

# Bank Proximity and Digital Transformation

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## Abstract

We investigate how digitalization influences the role of bank spatial proximity in enhancing firms' access to credit, and how this effect changes for different types of banks. For this analysis, we collect street-level data on the locations of firms' headquarters and nearby bank branches, analyzing over 1.9 million Italian firm-year observations spanning from 2011 to 2020. Our results reveal that being close to a cooperative bank increases firms' access to short- and long-term maturity credit. The positive effect of proximity, albeit to a lesser extent, is also observed for small commercial banks, similarly prioritizing relationship lending. While proximity to large commercial banks does not alter firms' total indebtedness, it shifts their debt towards longer-term maturities. Digitalization lessens these impacts, yet they consistently remain statistically significant, even within the most digitalized provinces. To strengthen our results, we employ a unique approach by leveraging the proximity between cooperative banks' branches and parish churches as a novel instrument to overcome endogeneity issues stemming from the geographical distribution of cooperative banks. Contrary to recent studies that imply technological advancements have diminished the significance of banks' physical presence, our analysis underscores that relationship lending remains a key enabler of credit access, even amidst highly digitalized provinces, particularly for micro and small firms, located in rural areas, and operating in high-tech sectors.

*JEL Codes:* G21, G30

*Keywords:* Cooperative Banks, Digitalization, Relationship Lending, SME Financing, Spatial Proximity

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# 1. Introduction

Small and medium enterprises (SMEs) face more challenges in accessing formal external finance compared to larger firms due to their inability to produce and transmit reliable hard information to lenders, leading to information asymmetry problems (Stiglitz and Weiss, 1981).<sup>1</sup> To mitigate these issues, SMEs and banks engage in relationship lending, a process where banks gather soft information through repeated interactions with SMEs. This approach allows banks to gain qualitative insights, otherwise challenging to obtain, leading to a better understanding and potentially more favorable lending conditions for SMEs (Diamond, 1989; Petersen and Rajan, 1994; Berger and Udell, 1995; Boot and Thakor, 2000; Sufi, 2007; Bharath et al., 2011).<sup>2</sup>

Several studies indicate that the formation of lender-borrower relationships depends on the geographical distances between banks and borrowers. Proximity to firms allows banks to gather more soft information about borrowers, facilitating access to financial resources otherwise difficult to obtain (Degryse and Ongena, 2005; Brevoort and Hannan, 2006; Alessandrini et al., 2010; Alessandrini et al., 2009; Agarwal and Hauswald, 2010; Nguyen, 2019). Additionally, local financial development positively influences firms' access to credit (Guiso et al. 2004). However, technological improvements have facilitated the collection, processing, and communication of hard information, permitting opaque companies to transmit quantitative information more effectively (Liberti and Petersen 2019). While, traditionally, relationship lending has been synonymous with cultivating connections within the local credit market, the advent of digital transformation might have spurred banks to engage with businesses situated at more distant locations.

In this paper, we aim to investigate how digital transformation has altered the value of bank proximity in facilitating firms' access to external funds. We examine how the spatial proximity between firms and different types of bank branches influences firms' access to external funding in Italy during a period of digital

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<sup>1</sup> Information asymmetry affects borrowers-lender relationships in various ways. Adverse selection theories suggest that banks with established relationships with firms are better informed about their quality compared to rival banks. Thus, a bank cannot cherry-pick only the good customers from another bank without also attracting the less desirable ones (Sharpe, 1990). Moral hazard theories highlight that banks cannot monitor borrowers' use of funds, leading to situations where borrowers may favour high-risk projects to maximize profits, shielded by limited liability that protects shareholders' wealth if projects fail (Holmstrom and Tirole, 1997). In costly state verification models, banks must pay monitoring costs that decrease over multiple interactions with borrowers (Williamson, 1987).

<sup>2</sup> Empirical evidence suggests that relationship lending helps banks sustain firms during crisis times (Bolton et al., 2016; Beck et al., 2018), it allows banks to improve credit risk management (Agarwal et al., 2018), and firms connected to banks in financial trouble are less likely to access external funding (Chodorow-Reich, 2014).

transformation. To do so, we analyze the proximity of firms to commercial and cooperative banks. We also differentiate between small and large commercial banks, as the “conventional paradigm” suggests that small banks are better suited for relationship banking with opaque firms, while large banks rely more on quantitative analysis (Berger et al., 2001; Berger and Udell, 2002; Cole et al., 2004; Scott, 2004; Berger et al., 2005b; Craig and Hardee, 2007). Moreover, cooperative banks predominantly engage in relationship lending. Indeed, as per their articles of association and the Italian banking law, cooperative banks operate primarily in their local area, serving their partners, and allocating at least 50% of credit to them.<sup>3</sup> This allows cooperative banks to have greater access to soft information about borrowers than other types of banks.

Italy provides an excellent setting to investigate the relationship between bank proximity, digitalization, and SMEs' access to bank finance due to several reasons. Firstly, the Italian economy is dominated by SMEs, which rely heavily on relationship lending. In 2019, SMEs accounted for 99.9% of non-financial firms in Italy, employing 77.3% of the workforce and contributing 64.7% of value added (ISTAT – Istituto Nazionale di Statistica, 2021), which is above the OECD average (OECD, 2021). Secondly, Italian cooperative banks, which have a significant market share in terms of deposits, loans, and mortgages (Cornée et al., 2018), rely extensively on relationship lending since they primarily lend to firms located in the same area. This means that they have better access to soft information about borrowers, making them well-suited to examine the value of relationship lending. Thirdly, Italy saw a significant digitalization increase during the study period. For instance, the percentage of households with access to broadband coverage of at least 30 Mbps was 3.61% in 2011, but this figure increased to 91.41% by 2020. This development may have introduced novel channels through which borrowers and potential lenders can establish contact, potentially diminishing the significance of traditional relationship lending.

Our main empirical analysis compares access to credit among firms located near commercial banks, cooperative banks, and those further from any bank type across provinces with varying levels of digitalization. To do so, use street-level information about the locations of firms' headquarters and banks' branches and broadband data at the province (NUTS 3) level. In this way, we investigate how digitalization affects the impact of proximity to banks that rely on relationship lending with different intensities. To filter out time-

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<sup>3</sup> Articles 33 to 37-ter of the Testo Unico Bancario.

varying demand shocks, we adopt a similar strategy to de Jonghe et al. (2020), including granular industry-by-size-by-year fixed effects.

We analyze both bank and trade credit, further breaking down bank credit into short- and long-term maturity. Additionally, we explore the effects of bank proximity and digitalization impact micro and small firms, those near small or large commercial banks, firms in rural areas, and those in high-tech sectors.

Our findings suggest that proximity to a cooperative, and to a lesser extent, small commercial banks, positively affects SMEs' access to both long- and short-term maturity bank credit, which is in line with the benefits of relationship lending emphasized in the literature. Furthermore, digitalization reduces the value of proximity to both cooperative and small commercial banks. However, even in provinces with high access to broadband technology, firms in the proximity of these banks still have higher levels of bank credit. Notably, access to digital technologies does not diminish the value of relationship lending for obtaining long-term bank credit. Proximity to large commercial banks does not alter firms' total debt levels. However, it allows firms to substitute short-term credit with long-term one. Consequently, our study sheds light on the interplay between bank proximity and digitalization and highlights the importance of considering both factors when analyzing SMEs' access to bank finance.

To validate our results, we tackle endogenous sorting of bank branches using an instrumental variable (IV) approach, leveraging the historical establishment of cooperative banks in Italy. Cooperative banks often establish branches in areas with higher credit demand from firms, potentially biasing our findings. To address this issue, we use the presence of parish churches, geo-localized at the street-level location, as an instrument to identify the presence of cooperative bank branches in a particular geographical area. Parish churches serve as aggregation places for Catholic communities in Italy, which makes it more likely for Catholic entrepreneurs to establish cooperative banks in those areas. We draw on the historical fact that the first Italian cooperative banks were founded by Catholic entrepreneurs between the end of the 19th century and the beginning of the 20th century (Cesarini et al., 1997; Beccalli, 2021; Berbenni and Cafaro, 2021; Fiordelisi, 2021).

Our IV approach meets the exclusion restriction criteria, as parish churches' presence should only affect firms' leverage via cooperative banks, after controlling for a granular set of fixed effects. While religiosity impacts small firms' social capital (Deller et al., 2018), we filter out demand effects thanks to a set of fixed effects at the industry-size-year level (de Jonghe et al., 2020). Additionally, Accetturo et al. (2023) uncover

that there is no discernible effect of religiosity proximity on loan supply. Finally, in a robustness test, we estimate a reduced-form regression that includes dummies for the presence of both cooperative banks and parish churches, with various indicators of firms' leverage as dependent variables. When both dummies are included, the presence of cooperative banks maintains its statistically significant effect, whereas the effect of parish churches alone does not. While not a formal test for exclusion restriction, this provides additional evidence that parish churches influence firms' borrowing via the cooperative banks channel.

The rest of the paper is organized as follows: Section 2 discusses the related literature. Section 3 describes the data and the variables that are used in this study. Section 4 outlines the empirical methodology and presents the results. Section 5 elaborates on the robustness tests. Section 6 concludes the paper and provides policy implications.

## **2. Literature Review**

In this paper, we test how the spatial proximity to banks of different types and sizes facilitates firms' access to external funding amid digital transformation. The formation of lender-borrower relationships and information acquisition by lenders depends on their physical proximity: closer borrower-bank proximity enhances the collection and utilization of soft information, affecting loan availability and pricing (Agarwal and Hauswald, 2010). Alessandrini et al. (2009) investigate the effects of increased distance between banks' decision-making centers and local borrowers in Italy, finding that greater distances worsen financing constraints, especially for small firms in less developed regions. Alessandrini et al. (2010) find that SMEs located in areas with distant banks are less likely to introduce new processes and products. More recently, Nguyen (2019) reports that bank branch closures lead to a significant and persistent reduction in local small business lending, especially near the closed branch and during financial crises. Similar results are found by Kärnä et al. (2021) in the Swedish context. Granja et al. (2022) find that in competitive areas, banks extend lending distances during economic booms, influenced by managerial short-termism and monetary policy shifts. However, loans at greater distances carry higher risks and default rates.

In this context, the literature has theorized the “conventional paradigm”, suggesting that small banks are better suited for relationship banking with opaque firms, while large banks rely more on quantitative analysis (Berger et al., 2001; Berger and Udell, 2002; Cole et al., 2004; Scott, 2004; Berger et al., 2005b; Craig and Hardee, 2007). This is attributed to the easier transmission of qualitative information in flatter organizational

structures (Stein, 2002; Liberti and Mian, 2009). Several empirical studies have provided support for the conventional paradigm. Sapienza (2002) find that when banks become larger, they reduce supply of loans to small borrowers. Berger et al. (2017) find that SMEs located in areas with a higher concentration of small community and cooperative banks face fewer financial constraints. Hasan et al. (2017) found that SMEs in Polish regions with more cooperative banks have better access to financing and higher growth rates. In Italy, enhanced credit availability from cooperative banks is linked to local area growth (Bernini and Brighi, 2018; Coccoresse and Shaffer, 2021). Post-Global Financial Crisis, local banks showed greater support for firms with stronger existing relationships (Banerjee et al., 2021). Koetter et al. (2020) show that German regional banks were able to grant credit to firms hit by a local natural disaster. Bord et al. (2021) study how the local US banks which were less affected by the real estate crisis of 2007, expanded their networks and lent to small firms, capitalizing on the retreat of larger banks. As a result, these local banks gained market shares for more than a decade. This phenomenon proved instrumental in enabling smaller firms to mitigate the adverse effects of the great financial crisis.

