Does the proximity of cooperative banks facilitate access to credit?

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Abstract

We empirically investigate the advantages of relationship lending as easier access for Italian firms measured to bank credit due to the proximity to (at least) a cooperative bank branch. For 470,237 firms, (2,166,878 firm-year observations) over the period 2010-2020, empirical findings show that firms located in the proximity of cooperative bank branches have more access to bank credit and use fewer other sources of external financing (trade credit). This effect is higher than the one shown for banks with similar size but different governance, while large banks do not show any effect in granting access to bank credit. Moreover, cooperative banks result to be effective in providing greater access to credit to more credit constrained firms, such as micro and small firms. Lastly, the cooperative bank effect is found to be more relevant in rural areas. Despite recent literature having argued that relationship lending and proximity effects have been overcome by technological improvements, our results assert that cooperative banks are still able to exploit relationship lending and ensure greater access to credit, at least in an economy strongly characterized by SMEs.

1. Introduction

Small and medium enterprises (SMEs) experience greater obstacles to accessing external sources of financing (Beck and Demirguc-Kunt, 2006; Garcia-Appendini and Montoriol-Garriga, 2013; Casey and O'Toole, 2014), and, therefore, have greater difficulties in implementing investment projects. Moreover, it is well known that smaller firms have trade credit or bank credit as their main source of external financing (Palacìn-Sanchez et al., 2019), and more generally have to recur to informal financing (Ayyagari et al., 2010). Indeed, the so-called "conventional paradigm" matters: banks collect soft information to lend to opaque firms, such as SMEs, through relationship lending (Petersen and Rajan 1994; Boot 2000). Specifically, small banks are better suited to lend to SMEs (Haynes, et al. 1999; Cole et al. 2004; Scott 2004; Berger et al. 2005). Banks with a strong relationship with the territory use the soft information collected through relationship lending so that they can be more informed about customers' activities to make better lending decisions (Berger and Udell, 2006). Small banks with few layers of management are better able to deal with soft information (Berger and Udell 2002; Stein 2002).

Regarding the conventional paradigm, banking literature tends to find supportive empirical evidence. SMEs based in areas with a greater presence of small (community and cooperative) banks were found to face fewer financial constraints (Berger et al., 2017). Mkhaiber and Werner (2021) found a negative relationship between bank size and propensity rate to lend to small businesses. Within small banks, a special focus is on cooperative banks for several reasons. First, cooperative banks have historically relied on relationship lending (Coccorese et al., 2016; Berger et al., 2017), which qualifies and distinguishes them from traditional commercial banks. Also, cooperative banks are shown to be closely linked with the territory, also in mandatory terms (Hasan et al., 2017; Coccorese and Ferri, 2020). Finally, local cooperative banks play a key role in facilitating credit to SMEs at a lower cost contributing to their growth (Hasan et al., 2017). The rationale is that geographical proximity of cooperative banks to SMEs enables to reduce financial constraints.

Over recent years, technological changes might have weakened the conventional paradigm. Berger et al. (2014) challenge the conventional paradigm, providing empirical evidence often not consistent with the conventional paradigm. Technological processes and deregulation have made it easier for megabanks to serve small and opaque firms. The idea that geographic proximity reduces the costs of transferring labour, goods, and, more importantly, information (Duranton and Puga, 2004) has been questioned in recent years since technological changes have dramatically lowered the costs of transmitting and processing information. Indeed, even if there is an extensive body of banking literature stating that informational asymmetries are central to credit allocation (starting from Akerlof, 1978, and Stiglitz and Weiss, 1981), Petersen and Rajan (2002) posed into doubt the importance of distance since innovation such as information technology and credit scoring have gradually eroded the local nature of small business lending.

Given this background, we aim to investigate whether the conventional paradigm still holds. More precisely, we address the following research questions: *i)* Are cooperative banks able to exploit proximity and so better able to provide credit? And do the bank size and governance matter? *ii)* What is the relationship between bank credit and informal finance? *iii)* What moderates the effect of proximity (firm dimension, and rural/urban area)? *iv)* What is the effect of the pandemic (i.e. substitution of geographic proximity with remote proximity)?

This paper, therefore, aims at contributing to three streams of literature. First, we add some pieces to the debate about the validity of the conventional paradigm and the role of local banks in providing credit, assessing whether Italian cooperative banks are still able to meet SMEs' financial needs. Second, we enter into the debate regarding the role of geographical distance in banking, using a relatively new methodology to identify proximity to better discuss the topic. Third, we study possible sources of external financing for SMEs, particularly focusing on the relationship between banks and trade credit.

To investigate this relationship between the local banking market and firms, we choose the Italian case for three distinctive reasons. First, the Italian economy is strongly characterized by the

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presence of micro, small and medium-sized enterprises (MSMEs). As of 2019, MSMEs represent 99.9% of Italian non-financial enterprises, 77.3% of employees, and contribute for 64.7% to value creation (ISTAT, 2021).[1] The presence of micro and small enterprises (and the added value) is above the average of other OECD countries, while the number of large firms is noticeably lower (OECD, 2021). Second, Italian cooperative banks have always relied on relationship lending, being closely linked to the territory, as also recalled by regulation.[2] Italian cooperative banks have a relevant domestic market share in terms of deposits, loans, and mortgages (Cornèe et al., 2018). Third, Italian cooperative banks have recently undergone a regulatory reform regarding their organizational structure, and debate about branch closing and reorganization is topical and intense nowadays, undoubtedly made more urgent by the pandemic context and technological innovations that call into question the existence of the traditional bank branch model.

To build the dataset, we employ Geographic Information System (GIS) technology. This makes possible to associate data with their geographical position on the earth's surface and process them to extract information. The aim is to know whether, how many and which bank branches are located in the proximity (within a set radius) of each company, and how many other firms. We first employ a radius of 1km, then we expand it for robustness test to 3 and 5 km. We constructed a large dataset consisting of non-financial Italian firms over the period 2010-2020.

We apply a fixed effect regression model to identify the effect of the presence of, at least, a cooperative bank branch in the proximity of a firm. Moreover, in order to rule out possible endogeneity concerns regarding the persistence of cooperative banks' branches in areas with better firms, we apply an instrumental variable approach. We instrument the presence of cooperative banks with the presence of parish churches: Italian cooperative banks were founded by catholic entrepreneurs in the proximity of parish churches at the start of the 20th century (Cesarini et al., 1997;

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[1] Data collected from Rapporto Imprese 2021, available at https://www.istat.it/storage/rapporti-tematici/imprese2021/Rapportoimprese2021.pdf
[2] Italian cooperative banks have to grant credit mainly to their members (Article 35 "Testo Unico Bancario", TUB). To be a member of a cooperative credit bank, it is necessary to reside, have a registered office or operate continuously in the territory for which the bank is responsible (Article 34 TUB).

Cafaro and Berbenni, 2021), so we can infer that the instrument is related to the presence of cooperative banks (relevance condition), but not to bank credit access (exclusion restriction).

We find that firms whose headquarters are located in the proximity of a cooperative bank branch have more access to bank credit (especially long-term bank credit) and use fewer other possible forms of finance, i.e. informal finance. This is known to play a complementary role to the formal financial system by servicing the lower end of the market (Ayyagari, 2010). A possible source of informal finance is trade credit (Fisman and Love, 2003). Our results stress the relationship between cooperative banks' proximity and the usage of formal and informal finance: if cooperative banks are present, firms recur less to forms of informal finance such as shareholders' loans and trade credit. We demonstrate this with a novel approach. This also confirms the stream of literature suggesting that bank credit and trade credit are substitutes, not complements, especially in a market where the vast majority of firms are SMEs (see, for instance, Casey and O'Toole, 2014 and Carbo-Valverde et al., 2016). Moreover, the increase in total leverage is lower than the one in bank leverage, so we can say that overall firms' financial leverage does not directly depend on the proximity to cooperative banks (the increase is due to the increase of bank credit but is partially compensated by the decrease of other sources of debt). Besides being confirmed by the instrumental variable approach, our results regarding the baseline analysis are confirmed when extending the radius of interest to 3 and 5 kilometers and when modifying the model specification. Cooperative banks are then found to be effective in providing credit especially to micro and small enterprises, which are the majority of Italian non-financial firms and are known to have greater constraints in accessing external debt. Moreover, cooperative banks are shown to be effective both in urban and rural areas, with a stronger magnitude in the latter. When moving the focus to the pandemic outbreak period (year 2020), we find that, even if physical proximity was not possible, cooperative banks were still able to perform relationship banking, moving to "remote proximity".[3]

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[3] Note that Italy has experienced more stringent restrictions since the start of Covid pandemic with respect to OECD countries' average (OECD, 2021)

All these results bring new evidence to support the persistence of the conventional paradigm and so the relevance of cooperative banks in Italy, also considering the recent reform they have undergone. Cooperative banks are still able to perform relationship lending and favor access to bank credit to firms located in their proximity, as also their Articles of Association state. The increase in bank credit does not entirely translate in the same magnitude increase in total debt, since those firms use less informal finance. They result to have debt of higher quality since they substitute trade credit with bank credit. Our results also put bank branches in a different light, highlighting how they can still be effective despite technological improvements and banking evolution in recent years, at least in an economy strongly characterized by the presence of MSMEs, also in the pandemic context.

