequality: the level of urbanization of the municipality (subsection 4.2.1); the industry structure, proxied by the number of active productive units located in the municipality (subsection 4.2.2); the level of financial development, measured through the amounts of deposits and loans extended to families and firms at the municipal level (subsection 4.2.3).

4.2.1 Urbanization

Federcasse, the Italian federation of cooperative banks stresses that cooperative banks play a relevant role in reducing the depopulation of local communities and strongly support financial inclusion in small municipalities. In the North of Italy, Banca della Marca fostered the development of local communities and tried to contrast the depopulation of small municipalities through the program "Social Start". In the South of the country, since 2003, some cooperative banks have promoted the initiative "Laboratorio Sud", aimed at enhancing job creation and reducing the migration from remote southern areas.

The economic literature has predicted that the level of urbanization has a significant impact on income inequality. In particular, Baum-Snow and Pavan (2013) and Behrens and Robert-Nicoud (2014) suggest that a more widespread urbanization and a lower concentration in big cities reduce income inequality. By generating productivity improvements through agglomeration economies, large cities promote segmentation and the selection of highly productive entrepreneurs, with adverse consequences on the income of less efficient business owners.

Based on these arguments, in Table 6 we estimate the distributional impact of cooperative banks after the financial and sovereign-debt crises by distinguishing small (less than 5,000 inhabitants) medium (more than 5,000 and less than 15,000 inhabitants), and large (more than 15,000 inhabitants) municipalities. Panel A reports the results for the financial downturn. Panel B focuses on the sovereign-debt crisis. Estimation results indicate that the presence of at least one cooperative bank branch is negatively associated with the Gini index after both the financial and sovereign-debt crises, especially in small municipalities (Panels A and B, columns 1-2). Here, the presence of at least one cooperative bank branch reduced the Gini index of about 4.7% and 12.8% after the financial and sovereign-debt crises, respectively. By contrast, the presence of other banks, albeit

negatively associated with the Gini index after the two crises in small municipalities, is found to be positively associated with the level of income inequality after the financial crisis in medium municipalities (Panel A, column 4).

4.2.2 Industry structure

As highlighted by the literature, the industry structure is a relevant channel through which financial development can affect income inequality (Banerjee and Newman, 1993; Beck et al., 2010). In particular, the creation of new businesses and the survival of incumbent firms are likely to have positive distributional effects through the creation of job opportunities. Anecdotal evidence suggests that Italian cooperative banks are particularly active in promoting new entrepreneurial initiatives, especially the ones led by young and female entrepreneurs. For example, since 2006, the cooperative bank of Rome has promoted the microcredit activity "Fondo Futuro" with the objective of fostering entrepreneurial initiatives. Moreover, anecdotal evidence also suggests that cooperative banks help support the growth of incumbent businesses. For instance, the cooperative bank of San Marco dei Cavoti e del Sannio made available funds to support small and medium-sized enterprises in temporary difficulty (Minetti et al., 2021).

In order to test the relevance of this channel, in Table 7, we investigate the distributional impact of cooperative banks by classifying Italian municipalities on the basis of the number of productive units located in the territory. More specifically, in columns (1)-(2) and (5)-(6), we run our baseline regressions on the subsample of municipalities with a number of productive units lower than the sample median; in columns (3)-(4) and (7)-(8), we instead focus on those municipalities with a number of firms higher than the median value of the sample. Estimation results indicate that the presence of cooperative banks is negatively associated with the Gini index in those municipalities where the level of industrial development is high and only after the sovereign-debt crisis (columns 7-8). In this case, the presence of at least one cooperative bank branch is associated with a reduction on the Gini index of about 10.1%. The interaction term is instead non-statistically significant at conventional levels when the focus is on the financial downturn, regardless of the industry structure of the municipality.

4.2.3 Financial development

Recent papers have shown that lending volumes and deposits can play an important role in the evolution of income distribution. Delis et al. (2019) find that banks' lending decisions can trigger a polarization of borrowers' income, exacerbating income inequality. In particular, credit rationed individuals experience a progressive deterioration in their income while individuals who are granted loans experience an upward income trajectory. Moreover, Beck et al. (2007) argue that financial inclusion and financial access are central elements in the estimation of income inequality. Where financial services are more easily accessible, financial development reduces income inequality.

Based on these arguments, in Table 8 we classify Italian municipalities on the basis of the amount of bank deposits and loans extended to households and firms. In particular, in columns (1)-(2) and (5)-(6), we run our baseline regression on the subsamples of municipalities with an amount of deposits (Panel A) and loans (Panel B) lower than the median value of the sample; in columns (3)-(4) and (7)-(8), we instead focus on those municipalities with an amount of of deposits (Panel A) and loans (Panel B) higher than the sample median. As discussed in the previous sections, while the amount of bank deposits can be interpreted as a measure of financial inclusion, the amount of loans extend to firms and households can be considered a measure of credit availability at the municipal level. Estimation results indicate that the presence of cooperative banks is negatively associated with the Gini index only in those municipalities characterized by a high level of bank deposits. Here, the presence of at least on cooperative bank branch is associated with a reduction of the Gini index of about 3.1% and 5.8% after the financial and sovereign-debt crises, respectively.