However, a growing number of studies challenge the conventional paradigm. These studies highlight how technological advances have somewhat diminished the benefits of relational lending and proximity. Petersen and Rajan (2002) and DeYoung et al. (2011) show that innovations in information technologies and credit scoring models have enabled banks to lend to more distant small businesses. Berger and Udell (2006) argue that the type and operational conditions of financial institutions significantly affect the viability and profitability of lending technologies, impacting SMEs' credit access. Berger and Frame (2007) document that US commercial banks often train credit scoring models tailored to small firms. Berger and Black (2011) find that the advantages of employing hard lending technologies do not increase with bank size. Berger et al. (2014) find that, in the US, small firms do not have stronger relationships with community banks than they have with large banks. Berger et al. (2015) show small banks enable small firms to borrow more at lower failure rates, a benefit that vanishes during financial crises, likely due to small banks' lesser diversification and reduced benefit from government guarantees compared to large banks. Kysucky and Norden (2016) find that the beneficial effects of relationship lending on credit volumes and rates depend on local banking structure and are heterogeneous across countries.

Given the reliance of relationship lending on local proximity, digitalization could undermine its significance. Information technology advancements have transformed banking operations, with traditional banks integrating digital technologies into their core functions (Thakor, 2020; Bollaert et al., 2021; Berger and Boot, 2024). Additionally, new types of financial intermediaries are now competing in the credit market (Gopal and Schnabl, 2022). Information technology innovations in banking have influenced banks' operating costs (D'Andrea and Limodio, 2023), deposits sensitivity to interest rate changes (Koont et al., 2023), mortgage lending (Fuster et al., 2019), entrepreneurship and job creation (Ahnert et al., 2021), and financial stability (Pierri and Timmer, 2022). The COVID-19 pandemic further accelerated digital service adoption in banking (Kwan et al., 2021; Saka et al., 2022). However, traditional banks lag behind FinTech and BigTech companies in this respect (Fu and Mishra, 2022). One area in which information technology has played a transformative role is credit scoring modelling (Berg et al., 2020). This hard-data technology increasingly complements relationship lending in SME lending (Berger et al., 2005a; Berger and Frame, 2007; Berger et al., 2011). Digitalization empowers banks' capacity to collect information thanks to new technologies, such as web-based banking platforms (Khedmatgozar and Shahnazi, 2018) and to engage in more activities with clients (Campbell and Frei, 2010). This context demands for an evolution of relationship banking to remain viable (Jakšič and Marinč, 2019). D'Andrea et al. (2023) found that broadband adoption in Italy increased loan supply and lowered interest rates in areas with fast internet access. Their proposed mechanism includes improvements in branch productivity, a wider geographical reach, and reduced market concentration, facilitated by broadband enabling banks to gather more information post-loan origination to enhance monitoring. Core and De Marco (2023) show that banks with more investments in information technology were able to grant more publicly guaranteed loans to small businesses during the COVID-19 pandemic in Italy.

A related strand of literature is if SMEs are unable to access bank credit, they may turn to substitute it with alternative sources of finance (Becker and Ivashina, 2014). The most common alternative of external funding comes from firms' suppliers. Several studies suggest that firms can substitute bank credit with trade credit by leveraging relationships with suppliers. However, alternative sources of external finance are typically more unstable and have shorter maturities, making them unsuitable for funding investment projects. Consequently, SMEs face larger growth constraints than large firms when relying on trade credit (Biais and

Gollier, 1997; Petersen and Rajan, 1997; Fisman and Love, 2003; Ayyagari et al., 2010; Garcia-Appendini and Montoriol-Garriga, 2013; Carbó-Valverde et al., 2016; Palacín-Sánchez et al., 2019).

### 3. Data

We draw on data from multiple sources to construct our dataset. We obtain financial ratios for both cooperative and commercial banks from Federcasse. Information on the addresses, openings, and closures of all bank branches operating in Italy is publicly available from the Bank of Italy. Firms' financial ratios and headquarters addresses are obtained from Bureau van Dijk's AIDA database. We collect data on broadband coverage in Italian provinces from Point Topic. Data on the addresses of Italian parish churches is publicly available from the website of the Conferenza Episcopale Italiana (CEI), the official assembly of bishops in Italy. Finally, we obtain information on territorial features such as altitude and degree of urbanization from the Istituto Nazionale di Statistica (ISTAT).

We combine data from these sources to create an unbalanced panel dataset of 458,737 firms at an annual frequency. To determine the proximity between firms and banks, we utilize Google Maps and QGIS, a geographic information system software, for address geolocation. Since most firms in our dataset are SMEs that operate within the vicinity of their headquarters, we use the headquarters address to identify the firm's location.

In our database, we only include firms that operate in the construction, manufacturing, energy, transportation, trade, or services industries. We require at least four consecutive years of data and exclude observations with missing data. Most companies in our database are considered SMEs according to the European Commission's definition.<sup>4</sup> Specifically, we have 356,509 micro enterprises (1,261,322 firm-year observations), 146,590 small enterprises (589,499 firm-year observations), 28,091 medium enterprises (118,626 firm-year observations), and 4,206 large firms (18,839 firm-year observations).

To measure firms' access to external funding, we use various dependent variables. Specifically, we use *Bank Leverage*, that is the ratio of bank debt to total assets, *Short-Term Bank Leverage*, that is the ratio of bank debt with a maturity of one year or less to total assets, *Long-Term Bank Leverage*, that is the ratio of bank debt

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<sup>4</sup> 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.



with a maturity greater than one year to total assets, *Financial Leverage*, that is the ratio of total debt to total assets, and *Trade Leverage*, that is the ratio of trade debt to total assets. All these ratios are calculated at the firm-year level and are used as dependent variables in our empirical analysis.

The main variables of interest are *Coop Bank*, a dummy variable that takes a value of 1 if there is at least one cooperative bank branch located within a 1 km radius of the firm's headquarters and 0 otherwise, and *Comm Bank*, a dummy variable that takes a value of 1 if there is at least one commercial bank branch located within a 1 km radius of the firm's headquarters and 0 otherwise.<sup>5</sup> Since the conventional paradigm suggests that small banks are better suited to lend to SMEs than large banks thanks to their reliance on relationship lending (Berger et al., 2001; Berger and Udell, 2002; Cole et al., 2004; Scott, 2004; Berger et al., 2005b; Craig and Hardee, 2007), we create two dummy variables to separate commercial banks based on their total assets: *Small Comm Bank* and *Large Comm Bank*. *Small Comm Bank* is a dummy variable that takes the value of 1 if there is at least one small commercial bank branch located within a 1 km radius of the firm's headquarters and 0 otherwise. Small commercial banks are defined as those in the bottom tercile of commercial banks' total assets distribution. This choice allows us to compare cooperative banks with commercial banks of similar size. *Large Comm Bank* is a dummy variable that takes the value of 1 if there is at least one large commercial bank branch located within a 1 km radius of the firm's headquarters and 0 otherwise. Large commercial banks are defined as those in the top two terciles of commercial banks' total assets distribution.

To capture digitalization, we employ the variable *NGA Coverage* that captures the percentage of households that have access to a “Next Generation Access” (NGA) technology, that are VDSL, VDSL 2 Vectoring, FTTP, Cable, DOCSIS 3.0, and DOCSIS 3.1. These technologies are expected to allow bandwidths greater than 30Mbps. Then we divide provinces into three terciles: *Low NGA Coverage* if the value of *NGA Coverage* in a province-year is in the bottom tercile of *NGA Coverage* distribution, *Medium NGA Coverage* if the value of *NGA Coverage* in a province-year is in the middle tercile of *NGA Coverage* distribution, and *High NGA Coverage* if the value of *NGA Coverage* in a province-year is in the upper tercile of *NGA Coverage* distribution.

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<sup>5</sup> We categorize popular banks as commercial banks.

We control for a range of variables in our analysis. *Num Other Firms* is defined as the number of other firms located within the same 1 km radius, which we use as a proxy for local demand for external funding. *Metropolitan City* is a dummy variable that takes value 1 if the firm's location is in a metropolitan city, as defined by ISTAT, and 0 otherwise. This variable enables to control for differences that may emerge when a firm operates in a major urban center, characterized by a higher concentration of established banks. *Total Assets* is a variable that captures the natural logarithm of a firm's total assets in thousands of euros, adjusted for the GDP deflator with 2011 as the base year. *Assets Turnover* is a variable that measures the ratio between a firm's sales and total assets, while *Profit Margin* captures the ratio between earnings before interest and taxes and sales of a firm. *Tangible Assets* is the ratio between firm's tangible assets and total assets.

In a series of extensions, we test how bank presence affects firms' borrowing depending on their size, if they are in a rural area, and if they operate in high-tech sectors. *Micro* is a dummy variable that takes value 1 if the firm is classified as micro according to the European Commission definition, and 0 otherwise. *Micro&Small* is a dummy variable that takes value 1 if the firm is classified as micro or small according to the European Commission definition, and 0 otherwise. *Rural* is a dummy variable that takes value 1 if the firm is located in a rural or suburban area according to ISTAT, and 0 if it is located in an urban area. *HighTech* is a dummy variable that takes value 1 if the firm operates in a high-tech sector, and 0 otherwise.<sup>6</sup> Finally, to better identify causality, we instrument *Coop Bank* with *Parish Church*, that is a dummy that captures the presence of a parish church in the 1 km area around the headquarter of the firm and the cooperative bank branch and 0 otherwise. We report detailed information on the definitions and sources of all variables in Table 1.

Table 2 provides summary statistics for the variables used in the analysis, where all variables are winsorized at the 1st and 99th percentile. 44% of firm-year observations are located in proximity to at least one cooperative bank branch and 79.2% of firm-year observations are located in proximity to at least one commercial bank branch. *Financial Leverage* represents 68% of firms' total assets, and of this, bank debt and

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<sup>6</sup> We define high-tech sector as the following NACE Rev. 2 categories: C20 (Manufacture of chemicals and chemical products), C21 (Manufacture of basic pharmaceutical products and pharmaceutical preparations), C22 (Manufacture of rubber and plastic products), C26 (Manufacture of computer, electronic and optical products), C29 (Manufacture of motor vehicles, trailers and semi-trailers), C30 (Manufacture of other transport equipment), D35 (Electricity, gas, steam and air conditioning supply), J61 (Telecommunications), J62 (Computer programming, consultancy and related activities), J63 (Information service activities), M72 (Scientific research and development).

trade debt have similar shares, which is reasonable given that most firms in the sample are SMEs that often have difficulty accessing bank credit, replacing it with trade debt (Carbó-Valverde et al., 2016).

