XLI CONFERENZA ITALIANA DI SCIENZE REGIONALI

DO COOPERATIVE BANKS MATTER FOR NEW BUSINESS CREATION? EVIDENCE ON ITALIAN MANUFACTURING INDUSTRY

Mariarosaria Agostino[1], Lucia Errico[2], Sandro Rondinella[3] and Francesco Trivieri[4]

Abstract

This work empirically investigates the role of Italian cooperative banks (BCCs) as a driver of new business creation in the Italian provinces over the period 2003-2012. The results show that the presence of BCCs positively and significantly affects firms' entry rates. We also find that the impact of BCCs diffusion on birth rate tends to be stronger for high tech industries during the pre-crises years, whilst it appears larger for low-tech sectors when considering the post-crisis period. This evidence suggests that BCCs might play an important role in financing innovative and risky firms – though, when banks' risk-aversion increases, BCCs tend (unsurprisingly) to downsize the financing of riskier projects.

Keywords: Entrepreneurship, business creation, BCC, Italy, crisis

JEL codes: L26, G21

[1] Department of Economics, Statistics and Finance 'Giovanni Anania', University of Calabria, Rende (Italy), e-mail: m.agostino@unical.it.

[2] Department of Economics, Statistics and Finance 'Giovanni Anania', University of Calabria, Rende (Italy), e-mail: lucia.errico@unical.it.

[3] Department of Economics, Statistics and Finance 'Giovanni Anania', University of Calabria, Rende (Italy), e-mail: sandro.rondinella@unical.it (corresponding author).

[4] Department of Economics, Statistics and Finance 'Giovanni Anania', University of Calabria, Rende (Italy), e-mail: francesco.trivieri@unical.it.

1. Introduction

Business creation and entrepreneurial activities represent the focus of a well-established literature, given the role that firms play as drivers of innovation, employment and economic growth (Baumol, 1990; Murphy et al., 1991; Schumpeter and Backhaus, 2003; Acs, 2006). Among the several determinants of new business formation identified by the research (for some reviews, see: Wärneryd et al., 1987; Davidsson et al., 1994; Armingtonand and Acs, 2002; Klapper et al., 2004; Sutuaria and Hicks, 2004; Nyström, 2007), a crucial one is the entrepreneurs' access to financing – which, in many countries, is essentially bank funding (Berger and Udell, 1998; Bonaccorsi di Patti and Dell'Ariccia, 2004; Sutaria and Hicks, 2004; Rogers, 2012; Backman, 2015; Eliasson, 2016). Indeed, in bank-based economies – generally characterised by a relatively narrow network of private investors, venture capitalists and business angels (Berger and Udell, 1998; Black and Gilson, 1998; La Rocca et al., 2011) – firms' financing is mostly provided by banks as a result of long-lasting lending relationships (Elsas and Krahnen, 1998; Lehmann and Neuberger, 2001; Kaufmann and Valderrama, 2008).

As argued in the literature on banking, the characterising element of a lending relationship is the acquisition of proprietary *soft information* on borrowers by lenders, which allows banks to overcome asymmetric information problems related to the opaqueness of customers (e.g., Boot et al., 1991; Udell, 2008).[5] Being other than information acquirable from written records, *soft information* is mainly qualitative in nature – so that its collection requires that banks have direct knowledge of the local environment in which they operate (e.g., Petersen and Rajan, 1994; Berger and Udell, 2002; Carpenter and Petersen, 2002; Agarwal and Hauswald, 2010a).

In the Italian banking system, a peculiar category of cooperative banks – the Banche di Credito Cooperative (hereafter BCCs) – have some comparative advantages over other types of credit institutions in acquiring *soft information* and evaluating borrowers' creditworthiness (Draghi, 2009). Indeed, being the local Italian banks *par excellence*, BCCs have established connections with the territory they serve, as well as may exploit the proximity of their headquarters with members/customers. Such advantages allow BCCs to implement mechanisms of efficient screening processes on potential borrowers, to assess qualitative aspects of their medium

[5] Boot (2000, p.10) defines a lending relationship as "the provision of financial services by financial intermediaries who: i) carry out expensive investments to acquire confidential information about each customer funded; ii) estimates the profitability of the *informative* investments done and the opportunity to repeat them later."

and long-term business projects (Alessandrini et al., 2009), and favouring access to credit for *marginal clients* (Stefani et al., 2016).

Due to their comparative advantage in terms of acquiring *soft information*, a diffused presence of BCCs might foster new business creation. In the first stage, indeed, firms are characterised by severe information asymmetries, because of the lack of data about their historical records and financial statements (Cassar, 2004). As a result, the availability of qualitative and confidential information may be fundamental for access to funds need to start a new business – especially when the latter involves activities, such as R&D and innovation projects, intrinsically *opaque* and risky (Jensen and Meckling, 1976; Diamond, 1984, 1991; Weinstein and Yafeh, 1998; Chiesa et al., 2009). Indeed, since new riskier enterprises face severe credit rationing (Audretsch et al., 2006), they could find in the BCCs major financiers – as the role of *soft information* might facilitate the overcoming of information asymmetries.

