Cooperative banks and local economic growth

Paolo Coccorese

Department of Economics and Statistics, University of Salerno, Italy

Sherrill Shaffer

Department of Economics and Finance, University of Wyoming, USA

ABSTRACT

In this paper we study the impact of cooperative banks on local economic development. Working on Italian municipality data in the period 2001-2011, we find that this type of banks plays a distinct role in enhanced local economic performance – particularly income, employment and firms' growth rates – and that their presence is more effective compared to conventional banks. This evidence upholds the view that their more widespread presence would be beneficial, especially in those areas that suffer from lower economic growth, and accords with other studies underlining the decisive role of cooperative banks in supporting traditional credit provision to local borrowers.

Keywords: Cooperative banks; Growth; Municipalities; Economic performance

JEL classification codes: G21, O4; R11

Corresponding author:

Paolo Coccorese
Università degli Studi di Salerno
Dipartimento di Scienze Economiche e Statistiche
Via Giovanni Paolo II, 132 - 84084 Fisciano (SA) - Italy
Tel.: (+39) 089-962338 - Fax: (+39) 089-962049
E-mail: coccorese@unisa.it

Paper for the *59th Annual Conference of the Italian Economic Association*

1. Introduction

Among financial intermediaries, banks have always played a rather extensive and deep-rooted role in the functioning of every market, and are thus important for the real economy. In particular, banks' function in directing savings to investment opportunities (which still remains fundamental notwithstanding the increasing weight of stock markets) is crucial for driving economic growth (Levine and Zervos, 1998; Levine et al., 2000; Beck and Levine, 2004; Coccorese, 2017).

In spite of the fact that information technology may have eroded some of the traditional benefits of small-scale and local banks thanks to the much easier, more rapid and cheaper information processing (Wheelock and Wilson, 2011, p. 1343), small banks still keep their traditional role in providing business lending to small- and medium-sized enterprises (SMEs), as in such cases geographic proximity and personal relationships are extremely important for acquiring information about the creditworthiness of potential borrowers, as well as enhancing customer demand (Brevoort and Hannan, 2006; Robbins, 2006; Ho and Ishii, 2011). Among small credit institutions, cooperative banks normally operate at small scale and are specialized in relationship lending. They are mutual organizations providing deposit accounts, lending and other financial services to their associates; the existence of a common bond among members is valuable because it can reduce the cost of acquiring information on clientele creditworthiness and allow unsecured lending on favorable terms to members (Wheelock and Wilson, 2011).

Cooperative banks belong to the broader category of financial cooperatives, which also includes credit unions, banks set up by other cooperatives (such as The Co-operative Bank in the UK), and building societies (Fiordelisi and Mare, 2014). One contrast with credit unions is that in the latter customers are identical with members, while in cooperative banks customers need not be members (Hesse and Cihak, 2007, p. 3). Such banks typically operate within a designated area, thus achieving a high degree of proximity with their customers, especially in remote areas; the primary basis of their business is deposit-taking and provision of credit to households, individual entrepreneurs and local SMEs (Lang et al., 2016).

In this study we try to assess whether the distinct features of cooperative versus non-cooperative banks matter for the real economy. Given the more competitive environment that today characterizes banking markets, traditional credit intermediation activity delivers narrow profit margins. Hence, commercial (profit maximizing) banks tend to divert resources from lending activity in favour of other (non-intermediation) activities: actually, in 2011 the ratio between

customer loans and total assets in Italy was 61.6% for commercial banks and 73.6% for cooperative banks (source: Bank of Italy). In this sense, cooperative (non-profit) banks are fundamental in sustaining the provision of financial funds, due to their mission and statutory rules that make them largely oriented towards traditional credit. This also motivates our empirical investigation on whether cooperative banks, through their activity, are able to support real economic growth, particularly local growth. We perform this test at the lowest geographical level possible, using municipality data over a sample period of 2001-2011.

Italian cooperative banks are our focus for two reasons. First, studying a single country reduces any unobserved sample heterogeneity. Second, in Italy there is a strong tradition of cooperative banks in local markets. While commercial banks operate nationwide, credit cooperatives limit their activity to the regions where they are headquartered. Their small size and substantial independence, coupled with a unique customer proximity and the possibility for a quick decision-making, may represent a competitive advantage in the local banking market. Moreover, as their members are locally based, cooperative banks are the most important funding providers for many households and SMEs, especially in poorer regions.

Our empirical results show that cooperative banks play a significant role in enhancing local economic performance. This evidence is robust to alternative economic development measures, and is in line with the fact that the Italian economic development is largely driven by the performance of information-intensive SMEs, towards which smaller and less complex banking institutions are better equipped to provide funding than large hierarchical banking corporations (Usai and Vannini, 2005, p. 713).

The rest of this paper is organized as follows. Section 2 reviews the literature on the link between cooperative banks and local economic development. Section 3 reports the main characteristics of cooperative banks, with Section 4 focusing particularly on the Italian context. Section 5 presents the empirical model and describes variables and data, while Section 6 reports and discusses the empirical evidence. Section 7 concludes.

2. Cooperative banks and economic growth: a review of the literature

Banks (and other financial intermediaries) are important to the economy for several reasons: they collect savings and convert them into long-lived assets (e.g. housing loans and lending to businesses); they specialize in evaluating the creditworthiness of clients and monitoring borrowers to ensure they meet their obligations, which helps to finance ‘good’ projects; they influence the

allocation of the resources of an economy between competing uses (e.g. they direct too little or too much credit to economic sectors according to what the economy needs to perform at its best). In other words, banks – and the financial system – are closely involved in the real economy. However, it is a separate question whether credit institutions can influence economic activity and the quality of this potential impact.

Recent theoretical and empirical contributions seem to converge towards the idea that banking does matter for economic performance (Coccorese, 2017). Schumpeter (1911) maintained that credit does create real value, and early important empirical works have confirmed such role (Goldsmith, 1969; McKinnon, 1973). In a cross-country study, King and Levine (1993) find that a series of predetermined indicators of 'financial depth' are positively and significantly correlated with real economic activity (GDP growth, the rate of physical capital accumulation, improvements in the efficiency of capital allocation), hence a deeper financial sector can foster long-run growth. Within a similar empirical framework, Levine and Zervos (1998) provide evidence that increasing bank credit allows a significant increase in real per capita income. Other studies on the link between financial development and economic growth have considered bank variables (usually, private or domestic credit) and found the same evidence (e.g. Levine et al., 2000; Beck and Levine, 2004; Law and Singh, 2014).

As Ayadi et al. (2010) observe, cooperative banks play a special role in fostering local/regional economic development by mobilising local savings (i.e. members' deposits) and lending them in the same region where they belong. This is essential to prevent a 'capital drain', which is likely to occur if savings move from regions in which economic activity is less developed to other economically more active areas, with the detrimental consequence of inducing migration and other transitional costs, reinforcing relative underdevelopment and ultimately causing a downward spiral for poorer regions. Quite to the contrary, a sufficient supply of banking services helps to make cities and regions attractive for people who consider moving there or not moving away, while longer-term relationships between banks and local businesses tend to strengthen the latter and even attract new businesses and create local employment (Ayadi et al., 2010, p. 107).

A number of empirical studies have attempted to explore the relationship between cooperative banks and regional economic growth. Working on Italian regional data between 1970 and 1993, Usai and Vannini (2005) highlight that the overall size of the Italian financial sector has a weak impact on growth, but some intermediaries are better than others: particularly, cooperative banks (together with special credit institutions) play a positive role, while the other banks either do not affect growth or have a negative influence on it (depending on how growth is measured). As long as cooperative banks are mostly small sized institutions, their results therefore lend support to the

concerns about a reduction in the availability of credit to SMEs that might result from the ongoing consolidation and regulatory reforms in the banking industry.