Regarding digitalization, Table 3 shows the percentage of households with access to broadband networks capable of realistically achieving download speeds of at least 30 Mbps in *Low*, *Medium*, and *High NGA Coverage* provinces. In *Low NGA Coverage* provinces, less than 20% of households have access to NGA technologies, while in *High NGA Coverage* provinces NGA technologies are widely adopted, to the point that more than 85% of households have access to such technologies. Figure 1 shows the distribution of provinces across *Low*, *Medium*, and *High NGA Coverage* over time. During the period of the analysis, Italy experienced a significant increase in broadband coverage. At the beginning of the sample period, almost all provinces are *Low NGA Coverage*, while, by the end of the sample period, most provinces are *High NGA Coverage*, with no *Low NGA Coverage* province remaining. 2016 represents an important year in our sample when many provinces improve access to NGA technologies. Given this wave of digitalization, we aim to investigate how the value of bank proximity has changed.

## 4. Results

To estimate the impact of bank branch proximity on firms' access to external sources of credit, we estimate the following baseline fixed-effect model:

$$Y_{i,t} = \beta_1 \text{Coop Bank}_{i,t} \times \text{NGA Coverage}_{p,t} + \beta_2 \text{Comm Bank}_{i,t} \times \text{NGA Coverage}_{p,t} + \beta_3 \text{NGA Coverage}_{p,t} + \mathbf{X}_{i,t} \boldsymbol{\delta} + \alpha_{j,s,t} + \alpha_{r,t} + \alpha_{a,u} + \varepsilon_{i,t}, \quad (1)$$

in which  $Y_{i,t}$  is the dependent variable that can be either *Bank Leverage*, *Short-Term Bank Leverage*, *Long-Term Bank Leverage*, *Financial Leverage*, or *Trade Leverage*.  $\mathbf{X}_{i,t}$  is a vector of firm-level controls that vary across firms (i) and years (t). The main independent variables are *Coop Bank* and *Comm Bank*, which vary at the firm-year level, and *NGA Coverage*, an indicator variable that vary across provinces (p) and years.  $\alpha_{j,s,t}$  are industry-by-size-by-year fixed effects. We classify industries based on their NACE Rev. 2 section classification. We classify firms size based on the European Commission definition of micro, small, medium, and large enterprises. We adopt a similar strategy to de Jonghe et al. (2020) to filter out for time varying demand shocks at the industry-size level by including granular industry-by-size-by-year fixed allows.  $\alpha_{r,t}$  are region-by-year fixed effects.  $\alpha_{a,u}$  are altitude-by-urbanization fixed effects to control for differences in

borrowing behaviors of firms in locations with different territorial characteristics. We categorize areas into three altitude levels (plain, hills, and mountains) and three urbanization levels (urban, suburban, and rural areas) according to the ISTAT territorial classification. We double-cluster standard errors at the firm level, to account for the fact that borrowing behaviors at the firm level are persistent over time, and at the year level, to account for the fact that improvements in digitalization happen progressively over time. In a robustness test, we double cluster standard errors at the firm and province levels.

The findings are summarized in Table 4. Firms benefit in different ways from the presence of cooperative and commercial bank branches, which rely on different lending technologies (Berger et al., 2001; Berger and Udell, 2002; Cole et al., 2004; Scott, 2004; Berger et al., 2005b; Craig and Hardee, 2007). Cooperative banks increase firms' usage of overall bank credit, both with short and, especially, long maturities, resulting in an increased financial leverage. Taken together, these results point out the beneficial effect of the presence of cooperative bank branches to alleviate firms' financial constraints. The presence of commercial banks does not change the usage of bank credit and the overall financial leverage. However, commercial banks allow firms to reallocate sources of credit towards longer-term instruments. Indeed, the coefficient of *Comm Bank* is negative for *Short-Term Bank Leverage* and positive for *Long-Term Bank Leverage*.

We find that firms close to cooperative or commercial banks decrease the usage of trade credit, indeed the sign of *Coop Bank* and *Comm Bank* on *Trade Leverage* is negative. This result is in line with a large body of literature studying the substitutability of bank and trade credit (Carbó-Valverde et al., 2016). This supports the notion of firms substituting bank credit with non-bank credit while highlighting the enduring influence of banks in facilitating firms' access to formal bank credit.

Regarding the sign of the independent variables, *Metropolitan City* exhibits a negative sign. This suggests that *ceteris paribus*, firms situated in more urbanized areas, where the availability of credit may be greater, are less inclined to access external credit. This could be attributed to two potential factors. First, larger cities tend to host a greater number of firms, which may intensify competition on the demand side for credit. Second, these firms may be more accessible to equity funding due to their urban location. *Num Other Firms* exhibits a negative sign for *Bank Leverage* and *Long-Term Bank Leverage*, indicating that an increased number of firms in a geographical area corresponds to higher competition for external sources of finance, in line with the sign of *Metropolitan City*. This heightened competition makes it more challenging for firms to access bank

funding, which aligns with the conventional understanding of the relationship between competition and obtaining credit.

*Total Assets* exhibits a positive sign, indicating that larger firms have greater access to bank credit. This positive relationship suggests that banks may view larger firms with higher levels of assets as less risky, making them more likely to receive credit. Additionally, capital-intensive firms with low *Assets Turnover* and high *Profit Margin* tend to have easier access to long-term bank credit, while competitive business firms (high *Assets Turnover*, low *Profit Margin*) tend to borrow more short-term bank credit. The positive sign of *Tangible Assets* on *Bank Leverage* implies that firms with a higher amount of collateral available for pledging tend to have more accessible access to bank credit. Moreover, firms with high *Tangible Assets* allow firms to replace short-term with long-term bank credit. These findings imply that firms with a higher proportion of capital investment, lower turnover of assets, and higher profitability are more attractive to banks when it comes to granting bank credit. Taken together, these findings shed light on the factors influencing firms' access to bank credit, underscoring the importance of competition, firm size, and financial performance in determining the availability of funding from banks.

In Table 4, we expand the results by interacting *Coop Bank* and *Comm Bank* with an indicator variable that identifies low, medium, and high digitalized provinces to examine how digitalization moderates the impact of banks' proximity on firms' borrowing behaviours. We find that the bank proximity effect is relatively homogeneous across different digitalization levels. The coefficient of *Coop Bank* is 0.010 in *Low NGA Coverage* provinces, where the percentage of households that have access to NGA technologies is below 17.9%, and it is 0.008 in *Medium NGA Coverage* and *High NGA Coverage* provinces, where the percentage of households that have access to NGA technologies is at least equal to 17.9% and 85.3%, respectively. Results remain virtually unaltered for *Short-Term bank Leverage*, *Long-Term Bank Leverage*, *Financial Leverage*, and *Trade Leverage*.

With the increasing influence of digitalization, firms are relying less on the branch network near their headquarters. However, relationship lending continues to hold significance, particularly when it comes to accessing bank credit with a maturity longer than one year.

Considering that the average value of *Short-Term Bank Leverage* is 0.119 and the average value of *Long-Term Bank Leverage* is 0.093, the impact of relationship lending remains economically significant even

in highly digitalized areas, particularly for accessing credit with longer maturities, having on average an increase of 9.68% in long-term bank credit.<sup>7</sup> These findings underscore the value of relationship lending in enabling firms to secure credit from banks with extended repayment periods. This is particularly beneficial as it allows firms to finance long-term investment projects beyond just meeting immediate working capital needs.

These results suggest that in low digitalization areas, firms heavily benefit from banks' relationship lending technologies. Despite the advancements in digital technologies, the physical presence of banks continues to shape firms' financing decisions, with a greater emphasis on formal bank credit and a reduced reliance on non-bank sources. The presence of a cooperative bank branch nearby significantly enhances their access to bank credit. In areas where digitalization is higher, where borrowers can leverage digital technology to access credit from banks that are not physically located in their immediate vicinity, the impact of relationship lending diminishes marginally but it remains strong and statistically significant.

#### 4.1. Firms' Dimension

According to the conventional paradigm, small and large enterprises access bank funding through different channels. In this extension, we examine how our baseline results change depending on firms' dimensions. To do so, we estimate the following fixed-effect model:

$$\begin{aligned}
Y_{i,t} = & \beta_1 Coop\ Bank_{i,t} \times NGA\ Coverage_{p,t} \times Firm\ Dimension_{i,t} \\
& + \beta_2 Comm\ Bank_{i,t} \times NGA\ Coverage_{p,t} \times Firm\ Dimension_{i,t} \\
& + \beta_3 NGA\ Coverage_{p,t} \times Firm\ Dimension_{i,t} + \mathbf{X}_{i,t} \boldsymbol{\delta} + \alpha_{j,s,t} + \alpha_{r,t} + \alpha_{a,u} + \varepsilon_{i,t},
\end{aligned} \tag{2}$$

in which *Firm Dimension* is either *Micro*, a dummy variable that takes value 1 if the firm is classified as micro according to the European Commission definition, and 0 otherwise, or *Micro&Small*, a dummy variable that takes value 1 if the firm is classified as micro or small according to the European Commission definition, and 0 otherwise.

Table 5 reports the results of this extension. By looking at the coefficient of *Coop Bank* on *Bank Leverage*, the role of cooperative banks is particularly important for micro and small firms in low- and medium-digitalized provinces. This finding suggests that relationship lending plays a crucial role in facilitating

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<sup>7</sup> Given that the average long-term bank credit of the sample is 0.093 and the coefficient for *Medium* and *High NGA Coverage* provinces is 0.008, the ratio of the two equates to 9.68%.

SMEs' access to credit in areas where digitalization is limited. In highly digitalized areas, the coefficient of *Coop Bank* declines but remains positive and statistically significant. This is further evidence that, also in provinces where there is wide access to information technologies, the physical presence of banks helps borrowers.

The presence of commercial and cooperative banks is especially useful for SMEs to access long-term bank credit, and their presence is particularly effective in low and medium-digitalized provinces. Overall, our findings demonstrate that digitalization does not diminish the significance of relationship lending. Despite the advancements in digital technologies, SMEs continue to rely on the local banking network and benefit from the presence of cooperative bank branches in their vicinity. This underscores the crucial role of relationship lending in supporting the financing needs of smaller firms in the context of digitalization.

#### 4.2. Commercial Banks' Size

The conventional paradigm states that small and large banks often employ different lending technologies and lend to different types of borrowers. According to the conventional paradigm, small banks rely more on qualitative information to lend to SMEs whereas large banks rely more on quantitative information to lend to large firms. To this extent, small commercial banks could be considered closer to cooperative banks, than to large commercial banks, given their reliance on relationship lending. In this extension, we examine how our baseline results change depending on commercial banks' size. To do so, we estimate the following fixed-effect model:

$$\begin{aligned}
Y_{i,t} = & \beta_1 Coop\ Bank_{i,t} \times NGA\ Coverage_{p,t} + \beta_2 Small\ Comm\ Bank_{i,t} \times NGA\ Coverage_{p,t} \\
& + \beta_3 Large\ Comm\ Bank_{i,t} \times NGA\ Coverage_{p,t} + \beta_4 NGA\ Coverage_{p,t} + \mathbf{X}_{i,t} \boldsymbol{\delta} \quad (3) \\
& + \alpha_{j,s,t} + \alpha_{r,t} + \alpha_{a,u} + \varepsilon_{i,t} ,
\end{aligned}$$

in which *Small Comm Bank* is a dummy variable that takes the value of 1 if there is at least one small commercial bank branch located within a 1 km radius of the firm's headquarters and 0 otherwise. Small commercial banks are defined as those in the bottom tercile of commercial banks' total assets distribution. This choice allows us to compare cooperative banks with commercial banks of similar size. *Large Comm Bank* is a dummy variable that takes the value of 1 if there is at least one large commercial bank branch located within

a 1 km radius of the firm's headquarters and 0 otherwise. Large commercial banks are defined as those in the top two terciles of commercial banks' total assets distribution.