The rest of the paper is organized as follows. Section 2 reports the relevant literature regarding cooperative banks and relationship lending, spatial competition and geographic distance in banking, and SMEs financing. Section 3 illustrates data and depicts the methodology. Section 4 discusses the empirical results and provides robustness checks. Section 5 concludes the paper.

2. Literature review

2.1. Cooperative banks and relationship banking

Cooperative banks are small-scale and local banks that exploit geographical proximity and personal relationship to facilitate the acquisition of information about creditworthiness (Wheelock and Wilson, 2011). While hierarchical firms usually employ quantitative rather than qualitative information (Stein, 2002) and large banks rely on quantitative criteria in the loan decision process, small banks (such as Italian cooperative banks) rely on qualitative criteria based on personal interactions (Cole et al., 2004). Thus, as underlined by Beck and Demirguc-Kunt (2006) seminal paper, banks have to use different lending technologies when dealing with SMEs: it follows that relationship lending is among the most important lending technologies adopted by banks and their borrowers (Berger and Udell, 2006; Kysucky and Norder, 2016). The literature argues that the adoption of this lending model is mainly related to small business lending (Berger and Udell, 2006; Berger et al., 2015) and it is usually performed by small banks: arguments in this strand of the

literature suggest that small banks, such as cooperative banks, are more prone in establishing a strong relationship with small businesses, while large banks prefer to serve more larger and transparent firms. Indeed, large banks rely on hard information, while serving smaller businesses requires the use of soft information, which is known to be difficult to quantify and transmit (see Berger et al., 2001, 2005a; Scott, 2004; Craig and Hardee, 2007). On the opposite, by implementing closer relationships through relationship lending, banks can resolve the information asymmetry and acquire soft information (Ramakrishnan and Thakor, 1984; Fama, 1985; Rajan, 1992; Fiordelisi et al., 2014), and alleviate credit constraints in economic downturns (Bolton et al., 2016). It has to be mentioned a recent work by Beck et al. (2018), who found that relationship lending is not associated with credit constraints during a credit boom, and it alleviates such constraints during a downturn. This positive role of relationship lending is stronger for small and opaque firms and in regions with a more severe economic downturn. Moreover, relationship lending mitigates the impact of a downturn on firm growth and does not constitute evergreening of loans. Conversely, De la Torre et al. (2010) found that any disadvantage in lending to small opaque businesses using relationship lending is offset by the advantages that the large banks have in using certain transaction lending technologies to provide credit. Also, Berger et al. (2014) posed doubt about the validity of the conventional paradigm, perhaps because of the changes in lending technologies and deregulation of the banking industries. More generally, the literature argues that since credit scoring techniques have become important and, thanks to that, larger banks have entered the market, distance have lost power and small businesses have easier access to more distant lenders that focus on hard-information based lending technologies (as summarized by Durguner, 2017: Petersen and Rajan, 2002; Berger et al., 2005b; Vera and Onji, 2010; DeYoung et al., 2011). Many studies tried to identify the link between cooperative banks and economic growth. Ayadi et al. (2010) found that while cooperative banks were associated with enhanced growth for the period 2000-2008 in Austria, Finland, Germany, and the Netherlands, that did not happen in Spain, France, and Italy. As concerns Italy, Bernini and Brighi (2018) showed that the presence of greater credit availability from cooperative banks was a mean to enhance growth in

local areas. Moreover, cooperative banks, exploiting their local knowledge to facilitate screening loans and monitoring borrowers, can be effective at promoting regional economic growth (Coccorese and Shaffer, 2021).

In this paper, we aim at adding some pieces to the debate about the validity of the conventional paradigm and the role of local banks in providing credit, assessing whether Italian cooperative banks are still able to meet SMEs' financial needs. In particular, we want to empirically investigate whether the conventional paradigm still holds, even if changes in lending technologies and deregulation of the banking industries are assumed to negatively affect its validity (Berger et al., 2014).

2.2 Spatial competition and geographic distance in banking

Relationship lending is strictly connected to the proximity between banks and borrowers. Berger et al. (2005a) showed that small banks tend to lend at a smaller distance, interact more personally with borrowers and have longer relationships. Liberti and Mian (2008) found that a greater hierarchical or geographical distance between the information collecting agent and the loan approving officer leads to less reliance on subjective information and greater reliance on objective information. Cultural proximity between lenders and borrowers is shown to increase the availability of credit (Fisman et al., 2017). Other studies highlight that distance is associated with a higher probability of credit rationing (Brevoort and Hannan, 2006; Alessandrini et al., 2009; Rauterkus and Munchus, 2014).

Regarding the applications of spatial competition to banking, it is important to mention Besank and Thakor (1992) who applied Hotelling (1929) and Salop (1979) models. Literature has highlighted two key changes which may have spatial implications for lending behavior in banks: operational distance and functional distance (Lee and Brown, 2017). Operational distance is defined as the proximity between bank branches and borrowers. Functional distance is referred to the relation between a bank's branches and a bank's headquarter. Both have increased in recent years. Hasan et al. (2017) studied Polish cooperative banks exploiting a dataset on bank branch locations and firm-, county-, and bank-level data. Among their analyses, they studied the branch market shares within different radiuses from SME's headquarters. They showed that local banking market structures matter

for SME access to bank loans and performance and that a stronger local presence of cooperative banks, which presumably use soft information, is beneficial for SMEs. This presence accelerates the pace of new firm creation, improves SME access to long-term financing, and augments SME investments. All this evidence accords very well with the theoretical conjectures concerning the virtues of relationship banking. In the US, Nguyen (2019) studied whether distance shapes credit allocation by estimating the impact of bank branch closing during the 2000s on local access to credit, finding that closings lead to a persistent decline in local small business lending. This effect results to be very localized but especially severe during the financial crisis. Regarding functional distance, Alessandrini et al. (2010) studied the impact of distance and bank size on firms' likelihood of introducing innovation and financing constraints on a sample of Italian SMEs. They provide evidence of the fact that firms located in provinces where the local banking industry has a higher functional distance are less inclined to introduce innovations and results to be credit rationed. Zhao and Jones-Evans (2016) studied functional distance in the UK, highlighting that greater functional distance between bank headquarters and branches exacerbates the credit constraints faced by local SMEs.

In this paper, we contribute to the literature stream regarding operational distance with a novel approach. The research is also demanded by the Italian context: in Italy, during the period of analysis, total bank branches decrease from around 32,000 to around 24,000 (Bank of Italy), while cooperative banks branches remained roughly constant (down by 200, to around 4200 in 2019). Therefore, we want to empirically investigate if the lower operational distance for cooperative banks could positively affect the ability of firms to get access to bank credit.

2.3 SMEs Financing

SMEs are known to be more financially constrained than large firms, therefore they have to rely on alternative sources of finance (Garcia-Appendini and Montoriol-Garriga, 2013 and Casey and O'Toole, 2014). Unlike large firms, SMEs do not have access to capital markets, therefore they limited options as alternative sources of external finance. The importance of SMEs finance is well analyzed by the literature. In their review of literature, Kersten et al. (2017) underline that the

interventions to promote access to finance to SMEs constitute an important component of the development strategy of many governments and donors: for example, in the period 2006-2012 the World Bank Group's commitments, expenditures, and exposure to SME support constituted approximately 7% of its total portfolio (World Bank, 2014).

Concerning debt access, literature has shown that age and size are two important determinants: information asymmetries impact more young firms because they have a limited relation with intermediaries (Diamond 1989). These findings are corroborated by Canton et al. (2013), who studied perceived bank loan accessibility show that small and young SMEs perceive more difficulties to obtain bank loans than larger and older SMEs, and by Freel et al. (2012), who studied UK firms and found that firms who have a higher probability to be denied when they apply for a bank loan are smaller and lack close relationships with banks. Moreover, younger and smaller firms may also have less collateral to be pledged (Andreiu et al., 2018).