Another strand of the literature, however, has also shown that the positive role of cooperative banks may be questioned, as they are traditionally risk-averse and present less risky portfolios (Fama and Jensen, 1983; Hesse and Cihak, 2007; Wyman, 2008). From this perspective, BCCs would not represent a relevant channel for supporting the birth of entrepreneurial activities, especially of firms that embody highly risky assets. Moreover, the propensity to finance new projects might dramatically compound during economic turmoil, when returns are more volatile and business risk much higher (e.g. Amiti and Weinstein, 2018; Dörr et al., 2018).

Moving from these insights, this work aims to assess the role of BCCs as a driver of firm creation, an open empirical question which – to the best of our knowledge – has not been addressed by the existing literature. What is more, we aim to test to what extent the diffusion of BCCs affects the birth rate of firms belonging to high-technology industries, both in *normal times* and during the recent economic downturn.

To investigate the relationship between the presence of BCCs and new business creation, we use provincial-level data on Italian manufacturing firms in the period 2003-2012. As firms' creation is concerned, an extensive literature justifies the use of entry rate as a proxy for entrepreneurship. For instance, Lumpkin and Dess (1996) affirm that the *new entry* strongly embodies the essence of entrepreneurship. The incidence of BCCs in the local credit market is accounted by two different indexes based on total loans and the number of branches of BCCs.

On a methodological ground, we adopt both pooled and random effect Tobit estimators as the dependent variable is bounded between zero and one. Also, to address concerns of endogeneity, we use instrumental variable methods.

The results of our econometric analysis suggest that the presence of BCCs fosters firm creation, though the magnitude of the estimated impact differs for high and low tech firms. Indeed, in the 2003-2008 period, the effect of BCCs' presence on firms' birth rate appears stronger for high-tech firms – suggesting that, in normal times, BCCs play an important role in financing innovative and risky firms. Conversely, in the post-crisis period, the positive effect of BCCs presence tends to be higher for low-tech firm entry. In our view, such findings corroborate the idea that cooperative banks could represent a channel to promote firm creation – event though, during negative economic conjunctures, banks' prudential orientation might lead to a lower propensity to fund riskier projects.

The remaining of this paper is organised as follows: after this introduction, Section 2 briefly illustrates the main features of BCCs in Italy. Section 3 provides an overview of the related literature and sets up the research hypothesis. Section 4 illustrates the estimating model, the econometric methodology and the dataset. Section 5 shows the results, while Section 6 concludes.

2. The Main Features of the Italian BCCs: a Brief Overview

Italian BCCs are characterised by specific features regarding their ownership structure, corporate governance, statutory requirements, business objectives and organisational structure, that differentiate these financial intermediaries from the others operating in the national banking system.

As regards the first aspect, BCCs are essentially owned by their members, which – according to the Italian banking regulation in force (the so-called *Testo Unico Bancario*) – must be domiciled or have their ongoing business in the territory where the bank operates. Shareholder participation is limited to 50,000 euros per member, with no distinction between individuals or legal entities. Ownership stakes of BCCs are not marketable (in general, provided there be Board approval, shares may be transferred to other members or even to non-members), which implies that for cooperative banks there is no market for corporate control via hostile take-overs.

Concerning the governance framework, each member of a BCC has only one vote in the shareholders' general meeting – irrespectively of the number of shares owned – and can collect a maximum of ten proxy votes. On the statutory ground, the banking law in force requires BCCs to allocate at least 70% of their profits to legal reserve, and assign a share of those residuals for purposes of social utility maximisation. Furthermore, at least 51% of the BCCs' risky activity must be carried out with members, and no less than 95% of their total loans must be granted in the catchment area, that is in the municipalities where the bank has a branch and in the neighbouring ones. A BCC can expand to an adjacent region if it has more than 200 members in that region.

The above regulatory requirements characterise BCCs as mutualistic, not-for-profit banks. As an implication of these features, the BCCs' banking business model is typically based on relationship lending: financing decisions widely rely on qualitative and confidential information on customers.[6]

Considering the organisational structure, in the period we study, BCCs are stand-alone banks linked together in a network by two sides: the associative one, and the business side. On the associative side, BCCs are coordinated by 15 regional federations – which represent, promote, support and monitor their members – and a national federation (*Federcasse*) that provides legal, fiscal, and organisational assistance, as well as defining the strategic guidelines for the whole network. As regards the business side, the range of financial products and services supplied by BCCs is exclusively provided by three central institutions (*ICREA*, *Cassa Centrale Banca* and *Cassa Centrale Raiffeisen*), with the aim of enhancing banks' efficiency and competition in local markets.[7]