5 Conclusions

In this paper we investigated whether local cooperative banks mitigated income inequality in Italian municipalities after the two main crises that characterized the European landscape between 2008 and 2015, i.e. the financial and sovereign-debt crises. Estimation results indicated that, although in the post-crisis periods income inequality increased, this increase was lower in municipalities characterized by the presence of cooperative bank branches. In particular, in municipalities where there was at least one cooperative bank branch, the Gini index after the financial and sovereign-debt

crises was, respectively 3.1% and 8.5% lower than in municipalities without branches of cooperative banks. The same result, that is a mitigation of income inequality, was not found for non-cooperative banks. Also the size of the cooperative banking system mattered after the crises: where cooperative banks extended more loans and deposits income inequality was lower.

The analysis then turned to investigate the channels through which cooperative banks can impact on income distribution after a crisis period. In particular, guided by the predictions of previous literature and by anecdotal evidence on the activities promoted by cooperative banks, we focused on some factors that may be affected by the cooperative banking system and that are likely to shape income distribution at the municipal level: urbanization, industry structure (measured by the number of local productive units), and financial development (proxied by the amount of deposits and loans extended to families and firms). The results suggested that cooperative banks were particularly effective in mitigating income inequality after the two crises in small municipalities, and where the level of industrial and financial development was higher.

Our findings have important policy implications. First, policymakers should recognize the specificity of cooperative banks while promoting banking regulation and supervision. The current approach, which neglects the role played by banking business models, might not be suitable for cooperative banks and could weaken their ability to alleviate income inequalities in local communities, especially after a crisis. Second, since the distributional impact of cooperative banks strongly depends on their specific nature and orientation, it is crucial to protect them from adopting a more commercial, profit-oriented approach. Finally, our results reveal the need to prevent the closure of cooperative bank branches in small municipalities, that is where local banks can produce the most significant effects.

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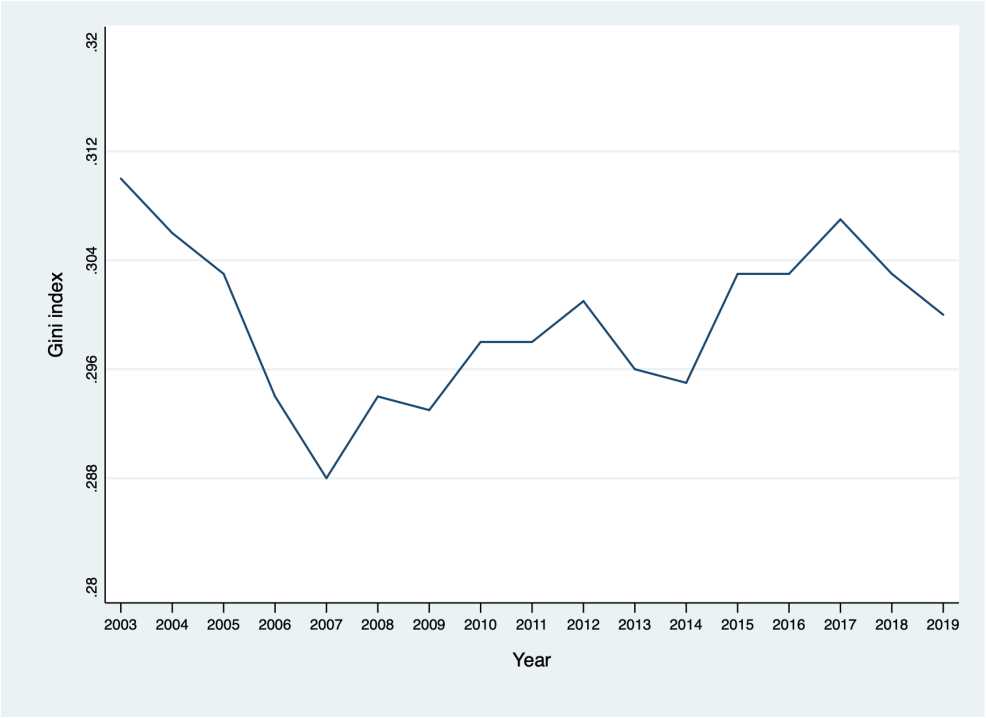
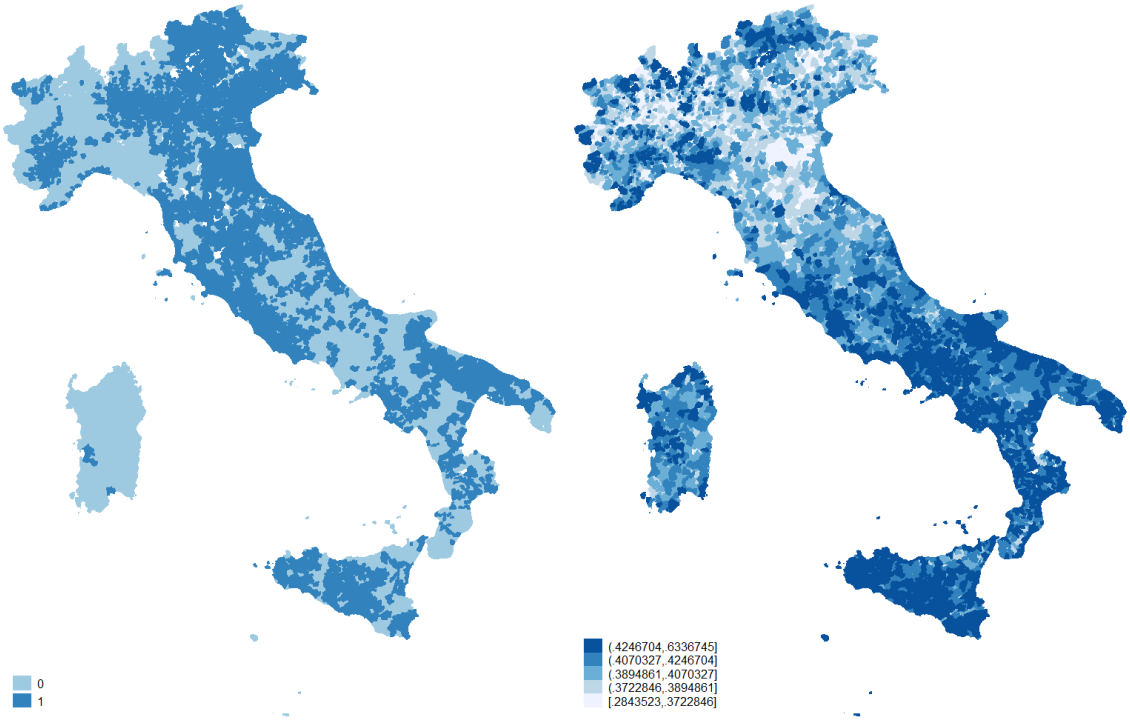
Tables and Figures