An alternative source of finance for small and medium enterprises is known to be the so-called informal finance. This is known to play a complementary role to the formal financial system by servicing the lower end of the market. Informal financing typically consists of small, unsecured, short-term loans restricted to rural areas, agricultural contracts, households, individuals, or small entrepreneurial ventures. Informal financial institutions rely on relationships and reputation and can more efficiently monitor and enforce repayment from a class of firms than commercial banks and similar formal financial institutions can. However, informal financial systems cannot substitute for formal financial systems, because their monitoring and enforcement mechanisms are ill-equipped to scale up and meet the needs of the higher end of the market (Ayyagari et al., 2010). Most informal finance comes from family and friends; however, this is connected to shadow costs (Lee and Persson, 2016). Another form of informal finance is trade credit (Fisman and Love, 2003). Literature has identified trade credit as a viable bank financing substitute for SMEs. Garcìa-Teruel and Marìnez-Solano (2010) focused on determinants of trade credit and found that trade credit represents, on

average, 22% of total assets (data on European countries). While Petersen and Rajan (1997) reported that better-quality SMEs in the USA obtained more trade credit, it is well known that this credit results to be expensive, so firms which used that more extensively results to have restricted access to bank financing as well. This is supported by Casey and O'Toole (2014), who found that, in Europe, firms that are credit rationed are 9% more likely to use trade credit. Carbo-Valverde et al. (2016), studying Spanish SMEs, reported that credit constrained SMEs depend on trade credit (but not bank loans), while unconstrained firms are dependent on banks loans but not trade credit, and these dependencies were found to be more intense during the financial crisis. By contrast, Gianetti et al. (2011) found that US firms can receive trade credit at a low cost, so they identified a complementarity rather than substitution as regards trade credit and bank lending. Agostino and Trivieri (2014) reported a similar finding studying Italian firms: banks in Italy took trade credit as relevant information when they make lending decisions, and they showed a positive effect of trade credit financing on obtaining bank financing, especially when the relationship between firm and bank is young, suggesting again the complementarity mechanism.

We aim at contributing to the debate on SMEs' financing in two ways. Firstly, we contribute to the literature by stressing the relationship between cooperative banks' proximity and the usage of formal and informal finance. To the best of our knowledge, we study this topic with a novel approach. Secondly, we aim at adding some pieces to the debate regarding the substitution or complementarity of trade credit with respect to bank credit.

3. Data and methodology

3.1 Data

In our analysis, we employ different data sources combined with several techniques.[4] As for bank branches openings and closure, we use the publicly available Bank of Italy database which comprises

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[4] See Appendix A for a summary of sources of data and variable definitions.

information about bank denomination, date of opening and closure of every single branch, and branch address. Thanks to that information, we can geolocate every single branch in our database thanks to Google Maps.[5] Banks' balance sheets are provided by Federcasse (federal association of Italian cooperative banks). Thanks to bank financials, we can identify banks of small dimension (identified as the first tercile of total assets distribution of Italian non-cooperative banks, in order to have a group comparable to the one of cooperative banks as bank size), which may exploit similar techniques like relationship lending as cooperative banks, given their size and connection with the territory. Firms' financials and locations are obtained through Bureau van Djik's AIDA.[6] Our database comprises non-financial firms (i.e., belonging to construction, manufacturing, trade, and services industries, according to the US SIC Code provided by AIDA). Firms are kept in the database if we have at least four consecutive years of data. We exclude observations with missing data. Almost 99% of the companies in the database meet the requirements to be defined as SMEs according to the European Commission definition: 373,948 have to be considered micro-enterprises (1,388,937 firm-year observations), 151,259 are small enterprises (629,165 firm-year observations), 29,153 are medium enterprises (128,421 firm-year observations), while 4,335 are large firms (20,355 firm-year observations).[7] Therefore, our database is an unbalanced panel dataset with 470,237 firms, and 2,166,878 firm-year observations for the period 2010-2020. Italian territorial features are obtained through ISTAT.[8] Lastly, data regarding Italian parish churches, employed as instrumental variable, are obtained through the Italian Episcopal Conference (*Conferenza Episcopale Italiana*, CEI) website, where information about parishes is publicly available.

Our goal is to identify proximity between firms and bank branches, and more generally local firm and bank market characteristics (such as number of firms and bank branches present in the same

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[5] We obtain geographic coordinates from Google Maps thanks to an automized procedure through a Python package.
[6] *Analisi Informatizzata delle Aziende Italiane*
[7] According to the definition provided by the European Commission, a firm is defined as (i) a micro firm if it has fewer than 10 employees and a turnover (or balance sheet assets) of less than €2 million; (ii) a small firm if it has fewer than 50 employees and a turnover (or balance sheet assets) of less than €50 million; (iii) a medium-sized firm if it has fewer than 250 employees and a turnover of less than €50 million or balance sheet assets of less than €43 million.
[8] *Istituto nazionale di statistica*, Italian national statistics institute

market) for every firm, so we employ a *Geographic information system* software (QGIS). We use headquarters (as Nguyen, 2019) as a proxy for the firm location since the majority of firms in our database are MSMEs, so we can assume they operate in areas close to their headquarters and enter into banking relationships with branches in that area. Then, we apply the following procedure. Through geographic coordinates, we are able to localize every Italian bank branch and every firm headquarter on the earth's surface, creating a very detailed map of Italy. Figure 1 shows cooperative banks' branches distribution around Italy. Panel A shows the ratio between cooperative banks and total banks, while Panel B shows the distribution of cooperative banks' branches with respect to firms (branches to 10 thousand firms) in our database. So, we can extract information from this map: we are able to identify, for every firm in every year of our study (2010 to 2020), whether, how many, and which bank branches are located in the proximity (within a set radius) of every company. The same methodology is employed to check for the construction of the instrument: we instrument the presence of cooperative banks by inspecting if in a given radius around the firm also a parish church is located. In this way, we do not rely on static information as in previous research on functional distance, where geographic information was not obtained at individual level: we are able to be more precise, having the detailed situation for every single firm, and not relying, for instance, on province characteristics, as in Alessandrini et al. (2010). In this way, we are able to obtain the local bank market characteristic for every single firm Moreover, by interacting the position of firms' headquarters, we obtain also the local firm market characteristic (i.e., the number of firms located in the proximity of every firm, which can be seen as a proxy of the concentration of this market and as possible competitors for obtaining bank credit from local banks' branches). Figure 2 shows two snapshots of our map: Panel A shows the case 13heree a firm Is located in the proximity of a cooperative bank branch and a parish church, while Panel B shows a more competitive market where many firms are located near both a cooperative bank branch and a small bank branch.

[Figure 1]

[Figure 2]

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Summary statistics are shown in Table 1.

[Table 1]

All possible dependent variables (total debt, bank debt, trade debt, other debt) are expressed as ratio with respect to total assets. As for bank leverage (bank debt to total assets), we both consider short-term (maturity less than 1 year) and long-term (maturity greater than 1 year) leverages. A graphical representation of independent variable is shown in Figure 3. Around 43% of Italian firms have a cooperative bank branch within a radius of 1km of the headquarters. All variables are winsorized at the 1st and 99th percentile. The correlation matrix is shown in Table 2

[Table 2]

3.2 Empirical strategy

To estimate the impact of the proximity of a cooperative bank branch to a firm, as for the baseline model aimed at estimating the overall effect of cooperative banks proximity, we employ the following fixed effect regression:

$$Y_{i,t} = \alpha_0 + \beta_{i,t} I_{i,t} + \gamma_{i,t} X_{i,t} + \Theta_{i,t} + \varepsilon_{i,t} \qquad (1)$$

where $Y_{i,t}$ is the observed dependent variable, α_0 is the constant term, $I_{i,t}$ is an indicator function that takes value of 1 when in a given distance around the firm headquarters (at least) a cooperative bank branch is located, $X_{i,t}$ is the vector of covariates, and $\Theta_{i,t}$ is the vector of fixed effects. Depending on the function, the dependent variable is, as for Research Question (*i*) Bank Leverage (total, short-term, and long-term) and as for Research Question (*ii*) Financial Leverage, Trade Leverage, and Other Leverage. We indeed aim at assessing the impact of the presence of cooperative banks to firms' access to formal (bank leverage) and informal (trade leverage, shareholders' loans) finance. As covariates, we employ firm characteristics which are known to affect firm performance and access to credit. So, we include total assets to account for firm dimension, the age of the firm (well known as debt access key driver, see for instance Freel et al. 2012; Canton et al., 2013; Andreiu et al., 2018), ratios provided by literature to evaluate firms (Nissim and Penman,