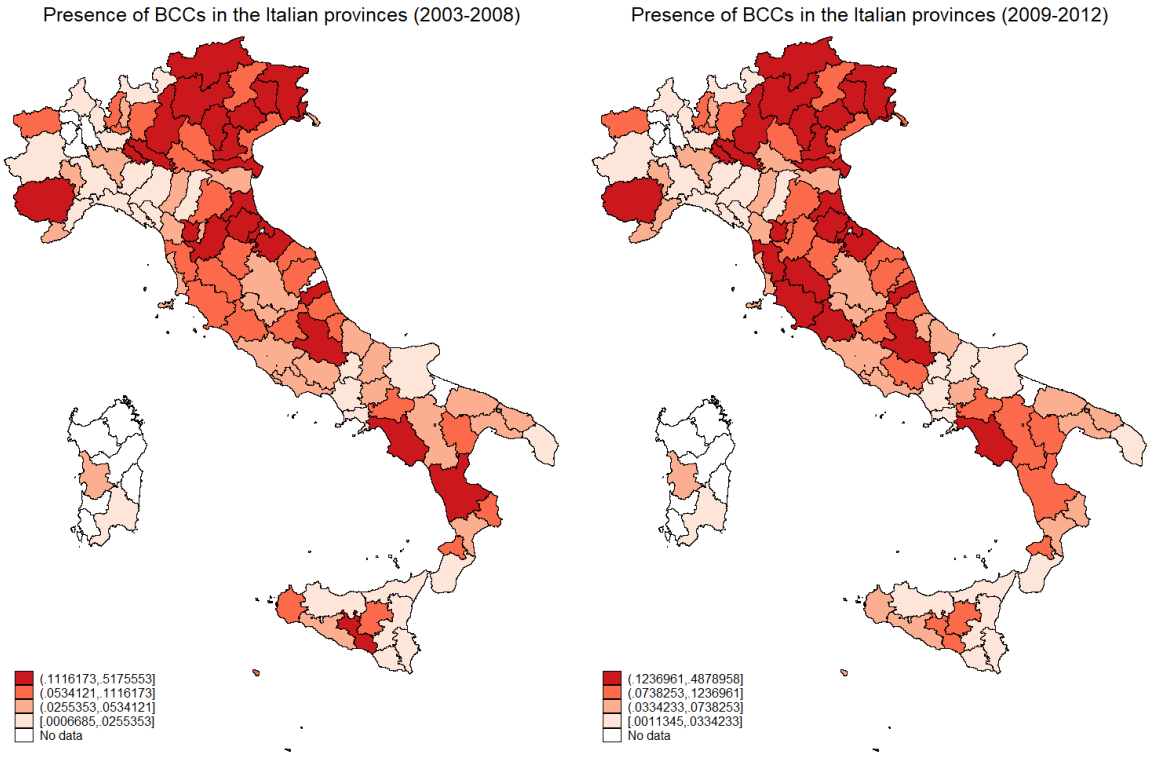
Figure 1 depicts the average BCCs' loans – over the average total loans – in the Italian provinces in the periods 2003-2008 and 2009-2012. The areas where the presence of BCCs is more relevant are North-east (the province of Cuneo being an exception in the Western area of the North), the Center, and some provinces of

[6] The relationship lending business model, though representative, is not exclusive to cooperative banks. For some reviews of the contributions investigating the relevance of lending relationships for firms' financing see: Boot 2000; Ongena and Smith 2000; Elyasiani and Goldberg 2004; Udell 2008.

[7] A recent law (n.49/2016) has transformed the central institutions in bank holdings, laying down that all BCCs with equity not exceeding 200 million euros must belong to one of the new banking groups. The new regulatory framework – which also envisages a State guarantee scheme for securitisations of non-performing loans – is intended to help BCCs to fulfil capital, governance, and efficiency requirements while preserving their role in providing mutual assistance to local stakeholders.

the *Mezzogiorno*. Across the two periods of analysis, an increase in the Centre of Italy is depicted, contrariwise, a slight decrease is registered for the province of Salerno, Cosenza and Caltanissetta.

Figure 1. Presence of BCCs in the Italian provinces.



Authors' Elaboration on ABI data.

3. Related Literature and Research Hypotheses

According to a considerable body of literature, in the first stage of firms' establishment, the personal knowledge of entrepreneurs may favour access to finance (Cole, 1998; Boot, 2000; Cassar, 2004; Storper and Venables, 2004; Elyasiani and Goldberg, 2004; Gereffi et al., 2005; Agarwal and Hauswald, 2010b). In this respect, thanks to stable links with the local community, mutual banks are more likely than other kinds of banks to support nascent entrepreneurship (Cesarini et al., 1997).[8] Such a feature ensures them a position of advantage – in terms of acquiring better information on entrepreneurs and of monitoring the appropriate use

[8] Larger bank branches may have comparative advantages in processing information as a result of their specialized offices and employees (Parker, 2004; Backman, 2015), although they mainly count on standardised information as financial statements (Cole et al., 2004).

of the funds – establishing close lending relationships through the accumulation of soft information by meetings with the owner, employees, and local community.[9] Also, the business model based on relationship lending and spatial proximity allows local banks and, specifically those having a cooperative corporate structure, to reduce the transaction costs associated with screening and monitoring borrowers. As a result, enforcing loans repayment and providing credit to lower-income individuals and businesses that do not have important collaterals (Hoff and Stiglitz, 1990; Stiglitz, 1990; Banerjee et al., 1994; Besley and Coate, 1995; Hansmann, 1996; Bongini et al., 2007; Alessandrini et al., 2009).