Figure 1
Income inequality in Italy



Notes: The figure reports the evolution of the Gini coefficient in Italy for the years 2003-2019. Source: ISTAT EU-SILC.

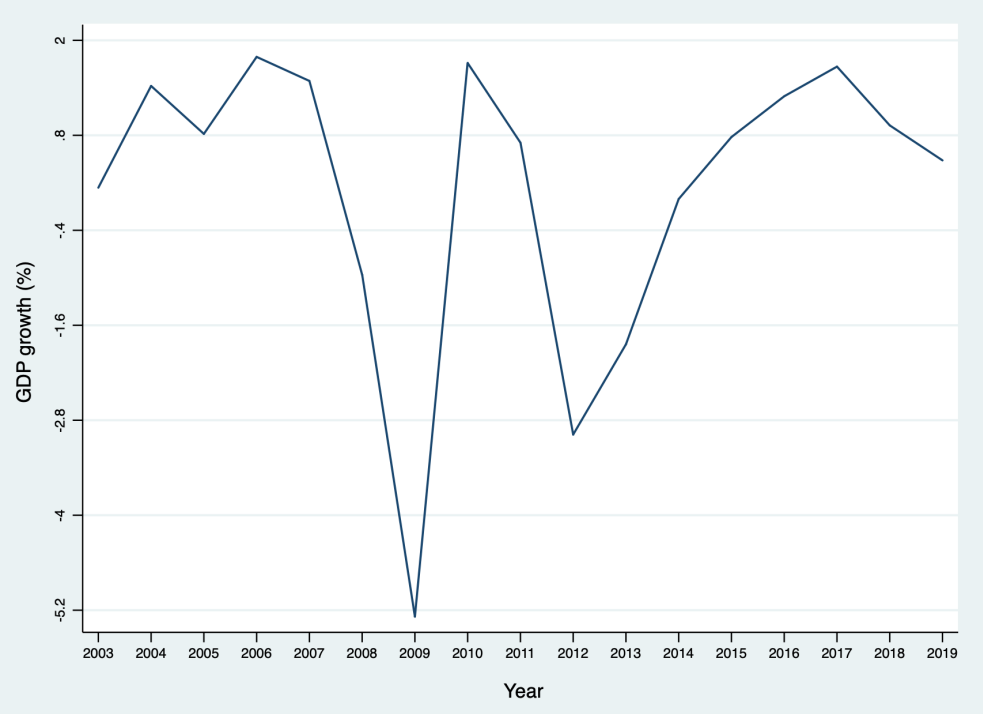
Figure 2
Cooperative banks and income inequality across Italian municipalities



(a) Cooperative bank branches (b) Gini coefficient

Notes: The maps show the presence of cooperative bank branches and the Gini coefficient (classified in quintiles) in 2011 in Italian municipalities. Source: our calculations based on data from Federcasse and the Department of Finance of the Italian Ministry of Economics and Finance.

Figure 3
Growth rate of GDP in Italy



Notes: The figure reports the growth rate of GDP in Italy for the years 2003-2019. Source: World Bank.