2001), such as the ratio between total sales and total assets (assets turnover, ATO) and the ratio between earnings before interest and taxes and sales (profit margin, PM) and some local market characteristics. As of this last specification, we take into account the number of other firms located around the firm of interest (the number of firms located in the specified radius) and the two dummy variables which capture the local banking market composition: firstly, a small bank dummy variable which takes value of one whenever a non-cooperative small bank is located in the given radius with respect to the firm. Small banks are defined as banks whose total assets are in the first tercile, to have a comparable group of banks to cooperative banks: besides cooperative banks, other small banks could try to benefit from relationship lending. This specification allows us to inspect whether banking governance matters in lowering credit barriers to firms. The second dummy variable has value of 1 whenever a non-small bank branch is located around the firm, in order to inspect whether bank size matters. Lastly, we add a rural area dummy (which takes value of 1 if the firm is located either in a rural area or in a low-density area according to ISTAT, 0 if it is in an urban area). As for fixed effects, we employ province- and industry-fixed effects (according to first 3 digits of US SIC Code), both interacted with year-fixed effects. Therefore, the key goal of this fixed effect regression is to assess whether the proximity of a cooperative bank branch has a statistically significant effect on the dependent variables, checking for the firm and local market characteristics. Hence, through our baseline model, we can quantify the effect of cooperative banking in comparison to non-cooperative small banks and inspect whether higher bank leverage translates in higher overall financial leverage or a substitution effect with informal finance takes place. As for the radius of interest, we decide to employ a 1 km radius, in order to detect the effect of the close proximity of cooperative banks' branches to the firm. Then, to check the robustness of the findings, we expand our radii to check for the results' sensitivity to this choice. We use short radii to reflect local markets (Hasan et al., 2017).

We then interact our variable of interest (the cooperative bank branch presence) with several other variables to better identify what moderates the effect of cooperative banks on bank credit access

(Research Question (*iii*)). First, we interact our indicator variable with a categorical variable which capture the firm dimension according to the European Commission classification $(v_{i,t})^9$, to address the effect of cooperative banks and their relationship lending when dealing with different types of firms:[10]

$$Y_{i,t} = \alpha_0 + \beta_{i,t} I_{i,t} \times v_{i,t} + \gamma_{i,t} X_{i,t} + \Theta_{i,t} + \varepsilon_{i,t} \qquad (2)$$

The sets of fixed effects and controls remain as the baseline regression, with the obvious exception of the natural logarithm of total assets, given it is highly correlated with firm dimension.

Second, we interact the independent variable with the density area dummy (rural vs urban), to check if results are different in rural areas and if cooperative banks are able to better perform in that areas:

$$Y_{i,t} = \alpha_0 + \beta_{i,t} I_{i,t} \times T_{i,t} + \gamma_{i,t} X_{i,t} + \Theta_{i,t} + \varepsilon_{i,t} \qquad (3)$$

where $T_{i,t}$ is a dummy variable that takes value of 1 for rural areas (rural areas and low-density areas according to ISTAT categorization).

Lastly, we check for a pandemic effect (Research Question (*iv*)) by interacting our independent variable with the year 2020, to check what happened when physical proximity was not possible during the most severe phase of the Covid pandemic:

$$Y_{i,t} = \alpha_0 + \beta_{i,t} I_{i,t} \times 2020 + \gamma_{i,t} X_{i,t} + \Theta_{i,t} + \varepsilon_{i,t} \qquad (4)$$

In this last specification, fixed effects are not interacted.

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[9] This variable takes value of 0 if a firm is defined as large, 1 if medium, 2 if small, and 3 if micro.

[10] Being $v_{i,t}$ a continuous variable that captures the number of non-cooperative banks' branches around the given firm's headquarters, results have to be interpreted in the following way: cooperative bank dummy coefficient is (*ceteribus paribus*) the effect on the dependent variable for a firm of having just cooperative banks branches around the firm headquarter; $v_{i,t}$ coefficient captures the impact on the dependent variable of having just non-cooperative banks around the firm headquarter; the interaction between the cooperative bank presence dummy and $v_{i,t}$ captures the impact on the dependent variable (when a cooperative bank branch is present) as the number of non-cooperative banks increases. This latter coefficient may be interpreted as the decreasing (or increasing) impact of the presence of cooperative bank branches as the number of non-cooperative bank branches increases.

Concerns about endogeneity problems regarding the results of the above analyses may arise since cooperative banks may decide to open or close bank branches in geographical areas in which there are more profitable and creditworthy firms. To address endogeneity concerns, we employ an instrumental variable approach that is related to the presence of cooperative banks (relevance condition) but not to bank credit access (exclusion restriction). The instrument variable that we employ is a dummy variable that captures the presence of parish churches in the geographical area surrounding the firm, as an instrument of cooperative bank branches' presence. Historically, many Italian cooperative banks were founded by catholic entrepreneurs and established in the proximity of parish churches. Because cooperative banks tend to limit their operation in the municipality in which they are established (Cesarini et al., 1997; Cafaro and Berbenni, 2021), we can infer that the presence of parish churches influences the presence of cooperative banks. At the same time, we can exclude that the presence of local parishes directly affects access to bank credit but through the just-mentioned presence of cooperative banks. Therefore, to implement the instrumental variables approach, we estimate the following first-stage regression:

$$I_{i,t} = \alpha_1 + \beta_{2i,t}C_{i,t} + \gamma_{i,t}X_{i,t} + \Theta_{i,t} + \varepsilon_{2i,t} , \qquad (5)$$

where $C_{i,t}$ is a dummy variable which takes the value of 1 if in the geographical area surrounding (1 km radius) the firm I at time t a parish church is present, and 0 otherwise. This is the instrumental variable. The second-stage equation estimates the impact of cooperative banks' presence on bank credit access:

$$Y_{i,t} = \alpha_2 + \beta_{3i,t}\hat{I}_{i,t} + \gamma_{i,t}X_{i,t} + \Theta_{i,t} + \varepsilon_{3i,t} , \qquad (6)$$

Where $\hat{I}_{i,t}$ are the predicted values from equation (4). If the conditions for a valid instrumental variable are met, β3 captures the causal effect of cooperative bank branches' presence on the given $Y_{i,t}$. We implement the instrumental variable estimator using two-stage least squares (2SLS). the instrument is highly correlated with the presence of cooperative bank branches (0.249). The first stage results

confirm the validity of this approach. **The coefficient of parish church dummy is positive and statistically significant at the 1% level** and the **F-statistic** always **exceeds the threshold of F = 10, which suggests that the instrument is strong and unlikely to be biased toward the OLS estimates (Bound et al., 1995; Staiger and Stock, 1997).** Moreover, we always reject the null hypothesis (the instrument is weak) of the under-identification test.

4. Empirical findings

Firstly, we regress our baseline model (Equation 1) using as dependent variable the total bank leverage. Table 3 shows regressions results. The presence of (at least) a cooperative bank branch has a statistically significant positive impact on firm access to total bank debt. The result is found to be robust for every specification of the model and by using the instrumental variable approach. Larger firms in terms of size are found to have more bank credit, as expected, since they have more collateral *ceteris paribus*. Firms known to be capital intensive (low ATO, high PM) tend to obtain more bank credit. Shifting the focus to the local credit market, as the competition from the demand point of view increases (the number of other firms increases), firms tend to obtain less bank credit. The presence of non-cooperative small bank branches does have a positive and statistically significant impact on bank credit access; however the magnitude is statistically different (and lower) from the one of cooperative banks. Therefore, we can deduce that banks' governance does impact the access to bank credit. Moreover, when looking at the result of other non-small bank dummies, which results not to be significant in lowering barriers to accessing bank credit, we can infer that bank size matters. Finally, firms in rural areas tend to obtain more bank credit. All these results are confirmed by the instrumental variable approach, which is found to be robust (high F-statistic and rejection of the null hypothesis of the under-identification test).