The spatial proximity is advantageous because it allows the bank to understand the local circumstances in which the company operates, such as market conditions and the degree of competition and, at the same time, acquiring that information is easier referring to local community network (Pollard, 2003; Michelacci and Silva, 2007; Dahl and Sorenson, 2009; Agarwal and Hauswald, 2010b); in other words, relationship lending and proximity – combined with a flat organisational structure – ensure to local banks competitive advantage in grasping soft information (Berger and Udell, 2002; Stein, 2002; Takats, 2004; Berger et al., 2005; Guiso et al., 2004; Agarwal and Hauswald, 2010b), thus entrepreneurs are likely to refer to local and regional banks (Berger et al., 1999; Kwast, 1999; Collender and Shaffer, 2003). Additionally, proximity reduces the costs of multiple face-to-face interactions and other transaction costs, with positive effects on the availability of credit, and on the possibility to establish lasting relationships (Ghatak, 2000; Bonaccorsi di Patti and Gobbi, 2001; Collender and Shaffer, 2003; Pollard, 2003; Michelacci and Silva, 2007; Alessandrini et al., 2008; Dahl and Sorenson, 2009; Agarwal and Hauswald, 2010a; Agarwal and Hauswald, 2010b). Through proximity and easier access to soft information, BCCs could also support start-ups by requiring less formal collateral and acting as a substitute for a developed network of private investors and venture capitalists in the Italian market.[10] Start-ups

[9] Several contributions show that local banks enhance access to finance for firms – especially for SMEs–, or that banking markets for small firms are very local (Kwast et al., 1997; Kwast, 1999; Dermine, 2000; Bonaccorsi di Patti and Gobbi, 2001; Fritsch and Schilder, 2008).

[10] A limited number of firms are able to receive private equity financing because private investors are more inclined to invest in pioneering and innovative firms that present high growth potential (Hall and Hofer, 1993; Berggren et al., 2001; Romano et al.,

with higher *inalienable* human capital and highly specific assets rely firstly on internal finance and have a lower probability of using bank debt, due to the lower collateral value of their assets (Sanyal and Mann, 2010).[11]

In a nutshell, a higher presence of BCCs can stimulate new business creation because of their deeper knowledge of the areas in which firms operate, and their greater capability to collect *soft information* on clients. The latter ability may be crucial when interacting with start-ups, for which specific and intangible assets compound information opacity and make external financing more difficult (Paulson and Townsend, 2004), as banks have to base their decisions on soft rather than hard information (Petersen and Rajan, 2002; Backman, 2015).

On the other hand, according to a less extensive strand of the literature, the prevalence of BCCs in the local credit markets could hurt new businesses formation. According to Hesse and Cihak (2007), cooperative banks tend to support less risky activities and those firms without risky assets in their balance sheets. Indeed, spatial proximity could imply an informational advantage on the needs and potential risks of borrowers, ensuring BCCs a greater ability to discard risky projects (De Bruyn and Ferri, 2005). Notwithstanding, this *modus operandi* may simply derive from a risk-averse attitude (Fama and Jensen, 1983; Wyman, 2008). The target-costumers of mutual banks are likely to be traditional businesses, and BCCs could lack the specific capabilities required to evaluate the quality of high tech investments – when compared to private investors, larger banks or venture capitalists. Besides, local banks might face relatively less competitive local markets mainly due to informational barriers that they can impose on non-local intermediaries (Benvenuti and Del Prete, 2019). Consequently, local banks may "capture" (*hold-up*) firms imposing higher interest rates. Hence, under certain circumstances, proximity could generate higher financial constraints, curtailing business creation (Alessandrini

2001; Berger and Udell, 2002; Cassar, 2004; Winton and Yerramilli, 2008; Berggren and Silver, 2010). On the other hand, manufacturing firms, that present more tangible assets used as collateral for loans, usually based their source of finance in banks hands (Berggren and Silver, 2010).

[11] Formal bank finance for start-ups appears mainly restricted to low-risk cases and where collateral is provided; it is unlikely that banks will be major financiers of high-tech start-ups, preferring low-risk firms, particularly those with good collateral and reputation (Audretsch et al., 2006). Indeed, the greater the banks' tendency to provide credit to more transparent companies, the lower the financing of innovative SMEs (Alessandrini et al., 2006; Jimenez et al., 2009).

et al., 2006).[12] Finally, as every kind of financial institutions, the BCCs' propensity to finance less risky projects might be compounded during economic downturns, when investment uncertainty dramatically rises (Amiti and Weinstein, 2018; Dörr et al., 2018).