By means of a simple autoregressive model, Ayadi et al. (2010) examine the sign and direction of causality between the presence of cooperative banks and regional growth, using regional data for seven European countries (Austria, Finland, France, Germany, Italy, the Netherlands and Spain) from 2000 to 2008. Their results show that cooperative presence appears to have a significant pro-growth impact especially in Austria, Finland, Germany and the Netherlands.

Hakenes et al. (2015) discuss the effects of small banks on economic performance. After theoretically showing that they are effective in spurring local economic growth, especially in regions with lower initial endowments and severe credit rationing, they test their model predictions on a sample of 457 German savings banks over 1995-2004, and find that small regional banks play a prominent role in enhancing local economic development in underdeveloped regions with low access to finance.

Becchetti et al. (2016) focus on a sample of 32 countries over the period 1998-2010 in order to compare the characteristics of banks' legal structure (cooperative vs. non-cooperative), and find that cooperative banks display higher loans/total assets ratios, higher share of income from lending activity and a significantly lower earning volatility. This indicates that their business is essentially focused on conventional credit activity and is less risky. They also find that that the traditional banking channel is important for some industries, but not for others where internal financing sources or financing channels different from bank loans may presumably play an important role. The above evidence makes them conclude that diversity in the financial system is important and must be carefully preserved by regulators, and particularly that the specificity of cooperative banks has relevant distinctive features and contributes to growth of at least a number of industries.

El Hancha Sfar and Ben Ouda (2016) analyze the impact of cooperative banks on real economic growth of French regions for the period 2006-2012. By means of a dynamic panel approach, they discover a strong positive association between cooperative bank development and regional economic growth, suggesting that these institutions play a stabilizing role, maintaining their presence in regions experiencing low growth and thereby contributing to future growth.

Finally, while studying the impact of spatial expansion of the branch network on the cost efficiency of Italian cooperative banks between 2006 and 2013, Bernini and Brighi (2017) find that a greater credit availability by them contributes to sparking growth in the area where they operate, thus confirming that cooperative banks play a major role in the development of local economies, which is however negatively affected by an increase in the number of their branches.

3. Cooperative banks: features and importance

Cooperative banks are an important part of the cooperative movement. Born in Europe in the 19th century to facilitate the access to credit for small urban and rural businesses, their organizational model is based on democratic governance and mutualism, even though it evolved and differentiated across countries along the needs of cooperative members and the specific national legal frameworks.

Despite technological advancements[1] and the strong consolidation trend that has characterized the banking industries worldwide – phenomena that seem to reward larger dimensions – the role of cooperative credit institutions has remained important. Today cooperative banks make up a sizeable part of the banking industry in many European countries: in terms of number of branches, their market share amounts to about 60% in France, 50% in Austria, 40% in Germany, Italy and the Netherlands, 10% in Spain and Portugal.

Groeneveld and de Vries (2009) argue that the core of cooperative banks' operations is the customer, to whom bank's policy is addressed (e.g. branch location, opening hours, services). Similarly, their conduct and financial strategy are linked to the corporate governance structure and the core values they represent: long-term care of customers and members (which forbids short-term profit maximisation), healthy profitability (which safeguards their continuity and continuing development), focus on local retail markets (which normally warrants stronger balance sheets and lower risks because of easier access to qualitatively stable sources of funding), closeness to customers (both literally and figuratively). Among the other things, all the above makes cooperative banks better equipped to assess the creditworthiness and risks of customers at a local level, notably reducing the problems of moral hazard and adverse selection, with benefits on the overall quantity and quality of loans (Groeneveld and de Vries, 2009, pp. 11-12). The long-term perspective of cooperative banks is in some way confirmed by Stefancic (2014), whose evidence indicates that the Italian cooperative banks have more stable managerial teams and boards, hence can be considered as more long-term oriented (even though often at the expense of bank performance) than commercial banks, which seem to have stronger disciplinary mechanisms and therefore a higher turnover of top managers.

[1] According to Petersen and Rajan (2002), advances in information technology have made quantifiable information about potential borrowers more readily available, hence reducing the value of soft information in small business lending and the importance of close proximity between borrowers and lenders. At the same time, however, Petersen and Rajan (2002) note that the median distance between banks and borrowers in the U.S. was just four miles, while other research has found that modern technology has not undermined the importance of geographic proximity in banking (Brevoort and Hannan, 2006; Robbins, 2006; Ho and Ishii, 2011).

Compared with commercial banks, cooperative banks' intrinsic different goal, as well as their mission to finance local business, may have opposite effects in terms of quality of credit (Becchetti et al., 2016). On the one hand, it should be improved by relationship lending with small-sized local customers, which reduces informational asymmetries between lenders and borrowers (Petersen and Rajan, 1994; Berger and Udell, 1995). On the other hand, it could be harmed by a lower degree of loan diversification, by scale inefficiencies due to the smaller dimensions, and also by the possibility of local political capture and more leniency toward riskier local business. However, being essentially stakeholder value institutions, cooperative banks are characterized by a lower propensity to risk than shareholder value banks, which induces lower earning volatility and a better capacity of handling intertemporal risk (Ayadi et al. 2010).

Cooperative banks play an important role also in developing countries. While studying how a number of banks' characteristics (size, discretion over credit, incentive schemes, competition, the institutional environment) affect lending to small- and medium-sized enterprises in China through panel data collected in 2005, Shen et al. (2005) find that a higher presence of county-level rural credit cooperatives (RCCs) is associated with more lending to SMEs. Wagner and Winkler (2013) analyze the impact of the financial crisis on credit growth of microfinance institutions, in order to assess financial vulnerability in the banking sector of 74 developing and emerging countries in the period 2000-2009, and discover that only credit unions have stand out as being significantly less affected by the crisis. Lastly, Abate et al. (2016) show that in Ethiopia financial cooperatives, together with specialized microfinance institutions, significantly and positively affect farmers' decision to employ technology in agriculture. However, their empirical results from 2012 survey data indicate that access to credit through financial cooperatives has a greater impact on agricultural technology adoption than through the microfinance institutions. This could be ascribed to the fact that financial cooperative members act as both borrowers and lenders, hence there is a built-in individual selection and monitoring incentive mechanism: the fear of losing their savings encourages depositors to be actively involved in screening potential borrowers and in monitoring those who have received loans.

4. Cooperative banks in Italy

In Italy, cooperative credit institutions occupy a prominent role among the stakeholder-value-oriented banks (together with Banche Popolari and a few remaining savings banks), i.e. non profit maximizing banks that aim to cater for a larger set of objectives satisfying non-shareholding

stakeholders too (Coccorese et al., 2016). Cooperative credit banks (henceforth, CCB) comprise Banche di Credito Cooperativo, Casse Rurali, and Casse Raiffeisen in Alto Adige (Sud Tirol). They are the only banks characterized by "prevailing mutualism", which consists in the following legal features (Coccorese et al., 2016):

- voting rights: regardless of the number of shares owned, each member has one vote in the general meeting (the 'one head-one vote' principle);
- share capital: each member may own more than one share, but the overall nominal value of the shares owned may not exceed 50,000 euro;
- members composition: they must have their domicile and/or continuative business within the territory where the bank operates;
- mutualism: at least 51% of the risk activity must be carried out with members;
- territorial ties: 95% of the lending must be in the catchment area (defined by the municipalities where the CCB has a branch and the neighbouring municipalities);
- profit distribution: at least 70% of profits must be put to legal reserve (reserves cannot be distributed to members, even in case of liquidation);
- safe business model: derivatives may be used only for hedging purposes.

Because of the process of banking consolidation, in Italy many local banks have disappeared in the last years (usually incorporated into medium-large banks), so today CCBs represent the greatest majority of local banks. As of 2016, there were 334 cooperative banks (55.3% of total banks) with 4,352 branches (15% of total branches) that served about 1.26 million members. The share of total assets managed by cooperative banks has also increased as a result of the recent financial crisis, from 4.2% in 2007 to 5.8% in 2016. CCBs have a strong expertise in traditional intermediation, and are characterized by long-lasting fiduciary relationships with customers (largely CCBs members). These features favoured mostly their typical customers, i.e. small enterprises and households.