[Table 3]

Shifting the focus to other dependent variables, we find that the main component of the above-discussed bank credit result is the long-term one, as shown by Table 4: firms located in the proximity

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of cooperative bank branches tend to obtain a higher share of long-term credit, while results are mixed in the short-term. This result is notable since, as shown also by summary statistics, firms have less access to bank debt with longer maturity. This finding might have the positive spillover effect to facilitate growth of firms since they have more stable sources of financing. The increase in bank leverage does not traduce in a comparable increase in overall financial leverage: that increases for firms located in the proximity of cooperative banks branches, however, the magnitude of the increase results to be lower than the bank leverage ones. It follows that this gain of financial leverage is all explained by the rise of bank leverage. This result is strictly connected to the answer to our second research question: we see that the presence of cooperative banks and, more generally, a more concentrated small banks market, leads to a decrease in trade leverage. Our results seem to confirm the stream of literature asserting that trade credit is a substitute and not a complement to bank credit (see, for instance, Rajan, 1997; Casey and O'Toole, 2013; Carbo-Valverde et al., 2016). This finding is also relevant since trade credit is known to be not monitored as the bank one, so it has positive consequences from system stability and reliability point of view. No statistically significant impact is found for other leverage. Lastly, it has to be noticed that cooperative banks are found to be more effective than small non-cooperative banks in granting access to bank credit, while the presence of other small banks has a more relevant impact on the decrease of trade leverage.

[Table 4]

While larger firms in terms of size are known to have more bank credit access (due to their higher stability and the possibility to have more collateral), as we also found in the baseline specification, local banks are known to grating access to bank credit to small and opaque firms. To test this framework and to answer the research question (*iii*), we interact the cooperative banks dummy variable with a categorial variable which captures firm dimension. Results are reported in Table 5. While we confirm that larger firms obtain more bank credit (see that, for instance, medium firms obtain more bank credit than small firms), results show that the presence of cooperative banks

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has a statistically significant impact for small and micro firms: the presence of at least a cooperative banks branch grant those firms to have more accesso to bank credit. This result is surely relevant knowing those are the ones which face more constraints in accessing external capitals. This effect tends to dissipate when dealing with medium and large firms. Also in this case, the instrumental variable approach confirms all results.

[Table 5]

We find in the baseline specification that firms in rural areas are observed to obtain more access to bank credit. In order to inspect whether cooperative banks play different roles in different density areas, we interact our cooperative banks branches dummy with a rural/urban area dummy. Results are reported in Table 6. First, cooperative banks are found to be effective also in urban areas, as we can see by the interaction between *Coop Bank* and urban area (having as baseline *Coop Bank=0 # Urban area*), although with a lower magnitude than in rural areas. Second, this extension of our model confirms that firms located in rural areas are found to have more access. Third, cooperative banks are also effective in this area, being the third coefficient found to be statistically different from the first one. We therefore confirm previous literature findings which assessed that small and local banks are more effective in rural areas.

[Table 6]

Relationship lending and the role of proximity might be harmed by the Covid pandemic, since it was no more possible to maintain physical proximity. To test that (Research Question (*iv*)), we interact our cooperative banks branches dummy with the year 2020, to highlight the effect of cooperative banks during the most acute phase of Covid pandemic, and we show results in Table 7. The overall effect of cooperative banks on years before 2020 is confirmed. In 2020, we see a negative impact as regards bank credit. This is partially offset by cooperative banks: firms located in proximity of cooperative banks branches are found to have, *ceteribus paribus*, a lower decrease in bank credit.

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When physical proximity was not possible, cooperative banks were able to operate through "remote proximity".

4.1. Robustness tests

To check the robustness of our methodology and our results, we repeat our analysis by extending the radius of our circles to 3 km and 5 km. Results are presented in Tables 8 and 9. Cooperative banks are again proven to be effective in lowering barriers to access bank credit when extending the concept of proximity. It has to be noticed that the effect does not decrease when extending radii. The banks' governance and size still matter. The cooperative bank effect is statistically greater than the small bank one regarding total bank leverage, long-term bank leverage, and financial leverage. Large banks' presence does not influence any of the dependent variables. The substitution effect with trade credit is still present, and so the lower increase in total leverage. In this regard, when having the radius extended to 5 km, cooperative banks effect on financial leverage is almost no more statistically significant.

[Table 8]

[Table 9]

It may be argued that banks, when assessing the firm capacity to repay debt and its overall creditworthiness, rely on the previous year's financial statements. Therefore, we repeat our analysis with the following modification: we take the observation at time t-1 of controls derived from financial statements (total assets, ATO, PM). Table 10 reports regressions results. Baseline findings are once again found to be robust, and the signs of lagged controls remain as in the previous specification.

[Table 10]

5. Conclusions

Banking literature has often investigated the role of banks in the real economy and empirical findings suggest that the development of a financial system stimulates economic growth, through the so-called

finance-growth nexus (see the literature review paper from Berger et al., 2020). Local banks' role in facilitating firms in accessing bank credit is a very discussed topic in literature. In recent years, banking literature debated the persistency of the conventional paradigm and the dissipated role of distance in banking relationships, while firms-related literature debated whether bank credit and trade credit (as a form of informal finance) were complementary or substitutes. In this research, we try to contribute to the literature by studying, in particular, the effect of cooperative banks' proximity and the effect of different banks size and governance to firms and their influence on bank credit access. We also inspect the effect of bank branches proximity to firms' financial leverage, and other possible sources of external financing, to study the relationship between them and bank credit. Moreover, we study what moderates the effect of proximity in terms of firm dimension and location in rural of urban area. Finally, we investigate if cooperative banks were able to promote relationship lending also during the Covid pandemic when physical proximity was made impossible and a shift to "remote proximity" was demanded. We choose Italy as the context of this study. We believe that this setting is particularly suitable for our aim for three distinctive reasons. First, the Italian real economy is strongly characterized by the presence of micro, small and medium-sized enterprises (MSMEs). This type of firm is known to be particularly at risk of being credit constrained (see, among others, Carbo-Valverde et al., 2009). Second, Italian cooperative banks have always relied on relationship lending. Third, the recent reform of Italian cooperative banks has once again brought to the forefront the discussion about their role towards MSMEs, their organizational model, and their consequent presence in their relevant territorial areas. This aspect has become even more topical following the technological innovations of recent years and the outbreak of COVID-19: banks are asked to play a key role in transmitting economic reforms to the real economy and cooperative banks business model was particularly challenged since it is known to rely on proximity. This was also more relevant in Italy since government restrictions were more impactful than in other countries.

Exploiting a vast dataset on Italian non-financial firms and banks branches located in Italy, we find that firms located in the proximity of a cooperative bank branch have more access to bank credit. The effect of small non-cooperative banks is smaller, while the one of large banks is negligible. The increase in total debt (financial leverage) is not of the same magnitude, since firms recur less to trade credit (we can say that bank credit and trade credit are substitutes, as the stream of literature started by Petersen and Rajan, 1997, asserts). Results are found to be robust when expanding radii to define proximity and when using lagged control variables. Cooperative banks are then found to be more effective in serving micro enterprises and small firms, and more generally in serving firms located in rural areas. During the pandemic, Italian cooperative banks were still able to perform relationship lending by shifting to "remote proximity".

Our results contribute to three different streams of literature. First, concerning the validity of the conventional paradigm and the role of local banks in providing credit, our results suggest that Italian cooperative banks are still able to meet MSMEs' financial needs, perform relationship lending, and favor access to bank debt to firms located in their proximity, despite the technological improvement and credit scoring techniques that should favor megabanks to access to MSMEs markets. Second, thanks to our methodology and technology used to identify proximity, we contribute to the literature on operational distance in banking and more generally to the role of geographical distance in banking: our results put bank branches in a different light, underlining how they can still be effective despite technological improvements and banking evolution in recent years, at least in an economy strongly characterized by a strong presence of MSMEs. Third, regarding possible external sources of financing for MSMEs, we found that bank credit and trade credit are not complements but substitutes: trade credit decreases for firms located in the proximity of cooperative banks branches, showing that there is a substitution effect between bank and trade debt.