Table 1
Variable definitions

Variable	Description and source
Dependent variables:	
Gini index	Gini index at the municipal level, computed starting from income data (MEF).
Ratio of the 90th and 10th percentiles of income	Ratio between the income at the 90th and 10th percentiles of the distribution (MEF).
Income at the 10th percentile	Income at the 10th percentile of the distribution (MEF).
Income at the 25th percentile	Income at the 25th percentile of the distribution (MEF).
Independent variables:	
Cooperative bank branches	Dummy variable equal to one if there is at least one cooperative bank branch in the municipality, and zero otherwise (Federcasse).
Other bank branches	Dummy variable equal to one if there is at least one non-cooperative bank branch in the municipality, and zero otherwise (Federcasse).
Cooperative bank deposits	Deposits with cooperative banks in the municipality, in logarithm (Federcasse).
Cooperative bank loans	Loans granted by cooperative banks in the municipality, in logarithm (Federcasse).
Other bank deposits	Deposits with non-cooperative banks in the municipality, in logarithm (Federcasse).
Other bank loans	Loans granted by non-cooperative banks in the municipality, in logarithm (Federcasse).
Post-crisis	Dummy variable equal to one in the years 2010-2011 (for the financial crisis) and 2014-2015 (for the sovereign crisis), and zero otherwise (2008-2009 and 2012-2013).
Control variables:	
Population (log)	Resident population in the municipality, in logarithm (ISTAT).
Productive units (log)	Local productive units in the municipality, in logarithm (ISTAT).
Bank branches per capita	Number of bank branches in the municipality, normalized by the population (Bank of Italy).
Share population 0-24y	Share of population with 0-24 years in the municipality (ISTAT).
Share population 25-44y	Share of population with 25-44 years in the municipality (ISTAT).
Share population 45-64y	Share of population with 45-64 years in the municipality (ISTAT).
Share of tax payers	Number of tax payers in the municipality, normalized by the population. (ISTAT)

Table 2
Summary statistics

	Observations	Mean	Std. Dev.	Min	Max
Dependent variables:					
Gini index	62,543	0.397	0.029	0.172	0.754
Ratio of the 90th and 10th percentiles of income	62,543	6.357	1.359	2.742	30.365
Income at the 10th percentile	62,543	5017.118	413.611	2004.157	12500
Income at the 25th percentile	62,543	6472.190	3032.625	2004.157	20465.714
Independent variables:					
Cooperative bank branches	62,543	0.331	0.470	0	1
Other bank branches	62,543	0.660	0.473	0	1
Cooperative bank deposits	20,456	36098.867	114261.437	0.101	5511128.5
Cooperative bank loans	20,436	52127.638	177546.879	0.022	11351523
Other bank deposits	62,543	110467.295	2104787.709	0	181422880
Other bank loans	62,543	106057.307	2084638.968	0	180690432
Control variables:					
Population	62,542	7663.436	42723.086	29	2873494
Productive units / 1000 inhabitants	56,048	6706.204	2403.967	0	37788.019
Bank branches per capita	62,542	0.002	0.028	0	2.207
Share of population 0-24 y	62,542	0.222	0.039	0.020	0.409
Share of population 25-44 y	62,542	0.252	0.034	0.045	0.519
Share of population 45-64 y	62,542	0.288	0.025	0.077	0.633
Share of population >65 y	62,542	0.236	0.057	0.044	0.689
Share of tax payers	62,542	0.989	0.881	0.018	2.830

Notes: The table reports summary statistics for the variables employed in the empirical analysis. All of the variables are defined in Table 1.

Table 3
Baseline results: cooperative bank branches and income inequality after crises

Dep. variables	Panel A: Financial crisis			Panel B: Sovereign-debt crisis		
	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index
	(1)	(2)	(3)	(4)	(5)	(6)
Cooperative bank branches	-0.046		-0.046	0.111		0.110
	(0.068)		(0.068)	(0.076)		(0.076)
Cooperative bank branches × Post-crisis	-0.031*		-0.031*	-0.085***		-0.080***
	(0.017)		(0.018)	(0.022)		(0.022)
Other bank branches		0.012	0.008		0.006	0.005
		(0.090)	(0.090)		(0.053)	(0.053)
Other bank branches × Post-crisis		-0.007	-0.001		-0.043*	-0.033
		(0.017)	(0.018)		(0.022)	(0.022)
Post-crisis	0.062***	0.057***	0.062***	0.008	0.015	0.027
	(0.013)	(0.016)	(0.017)	(0.015)	(0.020)	(0.020)
Population (log)	-0.257	-0.305	-0.256	0.129***	0.131***	0.128***
	(0.287)	(0.286)	(0.287)	(0.033)	(0.033)	(0.033)
Productive units (log)	0.089	0.086	0.089	-0.099***	-0.101***	-0.095***
	(0.076)	(0.076)	(0.076)	(0.028)	(0.028)	(0.028)
Bank branches per capita	-2.773	-2.778	-2.789	-0.061	-0.020	-0.048
	(4.455)	(4.452)	(4.459)	(0.341)	(0.342)	(0.342)
Share of population 0-24 y	-3.968***	-3.943***	-3.968***	1.280***	1.324***	1.267***
	(1.020)	(1.020)	(1.020)	(0.301)	(0.301)	(0.301)
Share of population 25-44 y	5.987***	6.062***	5.986***	-1.152***	-1.259***	-1.129***
	(0.839)	(0.839)	(0.840)	(0.299)	(0.298)	(0.299)
Share of population 45-64 y	2.282**	2.288***	2.280**	-1.795***	-1.724***	-1.769***
	(0.886)	(0.887)	(0.887)	(0.373)	(0.373)	(0.373)
Share of tax payers	-0.589**	-0.630**	-0.588**	0.044*	0.047**	0.043*
	(0.251)	(0.250)	(0.251)	(0.023)	(0.023)	(0.023)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31,197	31,197	31,197	24,848	24,848	24,848
R-squared	0.006	0.005	0.006	0.005	0.005	0.006