Table 6 reports the results of this extension. When differentiating small and large commercial banks, interesting differences emerge. Indeed, the coefficients of *Small Comm Bank* are always statistically significant on *Bank Leverage*, whereas *Large Comm Bank* coefficients are never. Similarly, to *Coop Banks*, *Small Comm Bank* coefficients impact positively *Short-Term Bank Leverage*, *Long-Term Bank Leverage*, and *Financial Leverage* in low-, medium-, and highly digitalized provinces.

Comparing the magnitudes of coefficients of cooperative banks with the ones of small commercial banks, the presence of cooperative banks increases the usage of bank credit more than the presence of small commercial banks. This suggests that within relationship lending, significance extends beyond just bank size to include governance structure. Cooperative banks, with a mandate to serve local community interests, possess a unique advantage in building relationships with local borrowers. Conversely, small commercial banks, lacking regulatory obligations to prioritize local borrowers, may not demonstrate the same commitment to local community development.

This evidence shows that the conventional paradigm, which states that smaller banks employ relationships to lend to SMEs, holds regardless of the level of digitalization. In this regard, small commercial banks operate similarly to cooperative banks and are substantially different from large commercial banks.

### **4.3. Rural Areas**

Within provinces, rural areas are less digitalized than suburban and urban areas (DeStefano et al., 2023). Moreover, cooperative banks have traditionally assumed a more prominent role in rural areas, where interpersonal relationships play a pivotal role, and larger financial institutions provide limited services to local businesses. Cooperative banks primarily serve artisans and small manufacturing enterprises, comprising 24.1% of their market share, agriculture at 22.7%, and tourism at 22.5%, primarily concentrated in non-urban regions.<sup>8</sup> To this extent, we expect to find that the physical presence of banks has stronger results for firms located in rural areas. However, the advent of digitalization may have facilitated larger commercial banks' entry into

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<sup>8</sup> <https://creditocooperativo.it/page/il-credito-cooperativo/key-figures-and-statistics>.



these credit markets. In this extension, we examine how our baseline results change depending on the firms' location. To do so, we estimate the following fixed-effect model:

$$\begin{aligned}
Y_{i,t} = & \beta_1 \text{Coop Bank}_{i,t} \times \text{NGA Coverage}_{p,t} \times \text{Rural}_i \\
& + \beta_2 \text{Comm Bank}_{i,t} \times \text{NGA Coverage}_{p,t} \times \text{Rural}_i + \beta_3 \text{NGA Coverage}_{p,t} \\
& \times \text{Rural}_i + \mathbf{X}_{i,t} \boldsymbol{\delta} + \alpha_{j,s,t} + \alpha_{r,t} + \alpha_{a,u} + \varepsilon_{i,t} ,
\end{aligned} \tag{4}$$

in which *Rural* is a dummy variable that takes value 1 if the firm is located in a rural or suburban area according to ISTAT, and 0 if it is located in an urban area.

Table 7 reports the results of this extension. In low and medium-digitalized areas, *Coop Bank* coefficients are always positive and statistically significant, and, in rural areas, their magnitudes are higher. In highly digitalized provinces, cooperative banks' presence increases bank borrowing only in rural areas while it does not in urban areas. These results provide further evidence of the importance of banks' branches in areas with lower levels of digitalization.

#### 4.4. High-Tech Industries

Firms in high-tech sectors need to secure stable sources of credit to undertake innovative projects. Thus, we explore how the physical presence of banks influences the borrowing ability of high-tech firms. To do so, we estimate the following fixed-effect model:

$$\begin{aligned}
Y_{i,t} = & \beta_1 \text{Coop Bank}_{i,t} \times \text{NGA Coverage}_{p,t} \times \text{HighTech}_i \\
& + \beta_2 \text{Comm Bank}_{i,t} \times \text{NGA Coverage}_{p,t} \times \text{HighTech}_i + \beta_3 \text{NGA Coverage}_{p,t} \\
& \times \text{HighTech}_i + \mathbf{X}_{i,t} \boldsymbol{\delta} + \alpha_{j,s,t} + \alpha_{r,t} + \alpha_{a,u} + \varepsilon_{i,t} ,
\end{aligned} \tag{5}$$

in which *HighTech* is a dummy variable that takes value 1 if the firm operates in a high-tech sector, and 0 otherwise.

Table 8 reports the results of this extension. In low and medium-digitalized areas, *Coop Bank* coefficients are always positive and statistically significant, and, for firms operating in high-tech sectors, their magnitudes are higher. In low-digitalized provinces, also the presence of commercial banks allows high-tech firms to increase their amount of bank borrowing. Innovative firms need to secure long-term maturity financing to undertake R&D projects. The coefficients in Table 8 confirm that the presence of cooperative banks allows

high-tech firms to increase bank borrowing, also in high-digitalized provinces. These results highlight the importance of banks' physical presence in funding innovative firms.

#### 4.5. Instrumental Variable Approach

In this section, to establish causality between the physical presence of banks supplying credit through relationship lending and firms' borrowing, we employ an IV approach. Specifically, we instrument the presence of cooperative banks' branches, whose business models are based on funding SMEs via relationship lending, with the presence of parish churches in the surroundings of cooperative banks. This choice of instrument allows us to disentangle the geographical sorting of banks due to historical reasons from credit demand effects. Given that, historically, the first Italian cooperative banks were mainly established by Catholic entrepreneurs (Cesarini et al., 1997; Beccalli, 2021; Berbenni and Cafaro, 2021; Fiordelisi, 2021), the presence of parish churches makes it more likely the existence of Catholic communities and the presence of cooperative banks.

Our IV approach respects the exclusion restriction because, although religiosity impacts small firms' social capital (Deller et al., 2018), after including a set of granular fixed effects, the demand for credit of firms should not directly be affected by the presence of parish churches. Moreover, loan supply is not affected by religiosity (Accetturo et al., 2023). Moreover, in Table A1 in the Appendix, we estimate a reduced-form regression that includes dummies for the presence of both cooperative banks and parish churches. When both dummies are included, the presence of cooperative banks maintains its statistically significant effect, whereas the effect of parish churches is not statistically significant. While not a formal test for exclusion restriction, this provides additional evidence that parish churches influence firms' borrowing via the cooperative banks channel.

The first-stage regression of the IV regression is as follow:

$$\begin{aligned} \text{Coop Bank}_{i,t} \times \text{NGA Coverage}_{p,t} \\ = \beta_1 \text{Parish Church}_{i,t} \times \text{NGA Coverage}_{p,t} + \mathbf{X}_{i,t} \boldsymbol{\delta} + \alpha_{j,s,t} + \alpha_{r,t} + \alpha_{a,u} + \varepsilon_{i,t}, \end{aligned} \quad (6)$$

we use the predicted value of  $\text{Coop Bank}_{i,t} \times \text{NGA Coverage}_{p,t}$  from Equation 6 as an independent variable in Equation 1, the second-stage regression, estimated with two-stage least squares (2SLS) estimator. We report the Kleibergen-Paap Wald F-statistic (KPW F-stat) and the Anderson-Rubin p-value (AR p-value) to test for weak instrument and overidentification.

Table 9 reports IV results. The coefficients of the first stage regressions highlight a strong relationship between the presence of parish churches and cooperative banks, varying from 0.888 to 0.914. KPW F-stats are always above 10, confirming that *Parish Church* is a strong instrument (Andrews et al., 2019). AR p-values are always below 0.01, rejecting the null hypothesis of over-identification.

The results of IV regressions confirm the findings reported in Table 4. After instrumenting for parish churches, cooperative banks increase the usage of bank (short and long term) credit and decrease the usage of trade credit, resulting in an increased overall financial leverage. Our results demonstrate that, despite the impact of digitalization reducing the value of relationship lending, firms continue to depend on the local bank branch network for accessing credit. Overall, these findings highlight the nuanced relationship between digitalization and relationship lending. Proximity to cooperative bank branches positively impacts access to credit in low-digitalized areas. The impact diminishes in high-digitalized areas where digital technology enables firms to access credit from a wider range of banks beyond their immediate vicinity but remains positive and statistically significant.

## 5. Robustness Tests

We conduct a battery of robustness tests to validate our results. In Table A2, we add control variables one at a time, to make sure no control is driving our findings. The results confirm our main analysis. In the main analysis, we double-cluster standard errors at the firm level and year level. In Table A3 we double-cluster standard errors at the firm and province levels, to account for the fact that digitalization is sticky at the province level. Results in Table A3 confirm the results of the main analysis.

We examine the impact of varying the proximity threshold used to classify the presence of cooperative bank branches. In Table A4, we redefine *Coop Bank* as a dummy variable that takes a value of 1 if there is at least one cooperative bank branch located within a 3 km radius of the firm's headquarters and 0 otherwise, and *Comm Bank*, as a dummy variable that takes a value of 1 if there is at least one commercial bank branch located within a 3 km radius of the firm's headquarters and 0 otherwise. In Table A5, we redefine *Coop Bank* as a dummy variable that takes a value of 1 if there is at least one cooperative bank branch located within a 5 km radius of the firm's headquarters and 0 otherwise, and *Comm Bank*, as a dummy variable that takes a value of 1 if there is at least one commercial bank branch located within a 5 km radius of the firm's headquarters and 0 otherwise. At the 3 km threshold, results remain unaltered with respect to the baseline findings. At the 5 km

threshold, results confirm the findings of the main analysis, however, standard errors increase and significance decreases. This is consistent with the idea that the value of branches' physical presence decreases when the distance between the lender and the borrowers increases.

In Table A6, we employ *NGA Coverage* as a continuous variable, instead of the indicator variable of the main analysis. *Coop Bank* and *Comm Bank* estimates match the value of *Coop Bank*  $\times$  *Low NGA Coverage* and *Comm Bank*  $\times$  *Low NGA Coverage*. The interaction term between *Coop Bank*, *Comm Bank*, and *NGA Coverage* confirm the signs of the main analysis in medium and high digitalized provinces. However, they are never statistically significant at the 95% confidence interval, highlighting the fact the value of bank physical presence does not depend on digitalization.

## 6. Conclusions

This paper re-examines the longstanding question in banking literature about the impact of bank proximity on firms' access to credit, considering the digital transformation of recent decades. Specifically, we explore how proximity to cooperative and commercial bank branches affects firms' access to external finance across provinces of Italy with varying levels of digitalization.

To address potential concerns of reverse causality, we adopt an IV approach to examine the impact of cooperative banks on firms' access to credit. Given Italy's history of cooperative banks being established by Catholic entrepreneurs, we construct an instrument based on the presence of parish churches near cooperative bank branches. This instrument isolates the exogenous variation in cooperative bank proximity, mitigating endogeneity issues from demand-side factors affecting their location.

Our findings indicate that the proximity to cooperative banks and, at a lesser extent, small commercial banks—whose business models emphasize relationship lending—positively impacts firms' access to bank credit. Proximity to large commercial banks, which utilize quantitative information for borrower selection, does not enhance overall funding for firms but facilitates access to long-term rather than short-term borrowing.