Building on the theoretical and empirical predictions of the literature so far reviewed, we state the following two research hypotheses:

H1: *the relationship between the presence of BCC and business creation is ambiguous. Thus, we do not posit any a priori expectation on the sign of the relationship under study.*

H2. *the BCCs' presence can exert a heterogeneous influence on the birth of firms belonging to high-technology industries, naturally more opaque, and in times of crisis when business risk is much higher.*

4. Empirical Analysis

4.1 The estimating model

Following Agostino et al. (2020), the estimating model is:

$$ENTRY_{pkt} = \alpha + \beta_1 BCC_{p(t-1)} + \beta_2 HMTI_k + \beta_3 INTE_{pk(t-1)} + \phi X_{p(t-1)} + EXIT_{pk(t-1)} + ENTRYOT_{pk(t-1)} + \sum_k \gamma_k IND_k + \sum_t \varphi_t T_t + \epsilon_{pkt} \quad (1)$$

where the dependent variable is the gross entry rate (ENTRY)[13] of manufacturing firms in province *p*, industry *k* at time *t*, calculated as the ratio of newly registered firms over the stock of existing ones. More in detail, the

[12] Another strand of literature shows that financial institutions, taking advantage from their potential greater market power, could have higher incentives to screen and monitor borrowers (Diamond, 1984; Udell, 2008) thus facilitating the financing of firms (Stiglitz and Weiss, 1981). In doing so, they might require a lower interest rate, aiming to lock-in the firm into a relationship and to gain rents in the future. Indeed, the market power allows banks to sacrifice any interest rate premiums they may otherwise have to charge when lending to firms that are relatively opaque or risky - e.g. young, small and/or distressed firms - (Petersen and Rajan, 1995).

[13] According to Fotopoulos and Spence (1997) and Agostino et al. (2020), gross entry rates (controlling for exits) should be preferred to net entry rates. Indeed, adding entry and exit into a net measure implies that the two processes are determined by the same factors.

main focus of the analysis are the limited liability (LL) companies because, following the current Italian legislation, new enterprises "of high technological value" (Italian Ministry of Economic Development, 2015, p. 2) are required to assume that explicit legal form. Focusing on the right-hand side variables, the key variable of the analysis is the presence of BCC in the province *p,* measured through two different indexes: the ratio between total loans of BCCs in province *p* over total loans of all the banks located in the province *p* (BCCLOAN), and the ratio between the total number of BCCs in province *p* and the total number of banks located in the province *p* (BCCBR).[14] As far as high tech start-ups are concerned, we employ a dummy taking value 1 for industries characterised by high and medium-high technological intensity according to the OECD (2011) classification, and zero otherwise (HMTI).[15] To test our research hypothesis, the interaction term (INTE) between the BCC indexes and HMTI is included.[16] The vector of determinants X include control variables accounting for provincial characteristics, such as the real gross domestic product (GDP), the unemployment rate (UNRATE) the business density (DENS) – measured as the stock of existing firms over the provincial surface (sq. km) – and a proxy of industrial structure in terms of firm size (FSIZE) – defined as the average number of employees in manufacturing firms. Also, we consider patent applications filed to the European Patent Office per million inhabitants (PATENT), an index of economic infrastructure endowment (INFRA),[17] a measure of provincial trade intensity (OPEN) – defined as the ratio between the sum of provincial imports

Furthermore, by using a net measure, the interpretation of regression coefficients does not allow to sort out the influence of explanatory variables on entries and exits because important information on the absolute values of entries and exits are hidden.

[14] We regress our baseline models by considering, alternatively, the indexes of the BCCs' presence in the province p (i.e. BCCLOAN and BCCBR). As a robustness check, the same set of regressions is implemented by using BCCASS, computed as the ratio of total assets of the BCCs in province *p* to total assets of all the banks located in the province *p*.

[15] High-technology industries are detailed in Table A1 note.

[16] Then, illustring results and in the tables, we refer to the interaction between BCCLOAN, BCCBR and BCCASS with HMTI as INTBCCLOAN, INTBCCBR and INTBCCASS, respectively.

[17] INFRA, defined at the regional level, is obtained using a Principal Component Analysis, which combines different (highly correlated) measures of infrastructure endowment provided by ISTAT (2019). The latter is the use of public transport and rail service, the roads extension, and diffusion of the broadband internet connection. Hence, INFRA is the linear combination of the original set of variables which have been standardized to avoid that the variable with the highest variance dominates the resulting index.

and exports and GDP, and the Herfindahl-Hirschman index based on bank branches (HHIbr) as a proxy of the provincial bank concentration (e.g. Carbò Valverde et al., 2003; Degryse and Ongena, 2005). Lastly, the ratio of the provincial BCC's deposits to the province population (DEP) and a proxy of human capital (EDU) – calculated as the share of the population (20-24 years) with high school diploma at regional level – are included. To take into account firms' turnover and "turbulence" phenomena, equation (1) includes the firm exit rate (EXIT) and the entry rate of firms other than the limited liability ones (ENTRYOT). Finally, IND_k are industry dummies, controlling for unobserved heterogeneity at the industry level, T_t is a set of time fixed effects and ϵ_{pkt} is the error term. To avoid simultaneity bias, all explanatory variables (except for HMTI) are lagged once.

4.2 Econometric Methodology

The nature of the dependent variable – defined as a proportion, taking on the zero value for a substantial number of observations – drives the methodology approach employed. The latter consists of a censored Tobit model as boundedness is not the result of a truncation (Rosenthal and Strange, 2003; Gagliardi, 2009; Kalmi, 2013; Agostino et al., 2020). In particular, to control for unobserved time-invariant heterogeneity at sector/province level, we use a random effect Tobit model, based on the assumption that the sector/province-specific effects are uncorrelated with the regressors. According to Wooldridge (2002), the fixed effects method (allowing this correlation) in limited dependent variable models is somewhat challenging, as it involves an incidental problem which leads to an inconsistent estimation of parameters with T fixed and $N \to \infty$.[18] As a robustness check, we apply a Multilevel-Effects Tobit regression to properly examine the influence of specific provincial characteristics on industry entry rate.[19]

[18] Besides, as Agostino et al. (2020) point out, the fixed effect approach is not appropriate when the repressors of interest do not vary substantially over time. Therefore, several variables at provincial level and sector fixed effects are included in order to overcome the assumption stated above.