Notes: The table shows regression coefficients. The dependent variable is reported at the top of each column. In Panel A, we focus on the financial crisis. Here, the Post-crisis dummy is equal to one in the years 2010-2011, and zero in the years 2008-2009. In Panel B, we focus on the sovereign-debt crisis. Here, the Post-crisis dummy is equal to one in the years 2014-2015, and zero in the years 2012-2013. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the municipal level are in parentheses. All of the variables are defined in Table 1.

Table 4
Baseline results: cooperative bank loans and deposits and income inequality after crises

	Panel A: Financial crisis						Panel B: Sovereign-debt crisis					
Dep. Variables	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Cooperative bank loans	-0.001		-0.002				-0.005		-0.006			
	(0.007)		(0.007)				(0.007)		(0.007)			
Cooperative bank loans × Post-crisis	-0.003*		-0.004**				-0.009***		-0.008***			
	(0.002)		(0.002)				(0.002)		(0.002)			
Other bank loans		-0.009	-0.010*					-0.008*	-0.007			
		(0.006)	(0.006)					(0.005)	(0.005)			
Other bank loans × Post-crisis		0.003*	0.004**					-0.003	-0.002			
		(0.002)	(0.002)					(0.002)	(0.002)			
Cooperative bank deposits				-0.004		-0.004				-0.010		-0.010
				(0.007)		(0.007)				(0.008)		(0.008)
Cooperative bank deposits × Post-crisis				-0.003		-0.003*				-0.008***		-0.007***
				(0.002)		(0.002)				(0.002)		(0.002)
Other bank deposits					-0.007	-0.008					0.000	-0.000
					(0.010)	(0.010)					(0.006)	(0.006)
Other bank deposits × Post-crisis					0.001	0.002					-0.005**	-0.004*
					(0.002)	(0.002)					(0.002)	(0.002)
Post-crisis	0.061***	0.032**	0.039**	0.061***	0.044***	0.049***	0.008	0.008	0.019	0.007	0.020	0.028
	(0.013)	(0.016)	(0.016)	(0.013)	(0.016)	(0.016)	(0.015)	(0.019)	(0.019)	(0.015)	(0.019)	(0.020)
Population (log)	-0.260	-0.344	-0.285	-0.262	-0.328	-0.281	0.129***	0.132***	0.129***	0.130***	0.131***	0.129***
	(0.287)	(0.286)	(0.287)	(0.287)	(0.287)	(0.287)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Productive units (log)	0.089	0.085	0.088	0.089	0.086	0.088	-0.098***	-0.101***	-0.096***	-0.099***	-0.099***	-0.095***
	(0.076)	(0.076)	(0.076)	(0.076)	(0.076)	(0.076)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
Bank branches per capita	-2.998	-2.333	-2.529	-2.912	-2.561	-2.674	-0.084	-0.037	-0.080	-0.078	-0.045	-0.080
	(4.454)	(4.452)	(4.457)	(4.455)	(4.454)	(4.458)	(0.342)	(0.342)	(0.342)	(0.342)	(0.342)	(0.342)
Share population 0-24 y	-3.958***	-3.940***	-3.969***	-3.976***	-3.937***	-3.973***	1.260***	1.301***	1.236***	1.270***	1.296***	1.241***
	(1.021)	(1.020)	(1.021)	(1.021)	(1.020)	(1.021)	(0.301)	(0.301)	(0.302)	(0.301)	(0.301)	(0.302)
Share population 25-44 y	5.987***	6.109***	6.006***	5.985***	6.099***	6.017***	-1.152***	-1.258***	-1.138***	-1.168***	-1.247***	-1.143***
	(0.840)	(0.839)	(0.841)	(0.840)	(0.840)	(0.841)	(0.299)	(0.297)	(0.299)	(0.299)	(0.298)	(0.299)
Share population 45-64 y	2.286***	2.370***	2.362***	2.290***	2.321***	2.330***	-1.802***	-1.754***	-1.800***	-1.799***	-1.722***	-1.772***
	(0.886)	(0.887)	(0.887)	(0.886)	(0.887)	(0.887)	(0.373)	(0.373)	(0.373)	(0.373)	(0.373)	(0.373)
Share of tax payers	-0.587**	-0.671***	-0.614**	-0.590**	-0.653***	-0.610**	0.043*	0.046**	0.042*	0.043*	0.045*	0.041*
	(0.251)	(0.250)	(0.251)	(0.251)	(0.250)	(0.251)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31,197	31,197	31,197	31,197	31,197	31,197	24,848	24,848	24,848	24,848	24,848	24,848
R-squared	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.006	0.006	0.005	0.006