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Tables

Table 1: Summary Statistics

This table reports the summary statistics for the variables in the analysis. *Financial Leverage* is obtained as Total Debt with respect to Total Assets, *Bank Leverage* is the ratio between Bank Debt and Total Assets. *ST (LT) Bank Leverage* is the share of Bank Leverage with maturity lower (greater) than 1 year. *Trade Leverage* is defined as Trade Debt to Total Assets. *Other Leverage* is defined as residual debt (Total – Bank – Trade) with respect to Total Assets. *Coop Bank* is a dummy variable that takes the value of 1 if there is a cooperative bank branch within a 1 km radius of the company. *Total Assets* are reported as their natural logarithm. *Asset Turnover* is the ratio between Sales and Total Assets, while *Profit Margin* is the ratio between EBIT and Sales. *Age of firm* is the natural logarithm of 1 + age of the firm. *N. other firms* is the natural logarithm of 1 + the number of other firms' headquarters located within a 1 km radius of the company. *Small non-coop banks* is a dummy variable which takes value of 1 if at least a small non-cooperative bank (first tercile in terms of total assets) branch is located in proximity of a given firm. *Other non-small banks* is a dummy variable which takes value of 1 if at least a other non-small non-cooperative bank (second and third tercile in terms of total assets) branch is located in proximity of a given firm. Rural area is a dummy variable which takes value of 1 if the firm is located in rural area (rural area or low-density area according to ISTAT), 0 if urban area. Parish churches is a dummy variable which takes value of 1 if at least a parish church is located within a 1 km radius with respect to the given company.

Table 1: Summary Statistics								
	count	mean	p50	sd	skewness	kurtosis	min	max
Bank Leverage	2,166,878	0.216	0.176	0.184	0.839	3.020	0.000	0.757
ST Bank Leverage	2,166,878	0.121	0.075	0.134	1.305	4.195	0.000	0.577
LT Bank Leverage	2,166,878	0.093	0.025	0.140	1.935	6.546	0.000	0.645
Financial Leverage	2,166,878	0.683	0.729	0.215	-0.725	2.713	0.111	0.987
Trade Leverage	2,166,878	0.244	0.208	0.186	0.851	3.177	0.000	0.793
Other Leverage	2,166,878	0.220	0.161	0.189	1.188	3.801	0.004	0.814
Coop Bank	2,166,878	0.439	0.000	0.496	0.244	1.060	0.000	1.000
Total Assets (log)	2,166,878	6.905	6.818	1.480	0.261	2.818	3.644	10.791
Assets Turnover	2,166,878	1.138	0.999	0.854	1.456	6.121	0.009	4.659
Profit Margin	2,166,878	0.024	0.034	0.259	-3.585	26.387	-1.713	0.787
Age of firm (ln)	2,166,878	2.521	2.565	0.840	-0.501	2.907	0.000	4.078
# other firms in 1 km (ln)	2,166,878	4.056	3.932	1.586	0.300	2.770	0.693	7.901
Small non-coop banks	2,166,878	0.244	0.000	0.430	1.189	2.415	0.000	1.000
Other non small bank	2,166,878	0.790	1.000	0.408	-1.421	3.019	0.000	1.000
Rural Area	2,166,878	0.551	1.000	0.497	-0.205	1.042	0.000	1.000
Parish churches	2,166,878	0.735	1.000	0.441	-1.067	2.139	0.000	1.000

Table 2: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Bank Leverage	1.000															
(2) ST Bank Leverage	0.644*	1.000														
(3) LT Bank Leverage	0.676*	-0.124*	1.000													
(4) Financial Leve~e	0.392*	0.301*	0.219*	1.000												
(5) Trade Leverage	-0.251*	-0.057*	-0.268*	0.382*	1.000											
(6) Other Leverage	-0.282*	-0.224*	-0.150*	0.376*	-0.302*	1.000										
(7) Coop Bank	0.028*	0.005*	0.030*	0.014*	-0.038*	0.025*	1.000									
(8) Total Assets (~)	0.139*	0.063*	0.124*	-0.038*	-0.046*	-0.136*	-0.048*	1.000								
(9) Assets Turnover	-0.152*	0.032*	-0.226*	0.033*	0.366*	-0.166*	-0.007*	-0.176*	1.000							
(10) Profit Margin	0.004*	-0.023*	0.027*	-0.052*	-0.014*	-0.048*	-0.007*	0.009*	0.056*	1.000						
(11) Age of firm (~)	0.045*	0.042*	0.023*	-0.280*	-0.210*	-0.152*	-0.036*	0.442*	-0.157*	-0.014*	1.000					
(12) # other firms~)	-0.059*	-0.039*	-0.042*	0.021*	-0.008*	0.088*	0.319*	-0.048*	-0.008*	-0.021*	-0.063*	1.000				
(13) Small non-coo~s	-0.009*	-0.014*	0.000	0.029*	-0.025*	0.064*	0.270*	-0.051*	-0.026*	-0.010*	-0.064*	0.536*	1.000			
(14) Other non sma~k	-0.022*	-0.028*	-0.003*	0.025*	-0.017*	0.065*	0.295*	-0.086*	-0.009*	-0.006*	-0.060*	0.497*	0.260*	1.000		
(15) Rural Area	0.083*	0.059*	0.053*	-0.014*	-0.004*	-0.091*	-0.094*	0.057*	-0.007*	0.016*	0.040*	-0.599*	-0.334*	-0.276*	1.000	
(16) Parish churches	-0.033*	-0.047*	0.000	0.025*	-0.017*	0.076*	0.249*	-0.092*	-0.015*	-0.008*	-0.063*	0.403*	0.258*	0.428*	-0.284*	1.000

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Bank Leverage

This table reports the results of regression 1 when having as dependent variable Bank Leverage

	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	IV
Coop Bank	0.004***	0.005***	0.003***	0.004***	0.004***	0.006***	0.004***	0.005***	0.005***	0.006***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)
Total Assets (log)		0.015***								0.013***	0.013***
		(0.000)								(0.000)	(0.000)
Assets Turnover			-0.035***							-0.032***	-0.032***
			(0.000)							(0.000)	(0.000)
Profit Margin				0.002**						0.007***	0.007***
				(0.001)						(0.001)	(0.000)
Age of firm (ln)					0.009***					-0.005***	-0.005***
					(0.000)					(0.000)	(0.000)
# other firms in 1 km (ln)						-0.002***				-0.002***	-0.002***
						(0.000)				(0.000)	(0.000)
Small non-coop banks							-0.000			0.003***	0.002***
							(0.001)			(0.001)	(0.000)
Other non small bank								-0.003***		0.001	-0.001
								(0.001)		(0.001)	(0.001)
Rural Area									0.009***	0.009***	0.008***
									(0.001)	(0.001)	(0.000)
Industry#Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province#Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
p-value test coop bank vs small bank							0.000			0.002	0.002
Weak id F-stat											23270.464
Underidentification test p-value											0.000
Observations	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832

Robust standard errors clustered at firm level in parentheses. * p<0.10 ** p<0.05 *** p<0.01

Table 4: Other dependent variables

This table reports the results of regression 1 when having as dependent variable Short Term and Long Term Bank Leverage, Financial Leverage, Trade Leverage, and Other Leverage.

Table 4: Short and Long Term Bank Leverage, Financial Leverage, Trade Leverage, Other Leverage									
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	ST Bank Leverage		LT Bank Leverage		Financial Leverage		Trade Leverage		Other Leverage	
Coop Bank	0.002***	-0.009***	0.004***	0.020***	0.003***	0.015***	-0.002***	-0.017***	-0.001	0.020***
	(0.000)	(0.002)	(0.000)	(0.002)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)
Small non-coop banks	0.001**	0.002***	0.002***	0.000	-0.001	-0.003***	-0.005***	-0.004***	0.001	-0.001**
	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry#Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province#Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
p-value test coop bank vs small bank	0.629	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.142	0.000
Weak id F-stat		23270.464		23270.464		23270.464		23270.464		23270.464
Underidentification test p-value		0.000		0.000		0.000		0.000		0.000
Observations	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832

Robust standard errors clustered at firm level in parentheses. * $p<0.10$ ** $p<0.05$ *** $p<0.01$

Table 5: Bank Leverage – interaction with firm dimension

This table reports the results of regression 2 for bank leverage.