[19] This method, which contains both fixed effects and random effects, is widely adopted when treating hierarchical or clustered data to overcome some methodological limitations of the traditional single-equation models, based on the restrictive assumption of independence among errors (De Leeuw and Meijer, 2008). Inference problems might occur avoiding to control for cluster because the estimated parameter variance will be underestimated (Hox, 2013). Nevertheless, as noted by Robinson (2009), considering clusters as statistical units may involve the so-called "ecological fallacy" because correlations that are valid at the aggregated level

Besides, reverse causality may arise between firm creation and the presence of BCCs. Indeed, not only the presence of BCCs might influence firm creation, but the latter may affect the presence of banks in a geographical area due to the increasing demand for credit. Furthermore, the birth of new businesses and BCCs could be even determined by unobservable features, such as cultural and historical determinants, causing omitted variables concerns. Hence, to control for endogeneity problems, we use an instrumental variable Tobit model. Following several contributions (such as Guiso et al., 2004; Agostino et al., 2012; De Bonis et al., 2015), the external instruments are some indicators of the geographical distribution of banks and branches in 1936 in Italy. Indeed, Guiso et al. (2004, p. 946) show that the territorial structure of the Italian banking system in 1936 [20] "*was the result of historical accidents and forced consolidation, with no connection to the level of economic development at that time*". Moreover, the 1936 regulation, were not driven by different regional needs, "*but it was random*" (2004, p. 943). Therefore, the geographical distribution of banks and branches in 1936 can be considered exogenous concerning business creation in subsequent years, while the geographical distribution of banking is significantly correlated with local banking development (Guiso et al., 2004).[21]

Finally, bank distribution and economic conditions of nearby geographical areas could influence each other, leading to spill-over effects across provinces. In other words, firms operating in close provinces may establish network relationships and, consequently, the new business entry rate in a province may be influenced by the analogous rate in adjacent areas (Agostino et al., 2020). Applying spatial econometrics to capture "neighbourhood effects" is challenging, given the sector/province and the longitudinal dimension of the data (e.g. McMillen, 2010; Gibbons and Overman, 2012). So that, following Agostino et al. (2020), we apply the Pesaran (2004)

do not necessarily hold true at the individual level. For a comprehensive treatment of mixed models see, among others, Searle et al. (1992), Pinheiro and Bates (2000), Raudenbush and Bryk (2002), McCulloch et al. (2008), De Leeuw and Meijer (2008), Hox et al. (2010) and Demidenko (2013).

[20] In this year, in response to the crisis of 1930–36, strict banking regulations were introduced and that remained substantially unchanged until the second half of the 1980s.

[21] Following the above considerations, BCC and INTE are instrumented by variables defined in 1936 at provincial level: the share of banks owned by cooperative Popolari, the number of cooperative banks, the total number of banks in the province, the share of branches owned by cooperative Popolari, the share of branches owned by saving banks in a province, the number of cooperative banks per million inhabitants, the share of banks owned by large banks and the total number of branches in a province.

test of cross-sectional dependence for panel data (with small T and large N) to take into account the presence of potential spill-over effects. The test allows verifying whether there is cross-sectional dependence across provinces, considering each sector at time. When we perform this test, the null hypothesis of independence across provinces cannot be rejected for 70% of the sectors in the pre-crisis period and 83% in the post-crisis period, corroborating the estimators adopted.

4.3 Data

Data have been retrieved from several sources. First, the *Movimprese-InfoCamere* dataset – held by the information service consortium of the Italian Chambers of Commerce – offers quarterly and annual data at the provincial, regional and industrial level on all registered, active and ceased enterprises in Italy since 1995. Firms are categorised – based on their legal status – in limited liability companies (LL), unincorporated partnerships, sole proprietors and enterprises with other forms of ownership. Regarding industries, data are available for the two-digit ATECO 2002 (Nace Rev. 1.1) classification until 2008, and for the two-digit ATECO 2007 (Nace Rev. 2) classification afterwards.