Notes: The table shows regression coefficients. The dependent variable is reported at the top of each column. In Panel A, we focus on the financial crisis. Here, the Post-crisis dummy is equal to one in the years 2010-2011, and zero in the years 2008-2009. In Panel B, we focus on the sovereign-debt crisis. Here, the Post-crisis dummy is equal to one in the years 2014-2015, and zero in the years 2012-2013. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the municipal level are in parentheses. All of the variables are defined in Table 1.

Table 5
Other measurements

Dep. Variables	Panel A Ratio of the 90th and 10th percentiles of income				Panel B Income at the 10th percentile (Log)				Panel C Income at the 25th percentile (Log)			
	Financial crisis		Sovereign-debt crisis		Financial crisis		Sovereign-debt crisis		Financial crisis		Sovereign-debt crisis	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Cooperative bank branches	-0.064	-0.064	-0.045	-0.044	-0.003	-0.003	0.001	0.001	0.004	0.004	-0.052***	-0.052***
	(0.045)	(0.045)	(0.051)	(0.051)	(0.002)	(0.002)	(0.003)	(0.003)	(0.012)	(0.012)	(0.017)	(0.017)
Cooperative bank branches × Post-crisis	-0.051***	-0.047***	-0.041***	-0.033**	-0.003	-0.001	-0.000	-0.000	0.002	0.002	0.030***	0.029***
	(0.012)	(0.012)	(0.015)	(0.015)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.005)	(0.005)
Other bank branches		-0.052		0.077**		0.005**		0.002		0.009		-0.010
		(0.060)		(0.035)		(0.002)		(0.002)		(0.015)		(0.012)
Other bank branches × Post-crisis		-0.022*		-0.062***		-0.006*		-0.002		0.002		0.014***
		(0.012)		(0.015)		(0.003)		(0.002)		(0.003)		(0.005)
Post-crisis	0.190***	0.202***	0.363***	0.401***	-0.009***	-0.005	-0.023***	-0.021***	-0.001	-0.002	0.007**	-0.002
	(0.009)	(0.011)	(0.010)	(0.013)	(0.003)	(0.005)	(0.004)	(0.004)	(0.002)	(0.003)	(0.003)	(0.004)
Population (log)	-0.391**	-0.360*	0.010	0.009	-0.087*	-0.080*	0.000	0.000	-0.055	-0.058	0.007	0.007
	(0.192)	(0.193)	(0.022)	(0.022)	(0.044)	(0.040)	(0.002)	(0.002)	(0.049)	(0.049)	(0.007)	(0.007)
Productive units (log)	-0.043	-0.042	-0.038**	-0.032*	0.017***	0.017***	0.002	0.002	0.003	0.003	0.001	-0.000
	(0.051)	(0.051)	(0.019)	(0.019)	(0.003)	(0.003)	(0.001)	(0.001)	(0.013)	(0.013)	(0.006)	(0.006)
Bank branches per capita	-1.369	-1.284	-0.246	-0.221	0.061	0.048	0.001	0.002	0.556	0.540	-0.040	-0.045
	(2.985)	(2.987)	(0.229)	(0.229)	(0.081)	(0.079)	(0.006)	(0.007)	(0.760)	(0.761)	(0.074)	(0.074)
Share population 0-24 y	-7.098***	-7.115***	1.045***	1.028***	0.183**	0.179**	0.012	0.011	0.179	0.180	-0.286***	-0.281***
	(0.684)	(0.684)	(0.202)	(0.202)	(0.083)	(0.084)	(0.022)	(0.022)	(0.174)	(0.174)	(0.066)	(0.066)
Share population 25-44 y	-4.750***	-4.797***	-2.179***	-2.134***	0.539***	0.528***	-0.020	-0.018	-0.714***	-0.710***	0.665***	0.655***
	(0.562)	(0.563)	(0.201)	(0.201)	(0.094)	(0.086)	(0.022)	(0.021)	(0.143)	(0.143)	(0.065)	(0.065)
Share population 45-64 y	-0.544	-0.599	-1.354***	-1.297***	0.156	0.143	0.021	0.023	-0.164	-0.159	0.153*	0.140*
	(0.594)	(0.594)	(0.250)	(0.250)	(0.100)	(0.092)	(0.031)	(0.031)	(0.151)	(0.151)	(0.081)	(0.081)
Share of tax payers	-0.922***	-0.894***	-0.035**	-0.037**	-0.050*	-0.043*	0.005**	0.005**	0.088**	0.085**	0.008*	0.009*
	(0.168)	(0.168)	(0.016)	(0.016)	(0.027)	(0.024)	(0.002)	(0.002)	(0.043)	(0.043)	(0.005)	(0.005)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31,197	31,197	24,848	24,848	31,197	31,197	24,848	24,848	31,197	31,197	24,848	24,848
R-squared	0.091	0.091	0.135	0.136	0.127	0.130	0.203	0.204	0.003	0.003	0.026	0.027