Recently, Law 49 of 2016 has given rise to Cooperative Banking Groups, each led by a parent company. Each CCB has had to choose between joining a Group (a joint stock company that directs and coordinates the CCBs in its Group, with the majority of its shares held by the same CCBs) or being converted into a joint stock company. In addition, the Law now requires higher share capital that can be held by a single shareholder (100,000 euro), and an increase in the minimum number of shareholders of a CCB.[2] Those measures aim at improving capitalisation and management control; furthermore, mergers among CCBs – one of the objectives pursued by Law 49/2016 and endorsed by the European Central Bank (see ECB Opinion of 24 March 2016) – might help to reduce costs by replacing inefficient management, exploiting scope economies (thanks to product-mix

[2] For further details, see Coccorese et al. (2017), pp. 10-11.

synergies), and gaining scale economies. As a result of mergers, CCBs could also increase cost and risk diversification by enlarging both the scope of asset portfolio and geographic operating area.

A consolidation involving credit unions – i.e. locally-oriented small mutual credit cooperatives serving primarily retail consumers, therefore quite similar to Italian cooperative banks – has already occurred in the US banking sector, as in about ten years the average size of federally insured retail credit unions has more than doubled. In a study on US retail credit unions in the period 1989 to 2006, Wheelock and Wilson (2011) find that almost all of them still operated under increasing returns to scale, hence were too small to fully exploit possible scale economies. Consequently, they maintain that competitive pressures among credit unions and from other types of depository institutions are likely to encourage further growth in the average size of this group of banks.

Malikov et al. (2017) provide evidence in favor of economically and statistically significant economies of diversification among US retail credit unions between 2001 and 2006, so that the integration of business could notably reduce credit union costs. Besides, their analysis confirms the presence of increasing returns to scale in the industry.

Yet, going back again to Italy, smaller-sized CCBs may answer local needs better: members and borrowers would be more homogeneous (as they belong to the same local community and/or social group), and small and marginal borrowers would not be neglected (which also curbs financial exclusion) since, through relationship banking, CCBs are able to mitigate adverse selection and moral hazard (Coccorese et al., 2016).

Given all the above, our investigation tries to provide an answer to the question whether Italian cooperative banks are effective at promoting local economic development, and especially whether they are better capable of serving this function than to the other (generally larger) types of banks. The novelty is that we consider the most disaggregated level of detail possible from official sources, i.e. municipalities: at such a territorial level, we are able to capture meaningful specific differences that would otherwise be neglected.

5. Model, variables and data

In order to assess the importance of cooperative banks in enforcing economic growth, we estimate the following basic model:

$$GROWTHVAR_i = \alpha \ln INITVAR_i + \beta_1 BANKPRESENCE_i + \beta_2 CCBPRESENCE_i + \gamma' X_i + \phi_i + \varepsilon_i \,, \qquad (1)$$

where $GROWTHVAR_i$ is the average annual growth rate of a variable representing the economic performance of municipality i (i = 1,...,N) from 2001 to 2011, $INITVAR_i$ represents the initial level of the same dependent variable (i.e. the 2001 value), $BANKPRESENCE_i$ is a dummy variables that takes the value of 1 if there is at least one bank operating in municipality i at the beginning of period (no matter its type) and 0 otherwise, $CCBPRESENCE_i$ is another dummy variable that equals 1 when there is at least one cooperative bank in municipality i at the beginning of period and 0 otherwise, X_i is a vector of control variables, ϕ_i is a provincial dummy,[3] and ε_i is the error term.

As dependent variables, we employ three different measures of performance that focus on multiple important aspects of local economies, namely income, employment and production. More in detail, for each municipality we consider the annual growth rates of: real income per capita (*INCOMEGROWTH*), firms' employees per adult inhabitant (*EMPLGROWTH*), and firms per inhabitant (*FIRMGROWTH*). They have been (geometrically) averaged over a 10-year period (2001-2011), corresponding to the time span between the last two editions of Census (either Population and Housing Census, and Industry and Services Census, both describing the characteristics of the local systems in a very detailed way).

The dependent variables are regressed on their initial values (i.e. 2001 values) as well as on other beginning-of-period control variables (later specified). Our approach is in line with the main economic growth literature (e.g.: King and Levine, 1993; Levine, 1998; Levine and Zervos, 1998; Levine et al., 2000; Collender and Shaffer, 2003; Beck and Levine, 2004; Shen and Lee, 2006; Law and Singh, 2014), and recognizes that economic phenomena may actually occur at varying rates from one year to another, and also that their impact will tend to be distributed over multiple successive years (Shaffer et al., 2015). Moreover, it provides a straightforward way of identifying the relationship between the presence of cooperative banks and local growth. Our lag structure – and the use of beginning-of-period values – can also help to reduce the possibility of reverse causality and endogeneity (King and Levine, 1993; Levine and Zervos, 1998; Rajan and Zingales, 1998), as referring to a multi-year interval decreases the likelihood that changes in economic outcomes are driving changes in the explanatory variables (in particular, banks' choice of entry in or exit from local markets). Lastly, our analysis focuses on local areas that share a common institutional and macroeconomic environment, so can deal more easily with the problems of heterogeneity that commonly afflict cross-country studies: heterogeneity within a country is lower than heterogeneity between countries (Coccorese and Silipo, 2015). However, we must recognize that this approach is not able to test for a distinction between short-run and long-run effects, which might be significant (Fritsch and Mueller, 2004).

[3] In Italy, the province (*provincia*) is an administrative district of municipalities comprising a larger town or city and several small neighbouring towns. By and large, it corresponds to a US county.

The variables *BANKPRESENCE* and *CCBPRESENCE* are crucial to our purpose. A positive and significant value of β_1 and/or β_2 should indicate that, all else equal, the presence of credit institutions is important in favouring economic performance. Particularly: if $\beta_1 > 0$ and $\beta_2 = 0$, we would get evidence that the presence of credit institutions boosts the local economy regardless of the type of banks; if $\beta_1 = 0$ and $\beta_2 > 0$, only cooperative banks are able to significantly improve the economic activity in the various municipalities; finally, if $\beta_1 > 0$ and $\beta_2 > 0$, banks are important for local economic development, but the presence of CCBs allows further progress. Both the second and the third case would mean that cooperative banks have a special role in stimulating the economy.[4]

Regarding the other variables, we have referred to the existing literature on economic growth, even if it needs to be noted that the availability of granular data at the municipality level is quite reduced (this is also the main reason that forced us to focus on the 2001-2011 period, as censuses occurred in those years). First of all, we include the logarithm of the initial value of the dependent variables (ln*INITPERCAPINC*, ln*INITEMPLADPOP*, ln*INITFIRMPOP*) so as to capture the convergence effect generally predicted by growth models (Barro and Sala-i-Martin, 1992), which should be negatively associated with subsequent changes in the economic variables. In order to account for the accumulated level of human capital, we consider the fraction of municipality population with secondary education (*SCHOOL*), which is expected to positively affect local economic performance (Mankiw et al., 1992; Glaeser et al., 1995; Sala-i-Martin et al., 2004).