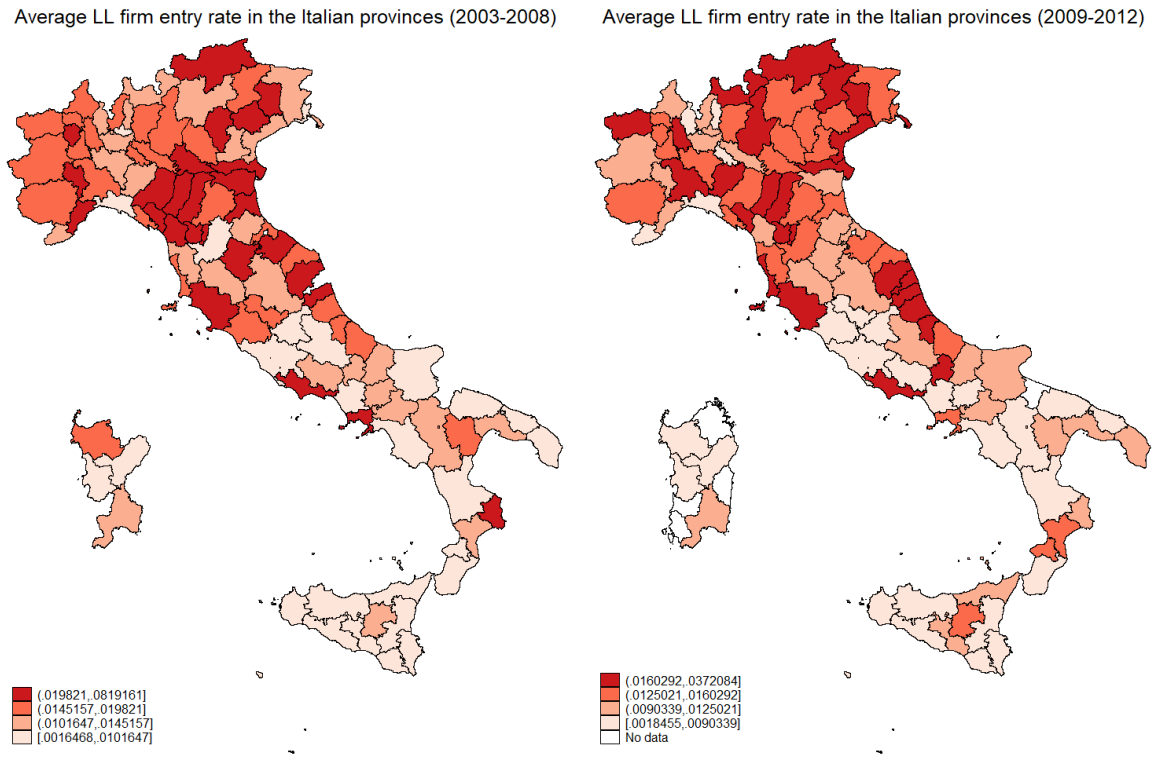
It should be recalled that, because of the lack of firm-level information, the dependent variable (ENTRY) is defined at the province and industry level. As a result, we cannot control for key micro-level determinants of new businesses creation, such as firm-specific characteristics (e.g., age, size), and socio-demographic features of entrepreneurs (such as sex, age, education). Figure 2 displays the average entry rate of new (LL) firms across the Italian provinces during the two periods. At first glance, an evident gap between Centre-Northern and Southern regions emerges both from 2003 to 2008 and from 2009 and 2012. What is more, in the latter, the entry rate decreases in the *Mezzogiorno*, as well as in Piedmont and Liguria.

Data on all the Italian BCCs and information on the provincial distribution of their branches come from the *ABI Banking dataset* provided by the Italian Banking Association. It is worth highlighting that balance sheet data are only available at bank-level, therefore, to retrieve information about the local market, i.e. provincial level, we employ the criterion suggested by Carbò Valverde et al. (2003).[22] Lastly, information on provincial

[22] Formally, this rule states that each variable of interest x for the branches (BRs) in province p of BCC i in year t is obtained as $x_{ipt} = X_{it} * \left(BR_{ipt}/BR_{it}\right)$, where X_{it} is the same variable as it is provided by the balance-sheet of bank i at time t; BR_{ipt} is the

and regional features used as control variables are collected from the Italian National Institute of Statistics (ISTAT, 2017).

Figure 2. Average (LL) firm entry rate in the Italian provinces.



Authors' Elaboration on Movimprese-InfoCamere data.

To estimate equation (1), we split the sample into two periods (2003-2008 and 2009-2012) for three reasons. First, to analyse whether and to what extent the crisis has affected the role of BCCs as a determinant of entrepreneurship. Moreover, a new regulation (named "Single Communication") occurred in October 2009 to facilitate business registration. Finally, industrial level data are available with different sectoral nomenclatures before and after 2008, an exact matching between the two classifications being precluded by the fact that information is provided at a two-digit level only. In the Appendix, Table A1 reports the main summary statistics for both our sub-samples, while Table A2 shows the correlation matrix of the variables entering equation (1).

number of branch offices of BCC i in province p in year t; finally, BR_{it} is the total number of branch offices of i at time t. This methodology allows to build the key indexes in our analysis, measuring the weight of BCCs in each province.

5. Estimation Results

5.1 Pre-crisis period

Table 1 shows the Tobit models estimates for the first period of analysis, 2003-2008. While in columns 1 and 3 the entry rate is defined on all firms, in the other columns the analysis focuses on limited liability (LL) companies.

To test H1, we first estimate equation (1) without the interaction term. As columns from 1 to 4 show, the coefficients of the key indexes (BCCLOAN and BCCBR) are both positive and statistically significant when considering LL firms (columns 2 and 4), while only the BCCLOAN parameter is positive and significant when considering all firms (column 1). Furthermore, the coefficients of the two indexes tend to noticeably rise considering only LL firms, suggesting that the presence of BCC may be particularly important for high tech firms as the LL is the legal form preferred by enterprises of high technological value (being mandatory since 2009).