Table 4: Bank Leverage interacted with firm dimension		
	OLS	IV
Coop Bank=0 # Medium Firms	0.036***	0.033***
	(0.004)	(0.004)
Coop Bank=0 # Small Firms	0.026***	0.023***
	(0.004)	(0.004)
Coop Bank=0 # Micro Firms	0.011***	0.008**
	(0.004)	(0.004)
Coop Bank=1 # Large Firms	0.005	-0.003
	(0.006)	(0.009)
Coop Bank=1 # Medium Firms	0.036***	0.033***
	(0.004)	(0.004)
Coop Bank=1 # Small Firms	0.029***	0.026***
	(0.004)	(0.004)
Coop Bank=1 # Micro Firms	0.018***	0.015***
	(0.004)	(0.004)
Controls	Yes	Yes
Industry#Year FE	Yes	Yes
Province#Year FE	Yes	Yes
p-value test Medium F	0.725	0.474
p-value test Small F	0.006	0.000
p-value test Micro F	0.000	0.000
Weak id F-stat		23710.633
Underidentification test p-value		0.000
Observations	2,166,832	2,166,832

Robust standard errors clustered at firm level in parentheses. * p<0.10 ** p<0.05 *** p<0.01

Table 6: Bank Leverage – interaction with urban/rural area

This table reports the results of regression 3 for bank leverage

Table 6: Bank Leverage interacted with rural area		
	OLS	IV
Coop Bank=0 # Rural Area	0.007***	0.010***
	(0.001)	(0.001)
Coop Bank=1 # Urban Area	0.004***	0.014***
	(0.001)	(0.003)
Coop Bank=1 # Rural Area	0.015***	0.019***
	(0.001)	(0.001)
Controls	Yes	Yes
Industry#Year FE	Yes	Yes
Province#Year FE	Yes	Yes
p-value test presence Coop Bank in rural area	0.000	0.000
Weak id F-stat		12408.493
Underidentification test p-value		0.000
Observations	2,166,832	2,166,832

Robust standard errors clustered at firm level in parentheses. * p<0.10 ** p<0.05 *** p<0.01

Table 7: Bank Leverage – impact of pandemic

This table reports the results of regression 4 for bank leverage

Table 6: Bank Leverage and pandemic effect		
	OLS	IV
Coop Bank = 1	0.006***	0.011***
	(0.001)	(0.003)
Year 2020	-0.038***	-0.048***
	(0.001)	(0.002)
Coop Bank=1 # Year 2020	-0.002**	0.021***
	(0.001)	(0.004)
Controls	Yes	Yes
Industry#Year FE	Yes	Yes
Province#Year FE	Yes	Yes
p-value test presence Coop Bank in rural area	0.018	0.018
Weak id F-stat		11650.492
Underidentification test p-value		0.000
Observations	2,166,832	2,166,832

Robust standard errors clustered at firm level in parentheses. * p<0.10 ** p<0.05 *** p<0.01

Table 8: Robustness test (3km)

This table reports the results of regression 1 for bank leverage (total, short-term, long-term), financial leverage, trade leverage, and other leverage when expanding radius to 3 kilometers (for cooperative banks' branch dummy, number of other firms, small bank and large bank dummies).

Table 8: Robustness test (3 km)					
	Bank Leverage	ST Bank Leverage	LT Bank Leverage	Financial Leverage	Trade Leverage	Other Leverage
Coop Bank	0.008***	0.002***	0.006***	0.003***	-0.004***	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Total Assets (log)	0.013***	0.002***	0.010***	0.015***	0.011***	-0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Assets Turnover	-0.032***	0.004***	-0.035***	0.002***	0.070***	-0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Profit Margin	0.007***	-0.017***	0.024***	-0.051***	-0.026***	-0.032***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age of firm (ln)	-0.005***	0.005***	-0.010***	-0.076***	-0.044***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# other firms in 3 km (ln)	-0.003***	-0.001***	-0.002***	-0.001**	-0.001***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Small non-coop banks	0.002**	0.001*	0.001	-0.002**	-0.002***	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other non small bank	0.001	-0.001	0.002*	0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Rural Area	0.005***	0.003***	0.002***	-0.002**	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Industry#Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province#Year FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value test coop bank vs small bank	0.000	0.133	0.000	0.000	0.213	0.884
Observations	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832

Robust standard errors clustered at firm level in parentheses. * p<0.10 ** p<0.05 *** p<0.01

Table 9: Robustness test (5km)

This table reports the results of regression 1 for bank leverage (total, short-term, long-term), financial leverage, trade leverage, and other leverage when expanding radius to 5 kilometers (for cooperative banks' branch dummy, number of other firms, small bank and large bank dummies).

	Table 9: Robustness test (5 km)					
	Bank Leverage	ST BL	LT BL	Fin Leverage	Trade Leverage	Other Leverage
Coop Bank	0.007***	0.003***	0.005***	0.002*	-0.004***	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Total Assets (log)	0.013***	0.002***	0.010***	0.015***	0.011***	-0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Assets Turnover	-0.032***	0.004***	-0.035***	0.002***	0.070***	-0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Profit Margin	0.007***	-0.017***	0.024***	-0.051***	-0.026***	-0.032***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age of firm (ln)	-0.005***	0.005***	-0.010***	-0.076***	-0.044***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# other firms in 3 km (ln)	-0.004***	-0.001***	-0.003***	-0.001***	-0.001***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Small non-coop banks	0.002**	0.001**	0.001	-0.003**	-0.002**	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other non small bank	0.003	0.001	0.002	0.001	-0.001	-0.002
	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Rural Area	0.004***	0.003***	0.001	-0.003**	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Industry#Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province#Year FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value test coop bank vs small bank	0.000	0.179	0.000	0.002	0.130	0.204
Observations	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832	2,166,832

Robust standard errors clustered at firm level in parentheses. * p<0.10 ** p<0.05 *** p<0.01

Table 10: Robustness test (lagged control variables)

This table reports the results of regression 1 for bank leverage (total, short-term, long-term), financial leverage, trade leverage, and other leverage when using lagged total assets, lagged asset turnover, and lagged profit margin.

	Bank Leverage	ST BL	LT BL	Fin Leverage	Trade Leverage	Other Leverage
Coop Bank	0.006***	0.002***	0.004***	0.003***	-0.003***	-0.001
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Total Assets (log)	0.011***	0.002***	0.009***	0.009***	0.008***	-0.010***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Assets Turnover	-0.026***	0.009***	-0.035***	0.005***	0.070***	-0.038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Profit Margin	0.008***	0.023***	-0.031***	-0.071***	-0.037***	-0.042***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Age of firm (ln)	-0.009***	0.003***	-0.012***	-0.080***	-0.041***	-0.029***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
# other firms in 3 km (ln)	-0.002***	0.000	-0.002***	0.000	-0.000	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Small non-coop banks	0.003***	0.001**	0.002***	-0.001	-0.005***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Other non small bank	0.000	-0.002***	0.002***	0.001	-0.002***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Rural Area	0.008***	0.004***	0.004***	-0.001	-0.003***	-0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Industry#Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province#Year FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value test coop bank vs small bank	0.011	0.737	0.001	0.006	0.007	0.084
Observations	1,529,663	1,529,663	1,529,663	1,529,663	1,529,663	1,529,663

Robust standard errors clustered at firm level in parentheses. * p<0.10 ** p<0.05 *** p<0.01

Figures

Figure 1

Panel A depicts the distribution of cooperative banks branches as ratio to total banks branches. Panel B shows the distribution of cooperative banks branches as ratio to 10,000 firms.
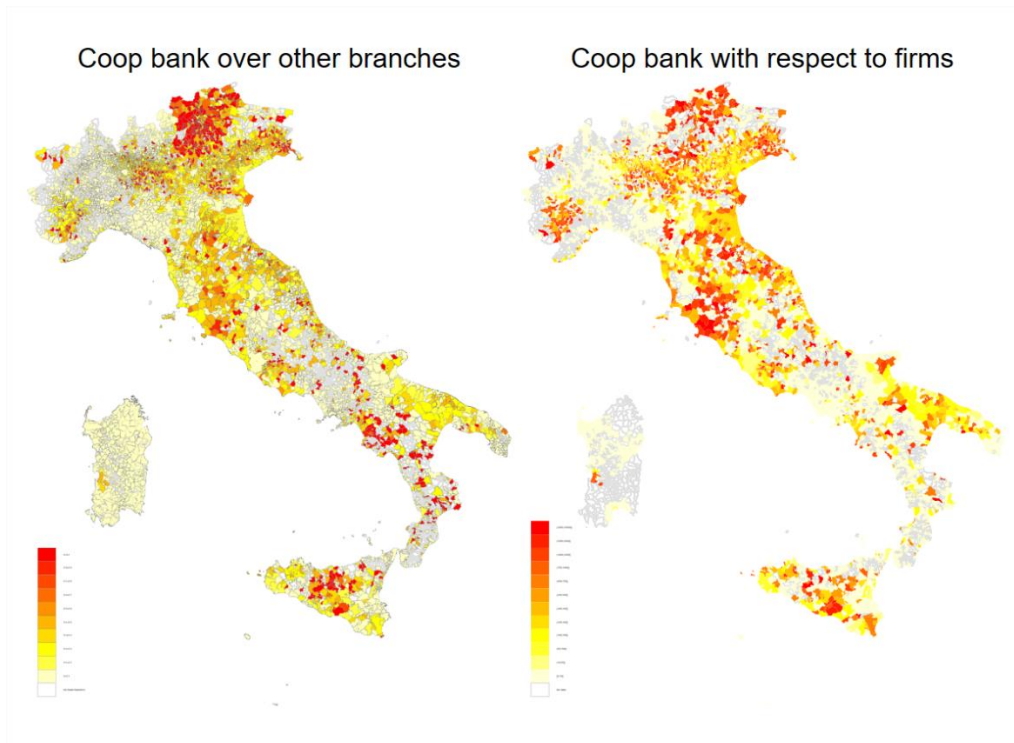