We then add four variables referring to characteristics of local population. First, we consider the average annual variation of population (*POPGROWTH*): its coefficient should have a negative sign because areas with higher population growth rates are usually characterized by lower rates of income growth (Mankiw et al. 1992) and in general by poorer economic performance. Second, we use the logarithm of population (ln*POP*) to control for market size. Third, we add population density (*POPDENS*), i.e. the number of inhabitants per square kilometer, because previous studies has found some links between this factor and workers' productivity, which can reflect on economic activity and development (e.g.: Ciccone and Hall, 1996; Audretsch and Fritsch, 2002). Finally, we include the share of dependent population (corresponding to those aged 0-14 and 65+) over total population (*DEPENDENTPOP*): it is likely that non-productive people need to be supported by the active population, with increase of the marginal propensity to consumption and reduction of saving

[4] Since our hypothesis is that economic growth is positively associated with the presence of banks, we could use a one-tailed test, with the null hypothesis being H_0: $\beta_k \leq 0$ ($k = 1,2$) and the alternative hypothesis being H_1: $\beta_k > 0$. However, the two-tailed test is more conservative than the one-tailed test, as in the former it is more difficult to reject the null hypothesis for a given significance level (which means less chance of obtaining statistically significant results). Therefore, here we adopt a two-tailed test, where the null hypothesis is H_0: $\beta_k = 0$ and the alternate hypothesis is H_1: $\beta_k \neq 0$. Of course, we will always check (and eventually discuss) the sign of β_k.

rates, both adversely affecting investment and slowing down economic growth (Birdsall et al., 2001). For the last three regressors, we consider their start-of-period values.

As told, our units of observation are all the Italian municipalities for which data were available. In 2011 they were 8,092, but lacking data for some of the main regressors reduced them to 8,064. Besides, since the level of their disaggregation made the presence of outliers and influential observations quite likely, we have removed a small number of observations from each regression through Cook's D influence statistic (Cook, 1977).

All data for banks are drawn from the Bank of Italy databases, while those on local incomes come from the Italian Ministry of Economics and Finance. The remaining data on population and firms have been obtained from the Italian censuses (2001 and 2011 editions) conducted by Istat (the National Statistical Institute).

Table 1 provides some descriptive statistics of the above variables (and also of additional regressors we will later employ), while Table 2 shows their correlations.

INSERT TABLE 1 ABOUT HERE

INSERT TABLE 2 ABOUT HERE

The various specification of Equation (1) have been estimated by ordinary least squares with robust (White heteroskedastic-consistent) standard errors.

6. Estimation results

6.1 Base model

The results of the estimations for the three versions of our base model are reported in Table 3. The start-of-period variables all exhibit negative and significant coefficients, thus confirming the presence of a convergence effect among municipalities in the sense of Barro and Sala-i-Martin (1992).

INSERT TABLE 3 ABOUT HERE

One important finding is that the initial presence of cooperative banks is associated with

significant additional growth of income, employment and firms. This does not happen when considering the other types of banks, except when looking at firms' employees. Therefore, our results strongly indicate that CCBs play a distinct role in the economic performance (as measured in different ways) of local areas in Italy, whilst the other types of credit intermediaries are only associated with measures of employment but have no significant association with firms' growth and income per capita. Our results confirm the findings of Usai and Vannini (2005), who – although working on regional data, hence quite more aggregate than ours – evidence a positive impact of cooperative banks (in the short, medium and long run) on the rate of economic growth (measured through both GDP per head and value added per worker). We ascribe this pattern to the fact that, because of both their less complex structure and strong ties with resident actors, cooperative banks are better prepared at funding and sustaining households and especially SMEs, which represent the backbone of Italian economy but at the same time are information-intensive borrowers (Usai and Vannini, 2005). It is worth also to note that, using a Granger-causality test, Ayadi et al. (2010) find no significant contribution of cooperative banks to regional growth in Italy.

The magnitude of the estimated effects is also of sizeable economic relevance. For instance, the coefficient of *CCBPRESENCE* in the first regression (+0.0773) indicates that adding one cooperative bank to a municipality where none previously existed is associated with a higher subsequent annual growth rate of per capita income by about 0.08%. Considering that in the sample period 2001-2011 the median annual growth of Italian municipalities with at least one cooperative bank in 2001 equals +0.52%, we conclude that the lack of CCBs would have pulled the growth rate down to +0.44%, a 15 percent drop and a plunge to the 46th percentile.

Analogously, from the second regression we derive that the existence of a CCB is associated with an additional employment growth of about 0.14%, which adds to the 0.21% growth due to the presence of other types of banks (i.e. the coefficient of *BANKPRESENCE*). In municipalities with both CCBs and other banks, the median variation of employment in firms has been -0.13%, hence without CCBs it would have fallen to -0.27%, which is twice the decline and a drop to the 46th percentile. Considering municipalities with only cooperative banks, where the median variation of employment amounts to +0.01%, the lack of CCBs would have been associated with a drop to -0.34% (i.e. the sum of both estimated coefficients), which means a slump to the 43rd percentile. In the last towns, therefore, the role of cooperative credit banks emerges as indeed important. If we turn to municipalities with only non-CCBs, where the median employment variation has been -0.17%, the absence of banks would have driven this value to -0.38%, again more than twice the decline and corresponding to the 46th percentile.

With similar reasoning we can gauge the evidence coming from the third regression. Here the

estimated coefficient for *CCBPRESENCE* is 0.0798, which means that cooperative banks are associated with a +0.08% in the local overall firms' growth: thus, since the sub-sample of municipalities with at least one CCB is characterized by a median growth in the number of firms of -0.04%, their absence would have been associated with a reduction of this figure up to -0.12%, which is three times the decline and coincides with the 47th percentile.

Overall, there are statistically and economically significant positive associations from having CCBs within the municipalities' boundaries, which translate into faster growth rates of various economic aggregates.

The control variables show patterns globally in line with existing literature. The negative and highly significant coefficients of ln*INITPERCAPINC,* ln*INITEMPLADPOP* and ln*INITFIRMPOP* provide clear evidence of convergence in the sense of Barro and Sala-i-Martin (1992). Higher starting levels of education (*SCHOOL*) are associated with higher subsequent rates of income, employment and firm growth: hence, human capital matters for growth. The variable *POPGROWTH* always exhibits negative and significant coefficients: as a consequence, when population grows faster, the available resources must be spread more thinly over the population of workers, which adversely affects economic activity (Mankiw et al., 1992). According to the (significant) coefficients of ln*POP*, in more crowded municipalities we observe lower increases of per capita income (probably due to a sort of convergence effect, since in larger towns the average level of income is higher and hence characterized by lower growth rates) but higher growth rates of employment and firm birth (in line with previous theoretical and empirical findings suggesting a positive association between population and economic performance). Population density (*POPDENS*) negatively impacts our dependent variables, meaning that in Italian towns the advantages of agglomeration areas (economies of scale in local networks, more efficient labour markets, more widespread human capital) are outweighed by their disadvantages (congestion, criminality, lower quality of life). Finally, the percentage of dependent population (*DEPENDENTPOP*) does not affect income, which might signal the effectiveness of the Italian social safety net as a whole, but is associated with lower levels of growth for our production indicators. It is worth noting that all control variables keep their sign and significance in every specification we have estimated, which shows the robustness of our evidence.

6.2 Extensions and robustness

So as to better gauge the economic-driving role of credit cooperatives in Italian local markets, we explore a number of extensions of the basic model.

First, in two different regressions we replace the dummy variables reflecting the presence of credit institutions (*BANKPRESENCE*) and cooperative banks (*CCBPRESENCE*) in the municipalities with, respectively, the logarithm of their number (ln*BANK* and ln*CCB*) and the logarithm of branches (ln*BANKBRANCH* and ln*CCBBRANCH*). They allow to understand whether we need more accurate indicators for capturing banks' role.