Notes: The table shows regression coefficients. The dependent variable is reported at the top of each column. In columns (1)-(2), (5)-(6), and (9)-(10), we focus on the financial crisis. Here, the Post-crisis dummy is equal to one in the years 2010-2011, and zero in the years 2008-2009. In columns (3)-(4), (7)-(8), and (11)-(12), we focus on the sovereign-debt crisis. Here, the Post-crisis dummy is equal to one in the years 2014-2015, and zero in the years 2012-2013. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the municipal level are in parentheses. All of the variables are defined in Table 1.

Table 6
Heterogeneities: Urbanization

	Panel A: Financial crisis					
	Small municipalities (<5,000 inhabitants)		Medium municipalities (>5,000 <15,000 inhabitants)		Large municipalities (>15,000 inhabitants)	
Dep. Variables	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index
	(1)	(2)	(3)	(4)	(5)	(6)
Cooperative bank branches	-0.098	-0.094	-0.063	-0.061	0.186	0.192
	(0.098)	(0.098)	(0.095)	(0.095)	(0.164)	(0.164)
Cooperative bank branches × Post-crisis	-0.047**	-0.040*	0.020	-0.000	-0.079*	-0.071
	(0.023)	(0.024)	(0.029)	(0.029)	(0.047)	(0.047)
Other bank branches		0.024		-0.085		0.061
		(0.110)		(0.150)		(0.714)
Other bank branches × Post-crisis		-0.040*		0.145***		-0.081
		(0.022)		(0.036)		(0.064)
Post-crisis	0.047***	0.068***	0.084***	-0.024	0.170***	0.233***
	(0.016)	(0.020)	(0.029)	(0.039)	(0.049)	(0.069)
+ controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	21,632	21,632	6,631	6,631	2,934	2,934
R-squared	0.005	0.005	0.019	0.022	0.031	0.031
	Panel B: Sovereign-debt crisis					
	Small municipalities (<5,000 inhabitants)		Medium municipalities (>5,000 <15,000 inhabitants)		Large municipalities (>15,000 inhabitants)	
Dep. Variables	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index
	(1)	(2)	(3)	(4)	(5)	(6)
Cooperative bank branches	0.069	0.075	0.072	0.090	0.108	0.109
	(0.130)	(0.130)	(0.129)	(0.131)	(0.205)	(0.206)
Cooperative bank branches × Post-crisis	-0.128***	-0.130***	-0.059	-0.064	-0.058	-0.059
	(0.037)	(0.037)	(0.055)	(0.055)	(0.067)	(0.067)
Other bank branches		0.034		0.170		-0.050
		(0.067)		(0.180)		(0.361)
Other bank branches × Post-crisis		-0.062**		-0.266*		-0.104
		(0.030)		(0.154)		(0.346)
Post-crisis	-0.007	0.024	0.057	0.314**	0.106**	0.209
	(0.019)	(0.024)	(0.036)	(0.153)	(0.051)	(0.349)
+ controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,314	17,314	5,204	5,204	2,330	2,330
R-squared	0.005	0.005	0.012	0.013	0.020	0.020

Notes: The table shows regression coefficients. The dependent variable is reported at the top of each column. In Panel A, we focus on the financial crisis. Here, the Post-crisis dummy is equal to one in the years 2010-2011, and zero in the years 2008-2009. In Panel B, we focus on the sovereign-debt crisis. Here, the Post-crisis dummy is equal to one in the years 2014-2015, and zero in the years 2012-2013. Small municipalities are defined as municipalities with less than 5,000 inhabitants; medium municipalities are defined as municipalities with more than 5,000 inhabitants and less than 15,000 inhabitants; large municipalities are defined as municipalities with more than 15,000 inhabitants. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the municipal level are in parentheses. All of the variables are defined in Table 1.

Table 7
Heterogeneities: Industry structure

	Panel A: Financial crisis				**Panel B: Sovereign-debt crisis**			
	Number of productive units < median		Number of productive units > median		Number of productive units < median		Number of productive units > median	
Dep. Variables	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cooperative bank branches	0.044	0.042	-0.192**	-0.195**	0.010	0.013	0.158	0.166
	(0.097)	(0.097)	(0.096)	(0.096)	(0.120)	(0.120)	(0.118)	(0.118)
Cooperative bank branches × Post-crisis	-0.028	-0.022	-0.021	-0.028	0.024	0.020	-0.101***	-0.100***
	(0.025)	(0.026)	(0.025)	(0.025)	(0.037)	(0.037)	(0.038)	(0.038)
Other bank branches		-0.045		0.245		-0.018		0.137
		(0.111)		(0.161)		(0.068)		(0.107)
Other bank branches × Post-crisis		-0.030		0.039		0.057*		-0.028
		(0.024)		(0.028)		(0.030)		(0.051)
Post-crisis	0.087***	0.104***	0.041*	0.016	0.063***	0.033	-0.126***	-0.102**
	(0.017)	(0.022)	(0.021)	(0.028)	(0.018)	(0.024)	(0.033)	(0.052)
+ controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,378	17,378	13,819	13,819	14,108	14,108	10,740	10,740
R-squared	0.013	0.013	0.007	0.007	0.008	0.008	0.015	0.016