While digitalization has reduced the significance of proximity in accessing credit, even in highly digitalized provinces, its value remains significant and positive. This suggests that despite the availability of fast digital technologies that enable firms to seek external funding from distant financial institutions and FinTech lenders, the local presence of banks continues to play a valuable role in facilitating access to bank credit. Additionally, bank proximity is especially beneficial for accessing longer-maturity credit, underscoring

its role in funding long-term investments. Moreover, we show that banks' physical presence is particularly beneficial in rural areas, where digitalization is lower, and for high-tech sectors, where external funding is necessary to invest in innovative projects.

Our findings have important implications for policymakers and bank directors: digital technologies cannot completely replace the benefits of relationship lending. Firms near banks focusing on relationship lending benefit from easier access to longer-maturity credit. This has several positive effects. This stability enables borrowers to pursue long-term investment projects, contributing to economic growth and business sustainability. Policymakers should acknowledge the enduring importance of relationship lending and ensure that policies support the maintenance and growth of cooperative and small commercial banks and their branch networks. Similarly, bank directors should consider the value of relationship lending in their strategies and ensure that they balance the integration of digital technologies with the preservation of personalized and local banking services.

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**Table 1: Variable Definitions and Sources**

In this table, we provide the definitions and the sources of the variable that we use in this paper.

<b>Variable</b>	<b>Definition</b>	<b>Source</b>
<i>Bank Leverage</i>	The ratio between bank debt and total assets of a firm.	AIDA
<i>Short-Term Bank Leverage</i>	The ratio between bank debt with a maturity equal to or lower than one year and total assets of a firm.	AIDA
<i>Long-Term Bank Leverage</i>	The ratio between bank debt with a maturity higher than one year and total assets of a firm.	AIDA
<i>Financial Leverage</i>	The ratio between total debt and total assets of a firm.	AIDA
<i>Trade Leverage</i>	The ratio between trade debt and total assets of a firm.	AIDA
<i>Coop Bank</i>	A dummy that takes a value of 1 if there is at least one cooperative bank branch in the 1 km area around the firm headquarter and 0 otherwise.	AIDA, Bank of Italy, Federcasse
<i>Comm Bank</i>	A dummy that takes a value of 1 if there is at least one commercial bank branch in the 1 km area around the firm headquarter, and 0 otherwise.	AIDA, Bank of Italy, Federcasse
<i>Small Comm Bank</i>	A dummy that takes a value of 1 if there is at least one small commercial bank branch in the 1 km area around the firm headquarter, and 0 otherwise. Small commercial banks have total assets in the bottom tercile of the distribution of commercial banks total assets.	AIDA, Bank of Italy, Federcasse
<i>Large Comm Bank</i>	A dummy that takes a value of 1 if there is at least one large commercial bank branch in the 1 km area around the firm headquarter, and 0 otherwise. Large commercial banks have total assets in the top two terciles of the distribution of commercial banks total assets.	AIDA, Bank of Italy, Federcasse
<i>NGA Coverage</i>	An indicator variable that takes a value of 1 if the percentage of households in a province that have access to broadband networks capable of realistically achieving actual download speeds of at least 30 Mbps is in the bottom tercile, a value of 2 if it is in the middle tercile, and a value of 3 if it is in the top tercile.	Point Topic
<i>Metropolitan City</i>	A dummy that takes a value of 1 if the firm is located in a metropolitan city (definition according to ISTAT), 0 otherwise	ISTAT
<i>Num Other Firms</i>	The natural logarithm of 1 plus the number of other firms headquartered in a 1 km area around the firm.	AIDA
<i>Total Assets</i>	The natural logarithm of total assets in thousands of euros, adjusted for the GDP deflator and with 2011 as base year.	AIDA
<i>Assets Turnover</i>	The ratio between sales and total assets of a firm.	AIDA
<i>Profit Margin</i>	The ratio between earnings before interests and taxes and sales of a firm.	AIDA
<i>Tangible Assets</i>	The ratio between tangible assets and total assets of a firm.	AIDA
<i>Rural area</i>	A dummy that takes a value of 1 if the firm is located in a rural or suburban area (definition according to ISTAT), 0 otherwise	
<i>High Tech Industry</i>	A dummy that takes a value of 1 if the firm belongs to a high tech industry, 0 otherwise. High tech industries are the ones belonging to following NACE Rev. 2 categories: C20 (Manufacture of chemicals and chemical products), C21 (Manufacture of basic pharmaceutical products and pharmaceutical preparations), C22 (Manufacture of rubber and plastic products), C26 (Manufacture of computer, electronic and optical products), C29 (Manufacture of motor vehicles, trailers and semi-trailers), C30 (Manufacture of other transport equipment), D35 (Electricity, gas, steam and air conditioning supply), J61 (Telecommunications), J62 (Computer programming, consultancy and related activities), J63 (Information service activities), M72 (Scientific research and development).	AIDA

<i>Micro</i>	A dummy that takes a value of 1 if the firm is categorized as a micro firm (according to the European Commission definition), 0 otherwise	
<i>Micro&amp;Small</i>	A dummy that takes a value of 1 if the firm is categorized as a micro or a small firm (according to the European Commission definition), 0 otherwise	
<i>Parish Church</i>	A dummy that takes a value of 1 if there is (i) a parish church in the 1 km area around the firm headquarter and (ii) there is at least one cooperative bank branch in the 1 km area around the firm headquarter and (iii) the parish church is in the 1 km area around the cooperative bank branch and 0 otherwise.	AIDA, CEI

**Table 2: Summary Statistics**

This table reports the summary statistics for the variables in the analysis. Variables definitions are reported in Table 1. The sample period ranges from 2011 to 2020.

	Obs.	Mean	St. Dev.	Min	Max
Panel A: Dependent Variables					
<i>Bank Leverage</i>	1,988,286	0.213	0.182	0.000	0.750
<i>Short Term Bank Leverage</i>	1,988,286	0.119	0.132	0.000	0.569
<i>Long Term Bank Leverage</i>	1,988,286	0.093	0.138	0.000	0.638
<i>Financial Leverage</i>	1,988,286	0.680	0.216	0.110	0.986
<i>Trade Leverage</i>	1,988,286	0.243	0.185	0.000	0.791
Panel B: Main Independent Variables					
<i>Coop Bank</i>	1,988,286	0.440	0.496	0.000	1.000
<i>Comm Bank</i>	1,988,286	0.792	0.406	0.000	1.000
<i>Small Comm Bank</i>	1,988,286	0.239	0.427	0.000	1.000
<i>Large Comm Bank</i>	1,988,286	0.787	0.409	0.000	1.000
Panel C: Control Variables					
<i>NGA Coverage</i>	1,988,286	0.416	0.390	0.000	1.000
<i>Metropolitan Area</i>	1,988,286	0.230	0.421	0.000	1.000
<i>Num Other Firms</i>	1,988,286	4.050	1.581	0.693	7.881
<i>Total Assets</i>	1,988,286	6.867	1.473	3.620	10.742
<i>Assets Turnover</i>	1,988,286	1.141	0.856	0.009	4.678
<i>Profit Margin</i>	1,988,286	0.023	0.257	-1.693	0.776
<i>Tangible Assets</i>	1,988,286	0.202	0.238	0.000	0.948
<i>Rural area</i>	1,988,286	0.551	0.497	0.000	1.000
<i>High Tech Industry</i>	1,988,286	0.211	0.408	0.000	1.000
<i>Micro</i>	1,988,286	0.608	0.488	0.000	1.000
<i>Micro&amp;Small</i>	1,988,286	0.916	0.277	0.000	1.000
Panel C: Instrumental Variable					
<i>Parish Church</i>	1,988,286	0.391	0.488	0.000	1.000

**Table 3: NGA Coverage**

This table reports the summary statistics for NGA Coverage divided in three terciles of the province-year NGA Coverage distribution, depending on the percentage of households in a province that have access to broadband networks capable of realistically achieving actual download speeds of at least 30 Mbps.

	Obs.	Mean	St. Dev.	Min	Max
<i>Low NGA Coverage</i>	816,409	0.031	0.056	0.000	0.179
<i>Medium NGA Coverage</i>	659,299	0.483	0.228	0.179	0.850
<i>High NGA Coverage</i>	512,578	0.941	0.039	0.853	1.000

**Table 4: Bank Proximity Effect**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We double cluster standard errors at the firm and year level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
	<i>Bank Leverage</i>	<i>Bank Leverage</i>	<i>Short-Term Bank Leverage</i>	<i>Short-Term Bank Leverage</i>	<i>Long-Term Bank Leverage</i>	<i>Long-Term Bank Leverage</i>	<i>Financial Leverage</i>	<i>Financial Leverage</i>	<i>Trade Leverage</i>	<i>Trade Leverage</i>
<i>Coop Bank</i>	0.009*** (0.001)		0.003*** (0.000)		0.006*** (0.000)		0.006*** (0.001)		-0.002*** (0.001)	
<i>Comm Bank</i>	0.001 (0.001)		-0.002** (0.001)		0.002*** (0.001)		-0.001 (0.001)		-0.003*** (0.001)	
<i>Coop Bank × Low NGA Coverage</i>		0.010*** (0.001)		0.004*** (0.001)		0.006*** (0.001)		0.005*** (0.001)		-0.003*** (0.001)
<i>Coop Bank × Medium NGA Coverage</i>		0.008*** (0.001)		0.003*** (0.001)		0.006*** (0.001)		0.006*** (0.001)		-0.003*** (0.001)
<i>Coop Bank × High NGA Coverage</i>		0.008*** (0.001)		0.002*** (0.001)		0.005*** (0.001)		0.006*** (0.001)		-0.002** (0.001)
<i>Comm Bank × Low NGA Coverage</i>		0.002 (0.001)		-0.002* (0.001)		0.003*** (0.001)		0.001 (0.001)		-0.003*** (0.001)
<i>Comm Bank × Medium NGA Coverage</i>		0.000 (0.001)		-0.002* (0.001)		0.002** (0.001)		-0.001 (0.001)		-0.003*** (0.001)
<i>Comm Bank × High NGA Coverage</i>		0.000 (0.001)		-0.002 (0.001)		0.002** (0.001)		-0.002 (0.001)		-0.003** (0.001)
<i>Medium NGA Coverage</i>		0.000 (0.002)		0.000 (0.001)		-0.000 (0.001)		0.001 (0.001)		0.001 (0.001)
<i>High NGA Coverage</i>		-0.002 (0.002)		-0.000 (0.001)		-0.002 (0.001)		0.000 (0.002)		0.002 (0.002)
<i>Metropolitan City</i>	-0.011*** (0.001)	-0.010*** (0.001)	-0.004*** (0.001)	-0.003*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)	-0.006*** (0.001)
<i>Num Other Firms</i>	-0.001*** (0.000)	-0.001*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	0.001 (0.000)	0.001 (0.000)	-0.000 (0.000)	-0.000 (0.000)