As Table 4 clearly shows, we get qualitatively similar results. Particularly, both ln*CCB* and ln*CCBBRANCH* exhibit a positive and significant coefficient in all estimations, indicating again that cooperative banks can play a distinct function in the advancement of local economies. In addition, like before, the other categories of banks are associated with enhancement of just employment in firms (which however is an important and remarkable outcome), while we even discover that too many of them are harmful to residents' income growth, as the coefficients of both ln*BANK* and ln*BANKBRANCH* are negative and statistically significant. We ascribe this outcome to the fact that those variables now range in a continuous and wide scale (rather than being dummy variables), so they exhibit a convergence effect in the sense of Barro and Sala-i-Martin (1992): banks are more likely to be present in larger (and well-off) markets, where the rates of growth tend to be lower.[5]

INSERT TABLE 4 ABOUT HERE

A second extension of the model seeks to assess the relationship between CCBs and firm dimension. This is done by adding into the main regressions the interaction between *CCBPRESENCE* and the initial average size of the firms in each municipality (*FIRMSIZE*). As cooperative credit institutions tend to specialize in relationship banking with small home-market firms, the sign of its coefficient is able to tell whether or not CCBs have a more positive effect on economic performance when firms tend to be smaller.

The related empirical results are portrayed in Table 5. It comes out that the initial presence of cooperative banks is still associated with faster income and employment growth, and that the corresponding rates of increase are higher when CCBs operate in municipalities with smaller-scale firms, a pattern consistent with the widespread perception that cooperative banks may have an informational advantage in lending to SMEs (Hakenes et al., 2015, p. 664). Regarding the growth of the number of firms per inhabitant, there is now evidence that cooperative banks grant higher firms' birth rates when local established producers are bigger (even if the coefficient is significant only at the 10% level).

[5] The coefficients of ln*BANK* and ln*BANKBRANCH* keep the negative sign also when omitting the variables linked to the CCBs, but their significance drops to the 10% level.

INSERT TABLE 5 ABOUT HERE

We turn now to the size of municipalities and try to assess whether there is an associated CCB presence effect. CCBs are more prevalent in small towns and in general in narrow geographic areas. This is due to their retail banking business model, characterized by deep ties with local economic agents, close relationships with customers, and solidarity with the environment where they operate. In order to verify such possible effect, we split the *CCBPRESENCE* dummy variable into two separate indicators based on local population: *CCBPRESENCE_SMALL* assigns the value of 1 to those municipalities where the population is less than 5,000 (amounting to about 72% of Italian towns), while *CCBPRESENCE_MEDLAR* takes the value of 1 for the remaining (medium and large) municipalities.

From Table 6, we can observe different outcomes according to whether we consider local income or local productive environment. In small towns income growth is notably associated with the presence of cooperative banks, as the coefficient of *CCBPRESENCE_SMALL* amounts to +0.1027, which measures the average yearly contribution of CCBs to this variable in the period 2001-2011 (it is higher than that of the main regression: see Table 3). Instead, in larger municipalities cooperative banks are associated with an extra income growth of 0.0368% (about one third of smaller towns), with the coefficient of *CCBPRESENCE_MEDLAR* being however significant only at the 10% level. When we turn to employment growth and firm growth, we get an opposite result: the dummy variable *CCBPRESENCE_SMALL* is not significant, while *CCBPRESENCE_MEDLAR* is positive, highly significant and of remarkable magnitude. Regarding *BANKPRESENCE*, we have the same evidence as that in Table 5. Overall, it seems that in smaller municipalities cooperative banks are quite effective in improving local overall economic conditions, which also means helping firms and entrepreneurs also if their help does not translate into a clear (i.e. significant) contribution, as it happens in larger towns and cities.

INSERT TABLE 6 ABOUT HERE

After considering the municipality size, it is worth turning to CCBs' size and its possible link with local economic performance. Actually, given the features of the cooperative credit, one would expect that its efficacy occurs especially when they are small-sized: in such cases their ability to deal with the opportunistic behaviour by borrowers is maximized, as well as their provision of loans to people otherwise left outside the credit market (e.g. farmers and artisans). In addition, when the

membership base is relatively small, members have more incentive to monitor each other, and this peer pressure delivers incentives for borrowers to repay (Stiglitz, 1990). Therefore, for each municipality we have calculated the (start-of-period) mean of total assets of CCBs operating therein as a proxy of their local average size. We have used this information to build two dummy variables – *CCBPRESENCE_SMALLCCB* and *CCBPRESENCE_LARGECCB* – which take the value of 1 when in the municipality the average size of CCBs is below or above the median value of the related distribution, respectively.

Table 7 clearly confirms our conjecture: smaller cooperative banks are associated with significantly enhanced local (income, employment and firm) growth, while larger ones are associated with higher levels of just personal income. Thus, relations among cooperative members represent another factor contributing to the effectiveness (and success) of CCBs (Fonteyne, 2007, p. 9).

INSERT TABLE 7 ABOUT HERE

Once ascertained that cooperative banks are a primary actor in the local economic environment, our last investigation consists in understanding how much they contribute. This is done by performing two separate estimations for each of the three model specifications, where the reference samples contain those municipalities in which the initial values of the income per capita, employment per adults and firms per inhabitant are below or above their median, respectively.

From Table 8 we deduce that the CCBs' presence is (positively and significantly) associated with the growth rates of income and employment where those variables are already of a remarkable magnitude, while they affect firms' birth in municipalities where its starting value is lower. Our inference is that cooperative banks are able to spur firm creation where entrepreneurship is not widespread yet, while they have a crucial function in supporting households and already existing firms in more economically advanced areas, all of which translates into considerable effects on the economic development of the area.

INSERT TABLE 8 ABOUT HERE

7. Conclusions

In recent decades, world banking has undergone significant transformations toward greater concentration and a reduction in the number of intermediaries, with the result of having larger and more complex banks. The problems faced by several countries during the recent financial crisis, due to the risk of big banks' bailout, has called new attention to the role of small banks in local economies, and cooperative and mutual banks among them.

While commercial banks aim at maximizing profits focusing on the wedge between the interest rates charged on loans and those paid on deposits, cooperative banks (and credit unions) do not pursue profit maximization, but seek to maximize service provision to their members in terms of quantity, price, and variety of services, including financial services (Malikov et al., 2017). This type of bank mainly focuses on financing individuals and small- to medium-sized enterprises (SMEs). They are sometimes believed to be weak at loan diversification, but this risk is mitigated when they can diversify portfolios – as in Europe – thanks to their organization under central entities that pool risk management and risk-sharing strategies (Hakenes et al., 2015). Because of this, but also of their local knowledge, which facilitates lower loan screening and borrower monitoring costs, they have often been found effective at promoting local and regional economic growth.

In this study we have investigated the relevance and effect of their presence in local areas, specifically municipalities. Small and regional banks are important players in many European banking systems, like Austria, Belgium, France, Germany, Italy, Norway, Portugal, Spain, and Sweden. Hence, our findings appear relevant even in those countries, as well as for the US credit unions. Our empirical evidence seems to suggest that cooperative banks provide more advantages compared to conventional banks, upholding the idea that their more widespread presence would be beneficial in those areas that suffer from lower economic growth. This result is in line with some (but not all) prior literature regarding Italy (e.g.: Usai and Vannini, 2005; Bernini and Brighi, 2017).

Therefore, given that the role of (small) cooperative banks in a nationwide banking market proves to be significant, we could infer that there would likely be a loss of benefits if the ongoing consolidation were to involve such institutions and turn them into bigger, profit-oriented banks. Consequently, public policy should take into account the distinctive features and benefits of cooperative banks while promoting the optimal architecture of the banking system: the presence of regional small, dispersed banks, especially the cooperative ones, might mitigate the drain of local financial resources and thus promote widespread economic development.

References

Abate, G.T., Rashid, S., Borzaga, C., Getnet, K. (2016). Rural finance and agricultural technology adoption in Ethiopia: Does the institutional design of lending organizations matter?. *World Development*, 84, 235-253.

Audretsch, D.B., Fritsch, M. (2002). Growth regimes over time and space. *Regional Studies*, 36, 113-124.

Ayadi, R., Llewellyn, D.T., Schmid, R.H., Arbak, E., De Groen, G.W. (2010). *Investigating Diversity in the Banking Sector in Europe*. Brussels: Centre for European Policy Studies.