Notes: The table shows regression coefficients. The dependent variable is reported at the top of each column. In Panel A, we focus on the financial crisis. Here, the Post-crisis dummy is equal to one in the years 2010-2011, and zero in the years 2008-2009. In Panel B, we focus on the sovereign-debt crisis. Here, the Post-crisis dummy is equal to one in the years 2014-2015, and zero in the years 2012-2013. In columns (1)-(2) and (5)-(6), the regressions are run on the subsample of municipalities with a number of productive units lower than the median value of the sample; in columns (3)-(4) and (7)-(8), the regressions are run on the subsample of municipalities with a number of productive units higher than the median value of the sample. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the municipal level are in parentheses. All of the variables are defined in Table 1.

Table 8
Heterogeneities: Financial development

	Panel A: Bank deposits							
	Financial crisis				Sovereign crisis			
	Deposits < median		Deposits > medians		Deposits < median		Deposits > median	
Dep. Variables	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cooperative bank branches	0.045	0.057	-0.144**	-0.145**	0.111	0.134	0.075	0.069
	(0.145)	(0.149)	(0.065)	(0.066)	(0.151)	(0.152)	(0.092)	(0.093)
Cooperative bank branches × Post-crisis	0.011	0.009	-0.031*	-0.025	0.091	0.081	-0.058**	-0.048*
	(0.038)	(0.038)	(0.018)	(0.019)	(0.071)	(0.072)	(0.026)	(0.027)
Other bank branches		0.049		0.297		0.027		0.001
		(0.143)		(0.258)		(0.092)		(0.143)
Other bank branches × Post-crisis		0.014		0.041		0.053		0.059
		(0.028)		(0.036)		(0.039)		(0.048)
Post-crisis	0.043**	0.037	0.061***	0.020	0.024	0.005	-0.048**	-0.105**
	(0.021)	(0.023)	(0.016)	(0.039)	(0.022)	(0.027)	(0.023)	(0.051)
+ controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,328	16,328	14,869	14,869	12,571	12,571	12,277	12,277
R-squared	0.009	0.009	0.005	0.006	0.005	0.005	0.012	0.012
	Panel B: Bank loans							
	Financial crisis				Sovereign crisis			
	Loans < median		Loans > median		Loans < median		Loans > median	
Dep. Variables	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index	Gini index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cooperative bank branches	0.163	0.174	-0.157**	-0.154**	0.117	0.128	0.019	0.010
	(0.156)	(0.161)	(0.064)	(0.064)	(0.161)	(0.162)	(0.087)	(0.088)
Cooperative bank branches × Post-crisis	0.008	0.002	-0.017	-0.017	0.094	0.091	-0.025	-0.017
	(0.042)	(0.042)	(0.018)	(0.019)	(0.066)	(0.066)	(0.025)	(0.026)
Other bank branches		0.026		0.283		0.006		-0.098
		(0.147)		(0.229)		(0.083)		(0.146)
Other bank branches × Post-crisis		0.035		-0.004		0.056		0.055
		(0.028)		(0.036)		(0.037)		(0.048)
Post-crisis	0.031	0.017	0.060***	0.064	0.026	0.003	-0.091***	-0.144***
	(0.021)	(0.023)	(0.016)	(0.039)	(0.021)	(0.026)	(0.024)	(0.053)
+ controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,834	15,834	15,363	15,363	12,589	12,589	12,259	12,259
R-squared	0.010	0.010	0.007	0.007	0.006	0.006	0.013	0.014

Notes: The table shows regression coefficients. The dependent variable is reported at the top of each column. In columns (1)-(4), we focus on the financial crisis. Here, the Post-crisis dummy is equal to one in the years 2010-2011, and zero in the years 2008-2009. In columns (5)-(8), we focus on the sovereign-debt crisis. Here, the Post-crisis dummy is equal to one in the years 2014-2015, and zero in the years 2012-2013. In Panel A, financial development is measured through the amount of bank deposits at the municipal level. In columns (1)-(2) and (5)-(6), the regressions are run on the subsample of municipalities with an amount of deposits lower than the median value of the sample; in columns (3)-(4) and (7)-(8), the regressions are run on the subsample of municipalities with an amount of deposits higher than the median value of the sample. In Panel B, financial development is measured through the amount of bank loans at the municipal level. In columns (1)-(2) and (5)-(6), the regressions are run on the subsample of municipalities with an amount of loans lower than the median value of the sample; in columns (3)-(4) and (7)-(8), the regressions are run on the subsample of municipalities with an amount of loans higher than the median value of the sample. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the municipal level are in parentheses. All of the variables are defined in Table 1.