<i>Total Assets (t-1)</i>	0.014*** (0.001)	0.014*** (0.001)	0.002*** (0.000)	0.002*** (0.000)	0.012*** (0.001)	0.012*** (0.001)	0.002 (0.002)	0.002 (0.002)	0.003*** (0.001)	0.003*** (0.001)
<i>Assets Turnover (t-1)</i>	-0.012*** (0.002)	-0.012*** (0.002)	0.002*** (0.000)	0.002*** (0.000)	-0.014*** (0.002)	-0.014*** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.058*** (0.001)	0.058*** (0.001)
<i>Profit Margin (t-1)</i>	0.005 (0.007)	0.005 (0.007)	-0.023*** (0.003)	-0.023*** (0.003)	0.027*** (0.004)	0.027*** (0.004)	-0.072*** (0.014)	-0.072*** (0.014)	-0.034*** (0.003)	-0.034*** (0.003)
<i>Tangible Assets (t-1)</i>	0.079*** (0.006)	0.079*** (0.006)	-0.064*** (0.007)	-0.064*** (0.007)	0.143*** (0.002)	0.143*** (0.002)	-0.145*** (0.007)	-0.145*** (0.007)	-0.159*** (0.002)	-0.159*** (0.002)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.092	0.086	0.086	0.179	0.179	0.095	0.095	0.253	0.253
Industry × Year × Size FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

**Table 5: Banks Proximity and Firm Dimension**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We double cluster standard errors at the firm and year level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
	<i>Bank Leverage</i>	<i>Bank Leverage</i>	<i>Short-Term Bank Leverage</i>	<i>Short-Term Bank Leverage</i>	<i>Long-Term Bank Leverage</i>	<i>Long-Term Bank Leverage</i>	<i>Financial Leverage</i>	<i>Financial Leverage</i>	<i>Trade Leverage</i>	<i>Trade Leverage</i>
<i>Firm Dimension</i>	<i>Micro</i>	<i>Micro&amp;Small</i>	<i>Micro</i>	<i>Micro&amp;Small</i>	<i>Micro</i>	<i>Micro&amp;Small</i>	<i>Micro</i>	<i>Micro&amp;Small</i>	<i>Micro</i>	<i>Micro&amp;Small</i>
<i>Coop Bank × Low NGA Coverage</i>	0.007*** (0.001)	0.005* (0.003)	0.003** (0.001)	0.002 (0.002)	0.004*** (0.001)	0.004** (0.001)	0.006*** (0.001)	0.005* (0.003)	-0.001 (0.001)	0.001 (0.002)
<i>Coop Bank × Low NGA Coverage × Dimension</i>	0.012*** (0.001)	0.011*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.008*** (0.001)	0.007*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	-0.004*** (0.001)	-0.003*** (0.001)
<i>Coop Bank × Medium NGA Coverage</i>	0.006*** (0.001)	0.001 (0.002)	0.002** (0.001)	-0.001 (0.002)	0.003*** (0.001)	0.002 (0.001)	0.005*** (0.001)	0.005 (0.003)	-0.002 (0.001)	0.001 (0.002)
<i>Coop Bank × Medium NGA Coverage × Dimension</i>	0.011*** (0.001)	0.009*** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
<i>Coop Bank × High NGA Coverage</i>	0.007*** (0.001)	0.009*** (0.002)	0.002* (0.001)	0.003 (0.002)	0.005*** (0.001)	0.006*** (0.001)	0.008*** (0.001)	0.011*** (0.003)	0.000 (0.001)	0.003 (0.002)
<i>Coop Bank × High NGA Coverage × Dimension</i>	0.009*** (0.001)	0.008*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.006*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.006*** (0.001)	-0.004*** (0.001)	-0.003** (0.001)
<i>Comm Bank × Low NGA Coverage</i>	0.002 (0.002)	-0.002 (0.004)	-0.001 (0.001)	-0.003 (0.003)	0.002** (0.001)	0.001 (0.001)	0.001 (0.002)	-0.002 (0.003)	-0.004** (0.001)	-0.007** (0.002)
<i>Comm Bank × Low NGA Coverage × Dimension</i>	0.001 (0.001)	0.002 (0.001)	-0.002** (0.001)	-0.001 (0.001)	0.004*** (0.001)	0.003*** (0.001)	0.001 (0.002)	0.001 (0.001)	-0.003** (0.001)	-0.003** (0.001)
<i>Comm Bank × Medium NGA Coverage</i>	0.001 (0.001)	-0.001 (0.004)	-0.001 (0.001)	-0.003 (0.002)	0.002** (0.001)	0.002 (0.002)	0.001 (0.002)	-0.004 (0.003)	-0.003** (0.001)	-0.006** (0.002)
<i>Comm Bank × Medium NGA Coverage × Dimension</i>	-0.001 (0.002)	0.000 (0.001)	-0.003* (0.001)	-0.002 (0.001)	0.001 (0.001)	0.002** (0.001)	-0.003* (0.002)	-0.001 (0.001)	-0.004*** (0.001)	-0.003*** (0.001)

<i>Comm Bank × High NGA Coverage</i>	0.002	-0.003	-0.001	-0.003	0.004***	0.000	0.002	-0.003	-0.001	-0.005*
	(0.002)	(0.003)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.003)	(0.001)	(0.002)
<i>Comm Bank × High NGA Coverage × Dimension</i>	-0.001	0.001	-0.002	-0.001	0.001	0.002**	-0.006***	-0.001	-0.004***	-0.002*
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
<i>Medium NGA Coverage</i>	0.002	0.008	0.001	0.005	0.001	0.002	0.001	0.006	-0.001	-0.003
	(0.002)	(0.004)	(0.002)	(0.003)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
<i>High NGA Coverage</i>	0.000	0.006	-0.000	0.004	0.001	0.002	-0.000	0.006	-0.001	-0.001
	(0.003)	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.005)	(0.002)	(0.003)
<i>Low NGA Coverage × Dimension</i>	-0.001	0.003	-0.008***	-0.008**	0.007***	0.011***	-0.024***	-0.015***	-0.046***	-0.019***
	(0.003)	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)	(0.003)	(0.003)
<i>Medium NGA Coverage × Dimension</i>	-0.004	-0.005	-0.008***	-0.013***	0.004*	0.008**	-0.024***	-0.020***	-0.041***	-0.014***
	(0.003)	(0.004)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
<i>High NGA Coverage × Dimension</i>	-0.006*	-0.007*	-0.007***	-0.012***	0.002	0.007**	-0.022***	-0.022***	-0.041***	-0.015***
	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)	(0.003)	(0.004)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.092	0.086	0.086	0.179	0.179	0.095	0.095	0.254	0.253
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

**Table 6: Bank Proximity and Bank Size**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and year level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
	<i>Bank Leverage</i>	<i>Short-Term Bank Leverage</i>	<i>Long-Term Bank Leverage</i>	<i>Financial Leverage</i>	<i>Trade Leverage</i>
<i>Coop Bank</i> × <i>LDP</i>	0.010*** (0.001)	0.004*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	-0.002*** (0.001)
<i>Coop Bank</i> × <i>MDP</i>	0.008*** (0.001)	0.003*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	-0.002*** (0.001)
<i>Coop Bank</i> × <i>HDP</i>	0.008*** (0.001)	0.002*** (0.001)	0.005*** (0.001)	0.006*** (0.001)	-0.001* (0.001)
<i>Small Comm Bank</i> × <i>LDP</i>	0.006*** (0.001)	0.002** (0.001)	0.004*** (0.001)	0.003* (0.002)	-0.003** (0.001)
<i>Small Comm Bank</i> × <i>MDP</i>	0.005*** (0.001)	0.003*** (0.001)	0.002* (0.001)	0.003** (0.001)	-0.003** (0.001)
<i>Small Comm Bank</i> × <i>HDP</i>	0.005*** (0.001)	0.002** (0.001)	0.002** (0.001)	0.000 (0.001)	-0.004*** (0.001)
<i>Large Comm Bank</i> × <i>LDP</i>	0.001 (0.001)	-0.002* (0.001)	0.002** (0.001)	0.000 (0.002)	-0.004*** (0.001)
<i>Large Comm Bank</i> × <i>MDP</i>	-0.001 (0.001)	-0.002** (0.001)	0.002** (0.001)	-0.001 (0.001)	-0.003*** (0.001)
<i>Large Comm Bank</i> × <i>HDP</i>	0.000 (0.001)	-0.002* (0.001)	0.002** (0.001)	-0.002 (0.001)	-0.003** (0.001)
<i>Medium Digitalized Province</i>	0.000 (0.002)	0.001 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.001 (0.001)
<i>High Digitalized Province</i>	-0.002 (0.002)	-0.000 (0.001)	-0.002 (0.001)	-0.000 (0.002)	0.001 (0.002)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.086	0.179	0.095	0.253
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES

**Table 7: Bank Proximity in Rural Areas**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and year level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
	<i>Bank Leverage</i>	<i>Short-Term Bank Leverage</i>	<i>Long-Term Bank Leverage</i>	<i>Financial Leverage</i>	<i>Trade Leverage</i>
<i>Coop Bank × LDP × Urban</i>	0.007*** (0.001)	0.003** (0.001)	0.004*** (0.001)	0.004** (0.001)	-0.003** (0.001)
<i>Coop Bank × LDP × Rural</i>	0.013*** (0.001)	0.005*** (0.001)	0.008*** (0.001)	0.006*** (0.001)	-0.003** (0.001)
<i>Coop Bank × MDP × Urban</i>	0.006*** (0.001)	0.002** (0.001)	0.003*** (0.001)	0.004* (0.002)	-0.003** (0.001)
<i>Coop Bank × MDP × Rural</i>	0.010*** (0.001)	0.003*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	-0.002** (0.001)
<i>Coop Bank × HDP × Urban</i>	0.005*** (0.001)	0.002* (0.001)	0.003** (0.001)	0.005** (0.002)	-0.002* (0.001)
<i>Coop Bank × HDP × Rural</i>	0.010*** (0.001)	0.003** (0.001)	0.007*** (0.001)	0.007*** (0.002)	-0.001 (0.001)
<i>Comm Bank × LDP × Urban</i>	0.001 (0.002)	-0.004** (0.001)	0.004** (0.001)	0.000 (0.002)	-0.005 (0.003)
<i>Comm Bank × LDP × Rural</i>	0.002 (0.001)	-0.001 (0.001)	0.002** (0.001)	0.001 (0.001)	-0.003*** (0.001)
<i>Comm Bank × MDP × Urban</i>	-0.000 (0.002)	-0.001 (0.002)	0.001 (0.001)	-0.000 (0.002)	-0.005** (0.002)
<i>Comm Bank × MDP × Rural</i>	-0.000 (0.001)	-0.002* (0.001)	0.002** (0.001)	-0.002 (0.001)	-0.003*** (0.001)
<i>Comm Bank × HDP × Urban</i>	-0.001 (0.002)	-0.003* (0.001)	0.002 (0.001)	-0.004 (0.003)	-0.005** (0.002)
<i>Comm Bank × HDP × Rural</i>	-0.001 (0.001)	-0.002* (0.001)	0.001 (0.001)	-0.001 (0.002)	-0.001 (0.001)
<i>Low Digitalized Province × Rural</i>	0.004 (0.003)	0.002 (0.002)	0.002 (0.002)	0.003 (0.003)	-0.000 (0.002)
<i>Medium Digitalized Province × Rural</i>	0.004 (0.002)	0.004* (0.002)	0.001 (0.002)	0.004 (0.003)	-0.001 (0.003)
<i>High Digitalized Province × Rural</i>	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
<i>Medium Digitalized Province</i>	0.001 (0.002)	-0.000 (0.001)	0.001 (0.002)	0.000 (0.002)	0.001 (0.002)
<i>High Digitalized Province</i>	0.001 (0.002)	0.002 (0.002)	-0.001 (0.002)	0.003 (0.003)	0.001 (0.003)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.086	0.179	0.095	0.253
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES

Altitude × Urbanization FE	YES	YES	YES	YES	YES
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**Table 8: Bank Proximity and High-Tech Industries**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and year level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
	<i>Bank Leverage</i>	<i>Short-Term Bank Leverage</i>	<i>Long-Term Bank Leverage</i>	<i>Financial Leverage</i>	<i>Trade Leverage</i>
<i>Coop Bank</i> × <i>LDP</i> × <i>LTI</i>	0.008*** (0.001)	0.003*** (0.001)	0.005*** (0.001)	0.004*** (0.001)	-0.002** (0.001)
<i>Coop Bank</i> × <i>LDP</i> × <i>HTI</i>	0.019*** (0.002)	0.006*** (0.001)	0.012*** (0.001)	0.009*** (0.002)	-0.005*** (0.001)
<i>Coop Bank</i> × <i>MDP</i> × <i>LTI</i>	0.006*** (0.001)	0.002** (0.001)	0.004*** (0.001)	0.005*** (0.001)	-0.002** (0.001)
<i>Coop Bank</i> × <i>MDP</i> × <i>HTI</i>	0.017*** (0.002)	0.006*** (0.002)	0.010*** (0.001)	0.009*** (0.002)	-0.005*** (0.001)
<i>Coop Bank</i> × <i>HDP</i> × <i>LTI</i>	0.006*** (0.001)	0.002** (0.001)	0.004*** (0.001)	0.005*** (0.001)	-0.002* (0.001)
<i>Coop Bank</i> × <i>HDP</i> × <i>HTI</i>	0.015*** (0.002)	0.005*** (0.001)	0.010*** (0.001)	0.010*** (0.003)	-0.002 (0.002)
<i>Comm Bank</i> × <i>LDP</i> × <i>LTI</i>	-0.000 (0.001)	-0.001 (0.001)	0.000 (0.001)	-0.001 (0.001)	-0.002* (0.001)
<i>Comm Bank</i> × <i>LDP</i> × <i>HTI</i>	0.007** (0.002)	-0.005* (0.002)	0.012*** (0.002)	0.007** (0.003)	-0.008*** (0.001)
<i>Comm Bank</i> × <i>MDP</i> × <i>LTI</i>	-0.001 (0.001)	-0.002 (0.001)	0.001 (0.001)	-0.003* (0.001)	-0.002** (0.001)
<i>Comm Bank</i> × <i>MDP</i> × <i>HTI</i>	0.003 (0.002)	-0.003* (0.002)	0.006*** (0.002)	0.005* (0.002)	-0.006*** (0.002)
<i>Comm Bank</i> × <i>HDP</i> × <i>LTI</i>	0.000 (0.001)	-0.001 (0.001)	0.002* (0.001)	-0.002 (0.002)	-0.002 (0.001)
<i>Comm Bank</i> × <i>HDP</i> × <i>HTI</i>	0.000 (0.003)	-0.002 (0.002)	0.002 (0.002)	0.000 (0.003)	-0.006** (0.002)
<i>Low Digitalized Province</i> × <i>HTI</i>	-0.003 (0.005)	0.002 (0.003)	-0.005 (0.004)	0.006 (0.004)	0.004 (0.002)
<i>Medium Digitalized Province</i> × <i>HTI</i>	-0.005 (0.003)	-0.002 (0.002)	-0.002 (0.002)	0.002 (0.003)	0.004 (0.002)
<i>High Digitalized Province</i> × <i>HTI</i>	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
<i>Medium Digitalized Province</i>	0.000 (0.002)	0.001 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.002 (0.001)
<i>High Digitalized Province</i>	-0.003 (0.002)	0.000 (0.001)	-0.003* (0.002)	0.001 (0.002)	0.003 (0.002)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.086	0.179	0.095	0.253
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES

Altitude × LTlization FE

YES

YES

YES

YES

YES

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**Table 9: Instrumental Variable**

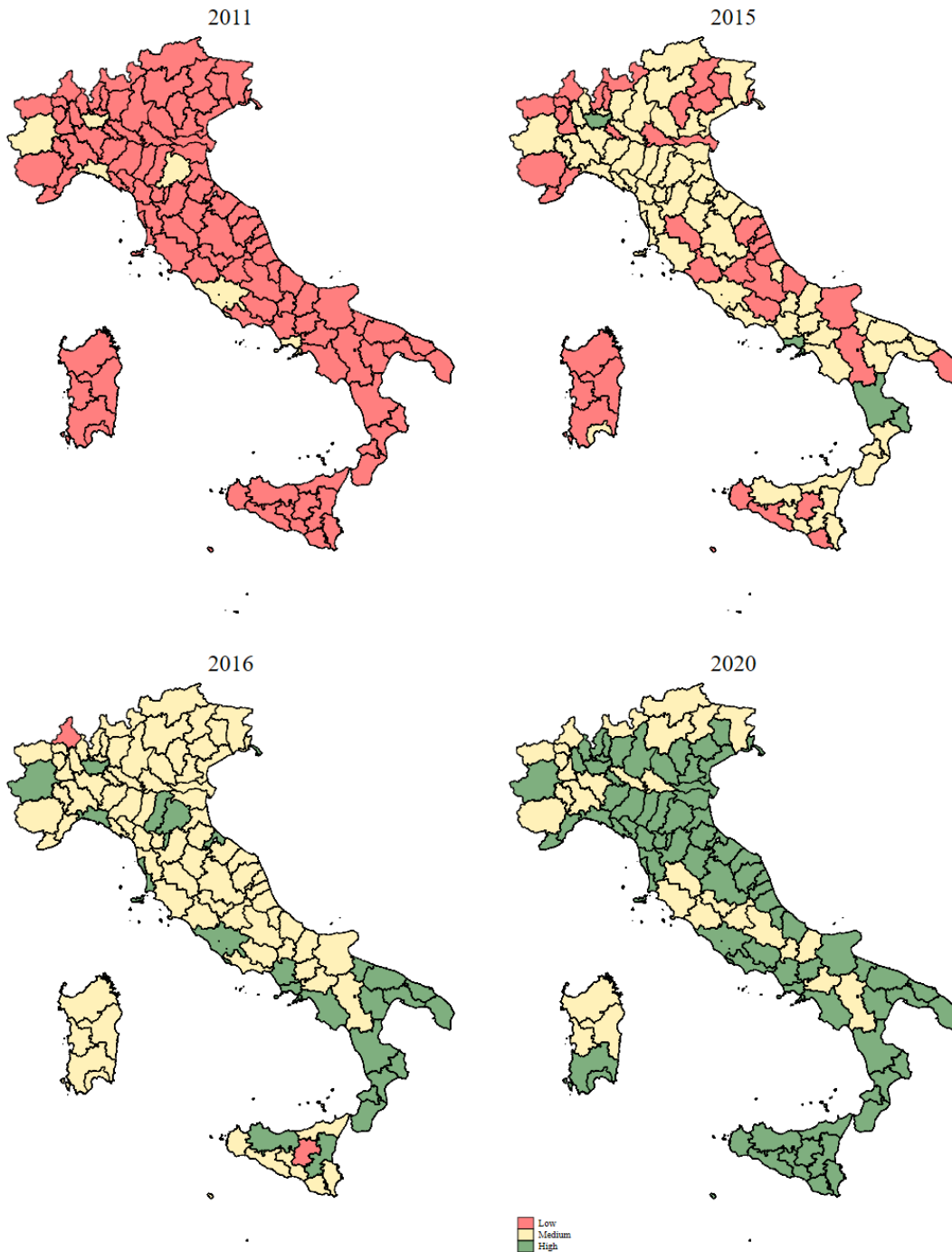
This table reports the estimated coefficients for the instrumental variable regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and year level (in parenthesis). Kleibergen-Paap F statistic tests for the weak identification assumption of the instrumental variable regressions. Anderson-Rubin p-value tests for the weak-instrument-robust inference of the instrumental variable regressions. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	First Stage	First Stage	First Stage	2SLS	2SLS	2SLS	2SLS	2SLS
	<i>Coop Bank</i> × <i>LDP</i>	<i>Coop Bank</i> × <i>MDP</i>	<i>Coop Bank</i> × <i>HDP</i>	<i>Bank Leverage</i>	<i>Short-Term</i> <i>Bank Leverage</i>	<i>Long-Term</i> <i>Bank Leverage</i>	<i>Financial</i> <i>Leverage</i>	<i>Trade Leverage</i>
<i>Parish Church</i> × <i>LDP</i>	0.888*** (0.002)	-0.002** (0.001)	0.000 (0.000)					
<i>Parish Church</i> × <i>MDP</i>	-0.002 (0.001)	0.905*** (0.006)	0.000 (0.001)					
<i>Parish Church</i> × <i>HDP</i>	-0.000 (0.001)	-0.003*** (0.001)	0.914*** (0.005)					
<i>Coop Bank</i> × <i>LDP</i>				0.011*** (0.001)	0.004*** (0.001)	0.007*** (0.001)	0.005*** (0.001)	-0.003*** (0.001)
<i>Coop Bank</i> × <i>MDP</i>				0.008*** (0.001)	0.003*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	-0.003*** (0.001)
<i>Coop Bank</i> × <i>HDP</i>				0.008*** (0.001)	0.003*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	-0.003** (0.001)
<i>Comm Bank</i> × <i>LDP</i>	0.045*** (0.002)	0.002 (0.002)	0.002* (0.001)	0.002 (0.001)	-0.002 (0.001)	0.003*** (0.001)	0.001 (0.001)	-0.003*** (0.001)
<i>Comm Bank</i> × <i>MDP</i>	0.003 (0.002)	0.043*** (0.003)	0.006*** (0.002)	0.000 (0.001)	-0.002* (0.001)	0.002** (0.001)	-0.001 (0.001)	-0.003*** (0.001)
<i>Comm Bank</i> × <i>HDP</i>	0.002 (0.002)	0.003 (0.002)	0.043*** (0.007)	0.000 (0.001)	-0.002 (0.001)	0.002** (0.001)	-0.002 (0.001)	-0.003** (0.001)
<i>Medium Digitalized Province</i>	-0.064*** (0.005)	0.050*** (0.006)	-0.003 (0.002)	0.000 (0.002)	0.000 (0.001)	-0.000 (0.001)	0.001 (0.001)	0.001 (0.001)
<i>High Digitalized Province</i>	-0.062*** (0.007)	-0.012 (0.008)	0.053*** (0.007)	-0.002 (0.002)	-0.000 (0.001)	-0.002 (0.001)	0.000 (0.002)	0.002 (0.002)
Observations	1,384,179	1,384,179	1,384,179	1,384,179	1,384,179	1,384,179	1,384,179	1,384,179

R <sup>2</sup>	0.868	0.881	0.897	0.037	0.016	0.116	0.031	0.172
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES	YES	YES	YES
IV tests								
KPW F-stat				47,334	47,334	47,334	47,334	47,334
AR p-value				0.000	0.002	0.000	0.001	0.009

### Figure 1: Broadband Coverage

This figure presents the classification of low-, medium-, and high-digitalized provinces over time, depending on the percentages of households that have access to broadband networks capable of realistically achieving actual download speeds of at least 30 Mbps.