Barro, R.J., Sala-i-Martin, X. (1992). Convergence. *Journal of Political Economy*, 100, 223-251.

Becchetti, L., Ciciretti, R., Paolantonio, A. (2016). The cooperative bank difference before and after the global financial crisis. *Journal of International Money and Finance*, 69, 224-246.

Beck, T., Levine, R. (2004), Stock markets, banks, and growth: Panel evidence, *Journal of Banking and Finance*, 28, 423-442.

Berger, A., Udell, G. (1995). Relationship lending and lines of credit in small firm finance. *Journal of Business*, 68, 351-382.

Bernini, C., Brighi, P. (2017). Bank branches expansion, efficiency and local economic growth. *Regional Studies*, doi: 10.1080/00343404.2017.1380304

Birdsall, N., Kelley, A.C., Sinding, S.W. (2001). *Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World*. Oxford: Oxford University Press.

Brevoort, K., Hannan, T. (2006). Commercial lending and distance: Evidence from Community Reinvestment Act data. *Journal of Money, Credit and Banking*, 38, 1991-2012.

Cetorelli, N., Gambera, M. (2001). Banking market structure, financial dependence and growth: International evidence from industry data. *Journal of Finance*, 56, 617-648.

Ciccone, A., Hall, R.E. (1996). Productivity and the density of economic activity. *American Economic Review*, 86, 54-70.

Coccorese, P. (2017). Banking competition and economic growth. In Bikker, J.A., Spierdijk L. (Eds.), *Handbook of Competition in Banking and Finance*, Cheltenham: Edward Elgar, 230-263.

Coccorese, P., Ferri, G., Lacitignola, P., Lopez, J. (2016). Market structure, outer versus inner competition: The case of Italy's credit coop banks. *International Review of Economics*, 63, 259-279.

Coccorese, P., Ferri, G., Spiniello, F. (2017). Are mergers among cooperative banks worth a dime? Evidence on post-M&A efficiency in Italy. *CERBE Working Paper*, n. 18, March.

Coccorese, P., Silipo, D.B. (2015). Growth without finance, finance without growth. *Empirical Economics*, 49, 279-304.

Collender, R.N., Shaffer, S. (2003). Local bank office ownership, deposit control, market structure, and economic growth. *Journal of Banking and Finance*, 27, 27-57.

Cook, R.D. (1977). Detection of influential observations in linear regression. *Technometrics*, 19, 15-18.

El Hancha Sfar, F., Ben Ouda, O. (2016). Contribution of cooperative banks to the regional economic growth: Empirical evidence from France. *International Journal of Economics and Financial Issues*, 6, 508-514.

Fiordelisi, F., Mare, D.S. (2014). Competition and financial stability in European cooperative banks. *Journal of International Money and Finance*, 45, 1-16.

Fonteyne, W. (2007). Cooperative banks in Europe. Policy Issues. *IMF Working Paper*, 159.

Fritsch, M., Mueller, P. (2004). Effects of new business formation on regional development over time. *Regional Studies*, 38, 961-975.

Glaeser, E.L., Scheinkman, J.A., Schleifer, A. (1995). Economic growth in a cross-section of cities. *Journal of Monetary Economics*, 36, 117-143.

Goldsmith, R.W. (1969). *Financial Structure and Development*. New Haven: Yale University Press.

Groeneveld, H., de Vries, B. (2009). European co-operative banks: First lessons of the subprime crisis. *International Journal of Co-operative Management*, 4, 8-21.

Hakenes, H., Hasan, I., Molyneux, P., Xie, R. (2015), Small banks and local economic development, *Review of Finance*, 19, 653-683.

Hesse, H., Cihak, M. (2007). Cooperative banks and financial stability. *IMF Working Paper*, n. 07/2, January.

Ho, K., Ishii, J. (2011). Location and competition in retail banking. *International Journal of Industrial Organization*, 29, 537-546.

King, R.G., Levine, R. (1993). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics*, 108, 717-737.

Lang, F., Signore, S., Gvetadze, S. (2016). The role of cooperative banks and smaller institutions for the financing of SMEs and small midcaps in Europe. *EIF Working Paper*, n. 36, July.

Law, S.H., Singh, N. (2014). Does too much finance harm economic growth?. *Journal of Banking and Finance*, 41, 36-44.

Levine, R., Loayza, N., Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, 46, 31-77.

Levine, R., Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, 88, 537-558.

Malikov, E., Zhao, S., Kumbhakar, S.C. (2017), Economies of diversification in the US credit union sector, *Journal of Applied Econometrics*, doi: 10.1002/jae.2569.

McKinnon, R.I. (1973). *Money and Capital in Economic Development*. Washington, DC: Brookings Institution.

Petersen, M., Rajan, R. (1994). The benefits of lending relationships: evidence from small business data. *Journal of Finance*, 49, 3-37.

Petersen, M.A., Rajan, R.G. (2002). Does distance still matter? The information revolution in small business lending. *Journal of Finance*, 57, 2533-2570.

Rajan, R.G., Zingales L. (1998). Financial dependence and growth. *American Economic Review*, 88, 559-586.

Robbins, E. (2006). Location, location, location: Has electronic banking affected the importance of bank location?. *Federal Reserve Bank of Kansas City Financial Industry Perspectives*, September, 1-12.

Sala-i-Martin, X., Doppelhofer, G., Miller, R.I. (2004). Determinants of long-term growth: A bayesian averaging of classical estimates (BACE) approach. *American Economic Review*, 94, 813-835.

Schumpeter, J. (1911). *The Theory of Economic Development: An Inquiry into Profits, Capital, Interest, and the Business Cycle*. Translated from the German by Redvers Opie. New Jersey: Transaction Publishers, 1983.

Shaffer, S., Hasan, I., Zhou, M. (2015). New small firms and dimensions of economic performance. *Economic Development Quarterly*, 29, 65-78.

Shen, C.H., Lee, C.C. (2006). Same financial development yet different economic growth – why?. *Journal of Money, Credit and Banking*, 38, 1907-1944.

Shen, Y., Shen, M., Xu, Z., Bai, Y. (2009). Bank size and small- and medium-sized enterprise (SME) lending: Evidence from China. *World Development*, 37, 800-811.

Stefancic, M. (2014). Investigating management turnover in Italian cooperative banks. *Journal of Entrepreneurial and Organizational Diversity*, 3, 131-163.

Stiglitz, J.E. (1990). Peer monitoring and credit markets. *The World Bank Economic Review*, 4, 51-366.

Usai, S., Vannini, M. (2005). Banking structure and regional economic growth: lessons from Italy. *Annals of Regional Science*, 39, 691-714.

Wagner, C., Winkler, A. (2013). The vulnerability of microfinance to financial turmoil. Evidence from the Global Financial Crisis. *World Development*, 51, 71-90.

Wheelock, D.C., Wilson, P.W. (2011). Are credit unions too small?. *Review of Economics and Statistics*, 93, 1343-1359.