Figure 2

This Figure reports two examples of bank credit market in our database. Panel A (left) shows the case where a firm (blue F) is located in the proximity of a cooperative bank branch (red CB) and a parish church (black cross), while Panel B shows a more competitive market where many firms are located near both a cooperative bank branch and a small bank branch (pink SB)

Figure 3

This Figure reports the trends of dependent variables employed in the empirical analysis over the period 2010-2020, when cooperative banks are present (blue line) or not (red line)
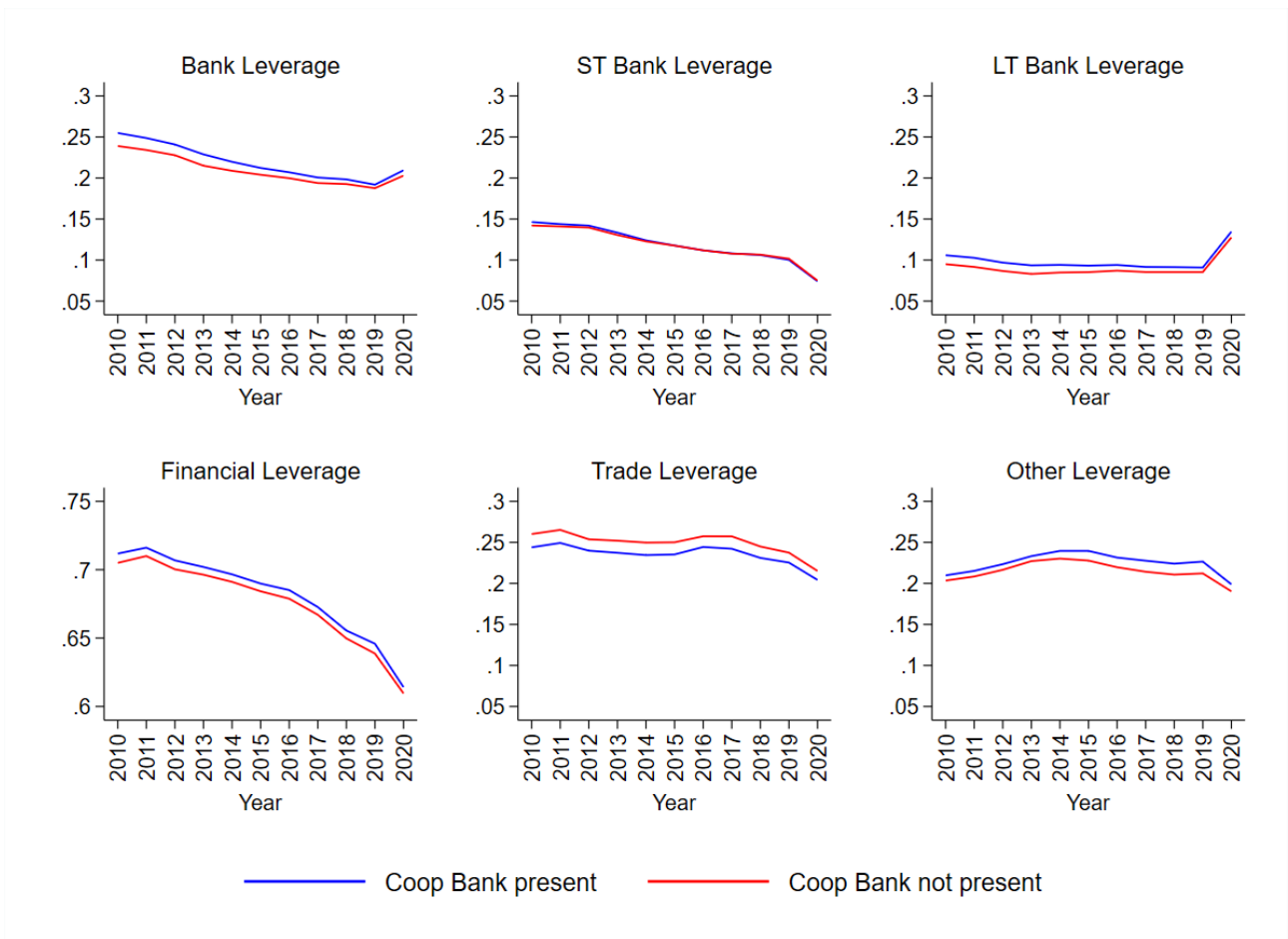
Appendix A. Data sources and list and description of variables

Panel A: Data Sources		
Category	**Description**	**Source**
Banks' branches' characteristics	Bank denomination, date of opening and closure of every single branch	Bank of Italy
Banks' branches' location	Addresses of banks' branches are provided by Bank of Italy. Through an automated process (thanks to a Python package), coordinates of every branch are obtained from Google Maps	Bank of Italy, Google Maps
Banks' Financials	Data on banks financial statements	Federcasse
Firm data	Financial statements and location of firms	AIDA (Bureau van Dijk)
Italy territorial features	Density areas (urban, high-density area, low-density area)	ISTAT
Parish churches	List and addresses of parish churches are provided by CEI. Through an automated process (thanks to a Python package), coordinates of every parish church are obtained from Google Maps	CEI, Google Maps
Panel B: List and definition of variable		
Variable	**Description**	**Sources**
Bank Leverage	Total bank debt divided by total assets	AIDA (Bureau van Dijk)
ST Bank Leverage	Short term (<1 year) bank debt divided by total assets	AIDA (Bureau van Dijk)
LT Bank Leverage	Long term (>1 year) bank debt divided by total assets	AIDA (Bureau van Dijk)
Trade Leverage	Trade debt divided by total assets	AIDA (Bureau van Dijk)
Other Leverage	Residual debt (total – Bank debt -Trade Debt) divided by total assets	AIDA (Bureau van Dijk)
Coop Bank	Cooperative banks' branches dummy. It is built by employing a Geographic Information System software. Firms' headquarters and bank branches coordinates are employed to build up a map of Italy. This dummy variable is equal to 1 if a branch of (at least) a cooperative bank is located in a given distance around the firm headquarter, 0 otherwise	AIDA (Bureau van Dijk), Bank of Italy, own analysis

Total assets	Total assets of a firm	AIDA (Bureau van Dijk)
Assets Turnover	Ratio between sales and total assets of a firm	AIDA (Bureau van Dijk)
Profit Margin	Ratio between Earnings Before Interest and Taxes (EBIT) and sales	AIDA (Bureau van Dijk)
Age of firm	Years from the establishment of the company	AIDA (Bureau van Dijk)
Number of other firms	Number of other firms headquarters in a given distance around the given firm headquarter. Calculated employing the same methodology of Cooperative bank dummy	AIDA (Bureau van Dijk), own analysis
Small non-coop branch	Small non-cooperative bank branches dummy. It is built by employing a Geographic Information System software. Firms' headquarters and bank branches coordinates are employed to build up a map of Italy. This dummy variable is equal to 1 if a branch of (at least) a small non-cooperative bank (a bank is defined as small if its total asset are in the first tercile of non-cooperative banks' total assets distribution, so that these are comparable in size to cooperative banks) located in a given distance around the firm headquarter, 0 otherwise	AIDA (Bureau van Dijk), own analysis
Other non-small banks branches	Dummy variable equal to 1 if (at least) a non-cooperative non-small (i.e. second and third tercile in terms of non-cooperative banks total assets distribution, these can be defined also as large banks) bank is located in a given radius around the given firm headquarter. Calculated employing the same methodology of Cooperative bank dummy.	Federcasse, own analysis

Rural	Dummy variable which takes value of one 1 the firm is located in a rural area or in a low-density area, 0 otherwise (high-density area)	ISTAT
Parish Churches Dummy	Dummy which takes value of 1 if a parish church is located in the proximity of the given firm. Employed for robustness test to rule out endogeneity concerns	CEI, own analysis
Firm dimension	Firm dimension according to European Commission definition: large, medium, small, and micro	Bureau van Djik, own analysis