## Appendix

**Table A1: Robustness test on Instrumental Variable**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We double cluster standard errors at the firm and year level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
Dependent Variable	Bank Leverage	Short-Term Bank Leverage	Long-Term Bank Leverage	Financial Leverage	Trade Leverage
<i>Coop Bank</i> × <i>LDP</i>	0.010*** (0.002)	0.005*** (0.001)	0.005*** (0.001)	0.005* (0.002)	-0.002 (0.001)
<i>Coop Bank</i> × <i>MDP</i>	0.009*** (0.002)	0.003** (0.001)	0.006*** (0.001)	0.007** (0.002)	0.000 (0.001)
<i>Coop Bank</i> × <i>HDP</i>	0.006** (0.002)	0.001 (0.001)	0.005** (0.001)	0.006* (0.003)	0.001 (0.002)
<i>Parish Church</i> × <i>LDP</i>	0.000 (0.002)	-0.001 (0.001)	0.001 (0.001)	0.001 (0.002)	-0.001 (0.001)
<i>Parish Church</i> × <i>MDP</i>	-0.001 (0.002)	-0.000 (0.001)	-0.001 (0.002)	-0.002 (0.002)	-0.003* (0.001)
<i>Parish Church</i> × <i>HDP</i>	0.002 (0.002)	0.002 (0.001)	0.001 (0.002)	0.001 (0.003)	-0.003 (0.002)
<i>Comm Bank</i> × <i>HDP</i>	0.002 (0.001)	-0.002 (0.001)	0.003*** (0.001)	0.001 (0.001)	-0.003*** (0.001)
<i>Comm Bank</i> × <i>LDP</i>	0.000 (0.001)	-0.002* (0.001)	0.002** (0.001)	-0.001 (0.001)	-0.003*** (0.001)
<i>Comm Bank</i> × <i>MDP</i>	0.000 (0.001)	-0.002 (0.001)	0.002** (0.001)	-0.002 (0.001)	-0.003** (0.001)
<i>Medium Digitalized Province</i>	0.000 (0.002)	0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	0.001 (0.001)
<i>High Digitalized Province</i>	-0.002 (0.002)	-0.000 (0.001)	-0.002 (0.001)	0.000 (0.002)	0.002 (0.002)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.086	0.179	0.095	0.253
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES

**Table A2: Robustness test on control variables**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and year level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	OLS	OLS	OLS
	<i>Bank Leverage</i>	<i>Bank Leverage</i>	<i>Bank Leverage</i>	<i>Bank Leverage</i>	<i>Bank Leverage</i>	<i>Bank Leverage</i>	<i>Bank Leverage</i>
<i>Coop Bank</i> × <i>LDP</i>	0.010*** (0.001)	0.010*** (0.001)	0.011*** (0.001)	0.010*** (0.001)	0.009*** (0.001)	0.010*** (0.001)	0.010*** (0.001)
<i>Coop Bank</i> × <i>MDP</i>	0.008*** (0.001)	0.008*** (0.001)	0.009*** (0.001)	0.008*** (0.001)	0.007*** (0.001)	0.008*** (0.001)	0.007*** (0.001)
<i>Coop Bank</i> × <i>HDP</i>	0.006*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
<i>Comm Bank</i> × <i>LDP</i>	-0.000 (0.001)	-0.000 (0.001)	0.002* (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.000 (0.001)
<i>Comm Bank</i> × <i>MDP</i>	-0.003*** (0.001)	-0.003** (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.002 (0.001)
<i>Comm Bank</i> × <i>HDP</i>	-0.003** (0.001)	-0.002 (0.001)	-0.001 (0.001)	-0.003* (0.001)	-0.003* (0.001)	-0.003* (0.001)	-0.002 (0.001)
<i>Medium Digitalized Province</i>	-0.002 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.001 (0.002)
<i>High Digitalized Province</i>	-0.005** (0.002)	-0.003 (0.002)	-0.004** (0.002)	-0.006** (0.002)	-0.005* (0.002)	-0.005* (0.002)	-0.004 (0.002)
Metropolitan City		-0.013*** (0.001)					
Num Other Firms			-0.002*** (0.000)				
Total Assets ( <i>t-1</i> )				0.021*** (0.002)			
Assets Turnover ( <i>t-1</i> )					-0.025*** (0.002)		
Profit Margin ( <i>t-1</i> )						0.004 (0.008)	
Tangible Assets ( <i>t-1</i> )							0.105*** (0.004)
Observations	1,988,137	1,988,137	1,988,137	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.069	0.069	0.069	0.077	0.076	0.064	0.081
Industry × Year × Size FE	YES	YES	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES	YES	YES

**Table A3: Robustness test on clustering level**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and province level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
	Bank Leverage	Short-Term Bank Leverage	Long-Term Bank Leverage	Financial Leverage	Trade Leverage
<i>Coop Bank</i> × <i>LDP</i>	0.010*** (0.002)	0.004*** (0.001)	0.006*** (0.001)	0.005*** (0.002)	-0.003*** (0.001)
<i>Coop Bank</i> × <i>MDP</i>	0.008*** (0.001)	0.003*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	-0.003*** (0.001)
<i>Coop Bank</i> × <i>HDP</i>	0.008*** (0.001)	0.002** (0.001)	0.005*** (0.001)	0.006*** (0.002)	-0.002* (0.001)
<i>Comm Bank</i> × <i>HDP</i>	0.002 (0.001)	-0.002 (0.001)	0.003*** (0.001)	0.001 (0.002)	-0.003*** (0.001)
<i>Comm Bank</i> × <i>LDP</i>	0.000 (0.001)	-0.002** (0.001)	0.002** (0.001)	-0.001 (0.001)	-0.003*** (0.001)
<i>Comm Bank</i> × <i>MDP</i>	0.000 (0.001)	-0.002 (0.001)	0.002*** (0.001)	-0.002 (0.002)	-0.003** (0.001)
<i>Medium Digitalized Province</i>	0.000 (0.002)	0.000 (0.001)	-0.000 (0.001)	0.001 (0.002)	0.001 (0.002)
<i>High Digitalized Province</i>	-0.002 (0.004)	-0.000 (0.002)	-0.002 (0.003)	0.000 (0.003)	0.002 (0.002)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.086	0.179	0.095	0.253
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES

**Table A4: Robustness with an Area of 3km**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and province level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
	Bank Leverage	Short-Term Bank Leverage	Long-Term Bank Leverage	Financial Leverage	Trade Leverage
<i>Coop Bank</i> × <i>LDP</i>	0.010*** (0.002)	0.004** (0.002)	0.006*** (0.001)	0.005*** (0.001)	0.001 (0.001)
<i>Coop Bank</i> × <i>MDP</i>	0.008*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004** (0.001)	-0.002* (0.001)
<i>Coop Bank</i> × <i>HDP</i>	0.010*** (0.002)	0.003** (0.001)	0.007*** (0.001)	0.003 (0.001)	-0.004*** (0.001)
<i>Coop Bank</i> × <i>HDP</i>	0.006 (0.003)	0.003 (0.002)	0.002 (0.003)	-0.003 (0.005)	-0.001 (0.003)
<i>Comm Bank</i> × <i>LDP</i>	0.006 (0.004)	0.004 (0.002)	0.002 (0.003)	0.001 (0.004)	-0.001 (0.003)
<i>Comm Bank</i> × <i>MDP</i>	-0.002 (0.003)	-0.001 (0.002)	-0.001 (0.002)	-0.009* (0.004)	-0.001 (0.003)
<i>Medium Digitalized Province</i>	-0.001 (0.007)	-0.001 (0.003)	-0.000 (0.005)	-0.004 (0.006)	0.004 (0.004)
<i>High Digitalized Province</i>	0.004 (0.006)	0.004 (0.003)	-0.001 (0.004)	0.007 (0.007)	0.007 (0.005)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.086	0.179	0.095	0.253
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES

**Table A5: Robustness with an Area of 5km**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and province level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
	Bank Leverage	Short-Term Bank Leverage	Long-Term Bank Leverage	Financial Leverage	Trade Leverage
<i>Coop Bank × LDP</i>	0.009*** (0.002)	0.004** (0.001)	0.005*** (0.001)	0.008*** (0.002)	0.003* (0.001)
<i>Coop Bank × MDP</i>	0.007*** (0.001)	0.004*** (0.001)	0.003** (0.001)	0.006** (0.002)	-0.001 (0.002)
<i>Coop Bank × HDP</i>	0.007** (0.003)	0.002 (0.002)	0.005** (0.002)	0.004 (0.003)	-0.001 (0.002)
<i>Coop Bank × HDP</i>	0.016 (0.012)	0.000 (0.005)	0.016 (0.010)	0.001 (0.014)	-0.013 (0.008)
<i>Comm Bank × LDP</i>	-0.003 (0.011)	-0.002 (0.005)	-0.001 (0.010)	0.013 (0.012)	0.003 (0.006)
<i>Comm Bank × MDP</i>	0.020 (0.011)	0.002 (0.004)	0.018* (0.009)	0.003 (0.010)	-0.004 (0.008)
<i>Medium Digitalized Province</i>	0.020 (0.014)	0.002 (0.006)	0.016 (0.011)	-0.011 (0.017)	-0.011 (0.007)
<i>High Digitalized Province</i>	-0.005 (0.015)	-0.000 (0.006)	-0.005 (0.013)	0.000 (0.016)	-0.003 (0.010)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.094	0.086	0.181	0.095	0.259
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES



**Table A6: Robustness test on digitalization**

This table reports the estimated coefficients for fixed effect regressions. Variable definitions are reported in Table 1. The sample period ranges from 2011 to 2020. We report robust standard errors clustered at the firm and province level (in parenthesis). \*\*\* p<0.01; \*\* p<0.05; \* p<0.1

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
	Bank Leverage	Short-Term Bank Leverage	Long-Term Bank Leverage	Financial Leverage	Trade Leverage
<i>Coop Bank</i>	0.010*** (0.001)	0.004*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	-0.002*** (0.001)
<i>Coop Bank</i> × <i>NGA Coverage</i>	-0.003* (0.001)	-0.002* (0.001)	-0.001 (0.001)	0.001 (0.001)	0.000 (0.001)
<i>Comm Bank</i>	0.001 (0.001)	-0.002* (0.001)	0.003*** (0.001)	0.001 (0.001)	-0.003*** (0.001)
<i>Comm Bank</i> × <i>NGA Coverage</i>	-0.001 (0.002)	0.000 (0.001)	-0.001 (0.001)	-0.003 (0.002)	0.001 (0.001)
<i>NGA Coverage</i>	-0.004 (0.003)	-0.001 (0.002)	-0.003 (0.002)	-0.001 (0.003)	0.003 (0.002)
Observations	1,384,059	1,384,059	1,384,059	1,384,059	1,384,059
R <sup>2</sup>	0.092	0.086	0.179	0.095	0.253
Controls	YES	YES	YES	YES	YES
Industry × Year × Size FE	YES	YES	YES	YES	YES
Region × Year FE	YES	YES	YES	YES	YES
Altitude × Urbanization FE	YES	YES	YES	YES	YES