Table 1 – Descriptive statistics

Variable	Mean	Std. Dev.	Minimum	Median	Maximum	Obs.
INCOMEGROWTH	0.7521	0.8862	-2.7273	0.6994	4.3573	7,732
EMPLGROWTH	-0.1192	2.2443	-10.0037	-0.1645	9.6356	7,729
FIRMGROWTH	0.0960	1.3675	-6.6852	0.0751	6.5443	7,747
INITPERCAPINC	10,009.09	3,282.96	2,709.72	10,319.84	29,976.83	7,732
INITEMPLADPOP	33.4087	24.1686	2.8777	27.4590	415.4369	7,729
INITFIRMPOP	6.9155	2.5596	1.4125	6.6285	35.6747	7,747
BANKPRESENCE	0.7357	0.4410	0	1	1	8,064
CCBPRESENCE	0.2700	0.4440	0	0	1	8,064
BANK	2.3330	4.3355	0	1	163	8,064
CCB	0.3003	0.5470	0	0	8	8,064
BANKBRANCH	3.6219	22.6663	0	1	1,339	8,064
CCBBRANCH	0.3827	1.0536	0	0	39	8,064
FIRMSIZE	3.0202	1.7095	1	2.5547	29.3430	8,064
SCHOOL	21.5361	4.5069	4.8387	21.5852	47.1910	8,064
POPGROWTH	0.2903	1.1605	-5.1739	0.2509	8.4860	8,064
POP	7,045.76	39,371.03	33	2,362	2,546,804	8,064
POPDENS	278.8198	620.4416	1.188183	104.064	13,157.14	8,064
DEPENDENTPOP	34.7682	4.5800	21.2871	34.0887	65.7143	8,064

Variable	Description
INCOMEGROWTH	Average annual growth rate of real per capita income in the municipality (percentage)
EMPLGROWTH	Average annual growth rate of firms' employees per inhabitant aged 15-65 in the municipality (percentage)
FIRMGROWTH	Average annual growth rate of firms' number per inhabitant in the municipality (percentage)
INITPERCAPINC	Initial real per capita income (constant 2010 euro)
INITEMPLADPOP	Initial firms' employees per 100 inhabitants aged 15-65
INITFIRMPOP	Initial firms' number per 100 inhabitants
BANKPRESENCE	Dummy for the presence of banks in the municipality (beginning of the period) (0=no; 1=yes)
CCBPRESENCE	Dummy for the presence of mutual banks in the municipality (beginning of the period) (0=no; 1=yes)
BANK	Number of banks in the municipality (beginning of the period)
CCB	Number of mutual banks in the municipality (beginning of the period)
BANKBRANCH	Number of bank branches in the municipality (beginning of the period)
CCBBRANCH	Number of mutual bank branches in the municipality (beginning of the period)
FIRMSIZE	Average firm size in the municipality (employees / firms, beginning of the period)
SCHOOL	Share of people with secondary education over total population (percentage, start-period census values)
POPGROWTH	Average annual growth rate of population (percentage, census values)
POP	Municipality population (start-period census values)
POPDENS	Municipality population per square kilometer (start-period census values)
DEPENDENTPOP	Share of population that is not aged 15-65 (percentage, start-period census values)

Source: Ministry of Economics and Finance, Istat, Bank of Italy.

Table 2 – Correlation matrix for selected variables

	INCOMEGROWTH	*EMPLGROWTH*	*FIRMGROWTH*	*INITPERCAPINC*	*INITEMPLADPOP*	*INITFIRMPOP*	*BANKPRESENCE*	*CCBPRESENCE*	*SCHOOL*	*POPGROWTH*	*POP*	*POPDENS*	*DEPENDENTPOP*
INCOMEGROWTH	1												
EMPLGROWTH	0.21*	1											
FIRMGROWTH	0.19*	0.55*	1										
INITPERCAPINC	-0.54*	-0.16*	-0.24*	1									
INITEMPLADPOP	-0.36*	-0.24*	-0.19*	0.53*	1								
INITFIRMPOP	-0.21*	-0.11*	-0.32*	0.49*	0.63*	1							
BANKPRESENCE	-0.17*	-0.02*	-0.06*	0.18*	0.27*	0.28*	1						
CCBPRESENCE	-0.10*	0.01	-0.05*	0.19*	0.19*	0.22*	0.36*	1					
SCHOOL	-0.26*	-0.05*	-0.07*	0.54*	0.26*	0.30*	0.16*	0.14*	1				
POPGROWTH	-0.31*	-0.18*	-0.23*	0.42*	0.32*	0.27*	0.23*	0.20*	0.31*	1			
POP	-0.08*	0.02*	0.04*	0.10*	0.06*	0.06*	0.09*	0.11*	0.12*	0.01	1		
POPDENS	-0.18*	-0.00	0.04*	0.17*	0.11*	0.05*	0.18*	0.07*	0.21*	0.12*	0.29*	1	
DEPENDENTPOP	0.29*	0.01	0.08*	-0.37*	-0.31*	-0.24*	-0.34*	-0.22*	-0.33*	-0.56*	-0.07*	-0.28*	1

* = the level of the correlation coefficient is significant at the 5% level or better.

Table 3 – Estimation results: basic models with bank dummy variables

	Dependent variable		
	INCOMEGROWTH	*EMPLGROWTH*	*FIRMGROWTH*
lnINITPERCAPINC	-2.5247***	-	-
	(-34.92)		
lnINITEMPLADPOP	-	-1.2889***	-
		(-22.28)	
lnINITFIRMPOP	-	-	-1.5167***
			(-24.44)
BANKPRESENCE	-0.0353	0.2083***	-0.0127
	(-1.53)	(2.61)	(-0.27)
CCBPRESENCE	0.0773***	0.1357**	0.0798**
	(4.44)	(2.39)	(2.45)
SCHOOL	0.0641***	0.0378***	0.0280***
	(21.00)	(5.02)	(6.41)
POPGROWTH	-0.0527***	-0.4368***	-0.2734***
	(-5.65)	(-14.17)	(-15.04)
lnPOP	-0.0653***	0.3116***	0.2225***
	(-5.92)	(9.09)	(11.15)
POPDENS	-0.0709***	-0.2661***	-0.0968***
	(-6.17)	(-7.27)	(-4.54)
DEPENDENTPOP	0.0031	-0.0949***	-0.0264***
	(1.02)	(-9.41)	-(4.26)
R^2	0.5545	0.2300	0.3029
N. obs.	7,732	7,729	7,747

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level.
t-values (in parentheses) are based on robust standard errors.
Provincial dummies are included in all estimations but are not reported.

Table 4 – Estimation results: basic models with bank number and branches

	Dependent variable			Dependent variable		
	INCOME GROWTH	*EMPLGROWTH*	*FIRMGROWTH*	*INCOME GROWTH*	*EMPLGROWTH*	*FIRMGROWTH*
lnINITPERCAPINC	-2.5237***	-	-	-2.5226***	-	-
	(-35.00)			(-35.01)		
lnINITEMPLADPOP	-	-1.3072***	-	-	-1.3095***	-
		(-22.39)			(-22.40)	
lnINITFIRMPOP	-	-	-1.5336***	-	-	-1.5374***
			(-24.24)			(-24.21)
lnBANK	-0.0133**	0.0679***	0.0101	-	-	-
	(-2.54)	(3.70)	(0.95)			
lnCCB	0.0176***	0.0249**	0.0162**	-	-	-
	(4.71)	(2.03)	(2.32)			
lnBANKBRANCH	-	-	-	-0.0125**	0.0718***	0.0124
				(-2.32)	(3.81)	(1.12)
lnCCBBRANCH	-	-	-	0.0171***	0.0238**	0.0162**
				(4.68)	(1.99)	(2.38)
SCHOOL	0.0642***	0.0371***	0.0282***	0.0642***	0.0368***	0.0282***
	(21.04)	(4.95)	(6.47)	(21.03)	(4.91)	(6.46)
POPGROWTH	-0.0533***	-0.4327***	-0.2729***	-0.0534***	-0.4316***	-0.2727***
	(-5.72)	(-14.05)	(-15.00)	(-5.73)	(-14.02)	(-14.98)
lnPOP	-0.0536***	0.2574***	0.2054***	-0.0542***	0.2434***	0.1999***
	(-4.23)	(6.47)	(8.88)	(-4.09)	(5.80)	(8.19)
POPDENS	-0.0713***	-0.2641***	-0.0962***	-0.0712***	-0.2621***	-0.0956***
	(-6.22)	(-7.22)	(-4.51)	(-6.21)	(-7.17)	(-4.48)
DEPENDENTPOP	0.0032	-0.0959***	-0.0265***	0.0032	-0.0965***	-0.0267***
	(1.05)	(-9.53)	(-4.27)	(1.06)	(-9.58)	(-4.29)
R^2	0.5548	0.2309	0.3030	0.5548	0.2310	0.3031
N. obs.	7,732	7,729	7,747	7,732	7,729	7,747

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level.
t-values (in parentheses) are based on robust standard errors.
Provincial dummies are included in all estimations but are not reported.

Table 5 – Estimation results: cooperative banks and firm dimension

	Dependent variable		
	INCOME GROWTH	*EMPLGROWTH*	*FIRMGROWTH*
lnINITPERCAPINC	-2.4911***	-	-
	(-34.31)		
lnINITEMPLADPOP	-	-1.2765***	-
		(-20.78)	
lnINITFIRMPOP	-	-	-1.5216***
			(-24.50)
BANKPRESENCE	-0.0403*	0.1897**	-0.0039
	(-1.75)	(2.35)	(-0.08)
CCBPRESENCE	0.2008***	0.3545***	-0.0094
	(6.03)	(2.85)	(-0.15)
CCBPRESENCE × *FIRMSIZE*	-0.0382***	-0.0695**	0.0266*
	(-4.63)	(-2.07)	(1.73)
SCHOOL	0.0630***	0.0371***	0.0282***
	(20.62)	(4.92)	(6.46)
POPGROWTH	-0.0514***	-0.4351***	-0.2746***
	(-5.52)	(-14.13)	(-15.08)
lnPOP	-0.0651***	0.3136***	0.2209***
	(-5.93)	(9.15)	(11.10)
POPDENS	-0.0689***	-0.2605***	-0.0988***
	(-6.01)	(-7.12)	(-4.62)
DEPENDENTPOP	0.0030	-0.0955***	-0.0261***
	(0.96)	(-9.47)	(-4.20)
R^2	0.5548	0.2316	0.3037
N. obs.	7,736	7,726	7,750

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level.
t-values (in parentheses) are based on robust standard errors.
Provincial dummies are included in all estimations but are not reported.

Table 6 – Estimation results: cooperative banks and municipality size

	Dependent variable		
	INCOME GROWTH	*EMPLGROWTH*	*FIRMGROWTH*
lnINITPERCAPINC	-2.5156***	-	-
	(-34.90)		
lnINITEMPLADPOP	-	-1.2904***	-
		(-22.30)	
lnINITFIRMPOP	-	-	-1.5228***
			(-24.55)
BANKPRESENCE	-0.0496**	0.2404***	0.0199
	(-2.07)	(2.90)	(0.41)
CCBPRESENCE_SMALL	0.1027***	0.0708	0.0248
	(4.53)	(0.93)	(0.58)
CCBPRESENCE_MEDLAR	0.0368*	0.2186***	0.1561***
	(1.75)	(3.30)	(4.30)
SCHOOL	0.0641***	0.0376***	0.0282***
	(21.02)	(4.99)	(6.46)
POPGROWTH	-0.0546***	-0.4359***	-0.2760***
	(-5.89)	(-14.15)	(-15.21)
lnPOP	-0.0535***	0.2915***	0.2026***
	(-4.55)	(7.89)	(9.39)
POPDENS	-0.0730***	-0.2644***	-0.0982***
	(-6.36)	(-7.22)	(-4.61)
DEPENDENTPOP	0.0031	-0.0959***	-0.0277***
	(1.02)	(-9.49)	(-4.48)
R^2	0.5543	0.2298	0.3032
N. obs.	7,735	7,731	7,747

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level.
t-values (in parentheses) are based on robust standard errors.
Provincial dummies are included in all estimations but are not reported.

Table 7 – Estimation results: the role of cooperative banks' size

	Dependent variable		
	INCOME GROWTH	*EMPLGROWTH*	*FIRMGROWTH*
lnINITPERCAPINC	-2.5236***	-	-
	(-34.86)		
lnINITEMPLADPOP	-	-1.2867***	-
		(-22.22)	
lnINITFIRMPOP	-	-	-1.5145***
			(-24.36)
BANKPRESENCE	-0.0365	0.1992**	-0.0181
	(-1.58)	(2.48)	(-0.39)
CCBPRESENCE_SMALLCCB	0.0843***	0.1820***	0.1081***
	(4.01)	(2.61)	(2.80)
CCBPRESENCE _LARGECCB	0.0697***	0.0833	0.0479
	(3.24)	(1.18)	(1.21)
SCHOOL	0.0640***	0.0378***	0.0280***
	(20.98)	(5.02)	(6.41)
POPGROWTH	-0.0527***	-0.4365***	-0.2732***
	(-5.65)	(-14.15)	(-15.03)
lnPOP	-0.0647***	0.3154***	0.2248***
	(-5.86)	(9.17)	(11.23)
POPDENS	-0.0706***	-0.2645***	-0.0957***
	(-6.14)	(-7.21)	(-4.47)
DEPENDENTPOP	0.0032	-0.0946***	-0.0263***
	(1.03)	(-9.39)	(-4.23)
R^2	0.5546	0.2301	0.3030
N. obs.	7,732	7,729	7,747

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level.
t-values (in parentheses) are based on robust standard errors.
Provincial dummies are included in all estimations but are not reported.

Table 8 – Estimation results: cooperative banks and the local initial level of the relevant economic variables

	Only municipalities below the median value of:			Only municipalities above the median value of:		
	INIT PERCAPINC	*INIT EMPLADPOP*	*INIT FIRMPOP*	*INIT PERCAPINC*	*INIT EMPLADPOP*	*INIT FIRMPOP*
	Dependent variable			Dependent variable		
	INCOME GROWTH	*EMPLGROWTH*	*FIRMGROWTH*	*INCOME GROWTH*	*EMPLGROWTH*	*FIRMGROWTH*
lnINITPERCAPINC	-2.3177***	-	-	-2.7890***	-	-
	(-24.70)			(-20.59)		
lnINITEMPLADPOP	-	-1.9547***	-	-	-0.9857***	-
		(-14.99)			(-10.38)	
lnINITFIRMPOP	-	-	-2.0136***	-	-	-1.0773***
			(-15.48)			(-11.37)
BANKPRESENCE	-0.0366	0.2533**	0.0127	-0.0213	0.1868	0.0707
	(-1.11)	(2.34)	(0.20)	(-0.63)	(1.30)	(0.90)
CCBPRESENCE	0.0370	0.1555	0.1305**	0.1167***	0.1494**	0.0520
	(1.38)	(1.55)	(2.33)	(5.01)	(2.08)	(1.29)
SCHOOL	0.0587***	0.0356***	0.0244***	0.0683***	0.0565***	0.0261***
	(14.09)	(3.34)	(3.81)	(15.07)	(5.15)	(4.33)
POPGROWTH	-0.0685***	-0.3449***	-0.2009***	-0.0292**	-0.5145***	-0.3394***
	(-4.58)	(-7.36)	(-7.40)	(-2.42)	(-12.74)	(-13.92)
lnPOP	-0.0783***	0.4053***	0.2078***	-0.0397***	0.2996***	0.2403***
	(-4.41)	(6.56)	(5.86)	(-2.67)	(6.73)	(9.67)
POPDENS	-0.0508***	-0.2529***	-0.0836**	-0.0830***	-0.3280***	-0.1115***
	(-2.97)	(-4.75)	(-2.55)	(-5.15)	(-6.25)	(-3.93)
DEPENDENTPOP	-0.0026	-0.0756***	-0.0290***	0.0034	-0.1114***	-0.0237***
	(-0.57)	(-5.14)	(-3.10)	(0.80)	(-7.80)	(-2.73)
R^2	0.3849	0.2012	0.2207	0.4515	0.1973	0.2571
N. obs.	3,783	3,808	3,816	3,949	3,921	3,931

*** = significant at the 1% level; ** = significant at the 5% level; * = significant at the 10% level.
t-values (in parentheses) are based on robust standard errors.
Provincial dummies are included in all estimations but are not reported.