To shed more light on this issue, and verify H2, columns from 5 to 8 in Table 1 show the results of models including the interaction terms (INTBCCLOAN and INTBCCBR) between the key indexes (BCCLOAN and BCCBR) and the High tech dummy (HMTI), respectively.[23] Consequently, the estimated impact of each index on the entry rate of the high-tech firms is the sum of the coefficient of the index parameter and the relative interaction term, while it is just the estimated coefficient of the index for the other firms. In columns 5 and 7

[23] To test H2, computing and interpreting the interactions effects is needed. However, it is worth recalling that in non-linear models the interactions marginal effects do not coincide with the first derivative of the multiplicative terms. The full interaction effect is the cross-partial derivative of the expected value of the outcome variable E(y) with respect to the constitutive terms (for instance, x_1 and x_2), which is different from the first derivative of E(y) with respect to the multiplicative term ($x_1 * x_2$). In addition, the statistical significance of the entire cross derivative must be calculated. Moreover, like all marginal effects in non-linear model, the interaction effect is conditional on the other independent variables, and it may have different signs for different values of covariates. Given its complexity, different ways of interpreting interaction effects in non-linear models have been advocated (see, among others, Ai and Norton, 2003; Cornelißen and Sonderhof, 2009; Buis, 2010). We prefer following the Williams's (2012) suggestion, computing predicted or expected values for hypothetical or prototypical cases. By doing so, we avoid the critical features of the other approaches mentioned above and make the results "more tangible" (Williams, 2012, p. 308). To sum up, we only deal with the computation of the adjusted predictions of the interaction term included in the equation (1), that are reported in figures A1 to A6 in the Appendix.

pooled Tobit model estimates are shown, while columns 6 and 8 report results obtained by employing a Random Effect Tobit estimator, to account for the panel structure of the data.

Looking at columns 5 and 7, the coefficients of BCCLOAN and BCCBR are positive and statistically significant at 1% and 10% level, respectively, signalling that a higher presence of BCCs in the provinces leads to higher entry rate of firms in low-tech sectors. What is more, these indexes show a higher positive influence on the entry rate of high-tech firms. Indeed, the coefficient of the interaction term is always positive and jointly statistically significant with the BCCs indicators, as shown by the F-test reported at the bottom of Table 1.[24] Besides, the sum of the coefficients of each indicator (BCCLOAN, BCCBR) and the relative interaction term is always statistically significant, as shown by the t-test reported in the final rows of Table 1 (at 1% level of significance considering BCCLOAN). To assess the effect of BCCs on firm creation for low and high tech firms, we exploit a graph that plots the fitted values for the two groups of firms individuated by the dummy variable HMTI, for each measure of BCCs' presence (Figures A1 and A2 in Appendix 1).[25] These results are confirmed also when employing a Random Effect Tobit (columns 6 and 8).

Finally, looking at the Wald test on the exogeneity of the BCC indexes (and their interaction terms),[26] it is never statistically significant (columns 5 and 7 of Table 1), hence, the null hypothesis of exogeneity of the instrumented variables cannot be rejected, indicating that the other estimators employed can be deemed as reliable. To sum up, in the pre-crisis period higher presence of BCCs seems to positively influence new business creation, moreover, the effect is even stronger on the entries of high-tech firms.

[24] Inconsistency between individual and joint significance may occur because of multicollinearity due to the inclusion of interaction terms (Brambor et al., 2006).

[25] Figure A1 shows that at low level of BCCLOAN there is not significant difference between the (fitted) entry rate relative to HMTI firms and the entry rate of the other firms, in other words, the presence of BCCs in the provinces affects firms' creation similarly for any technological category. However, as the BCCs' presence intensifies, the difference between HMTI and other firms becomes bigger and statistically significant (the confidence bands do not overlap). HMTI firms seem to benefit more than other firms from an increase in the presence of BCC. Figure A2 depicts a similar pattern.

[26] The Wald test on the exogeneity is obtained by employing the IV Tobit estimator, in which the Amemiya-Lee-Newey Test for the validity of the instruments is satisfied. For the sake of conciseness, the results obtained by employing the IV approach are not reported.

Briefly considering the control variables, GDP and business density positively impacts the new business formation. By contrast, UNRATE shows a negative impact on the birth of new firms, consistent with the results of Guesnier (1994), Garofoli (1994) and Caree et al. (2008). Moreover, in line with Agostino et al. (2020), firm creation is positively affected by the province innovation capability, proxied by EDU and PATENT. Similarly, the level of trade intensity (OPEN) seems to be positively associated with the new firm entry in the period 2003-2008. Lastly, observing the level of deposit, there is weak evidence that DEP negatively impacts on the new business formation.

[TABLE 1]

5.2 Post-crisis period

As shown by Table 2, notable differences arise when focusing on the period 2009-2012. Firstly, looking at the results without interaction term (columns1 and 2), BCCLOAN is positive and statistically significant and the magnitude of the effect seems to be higher for (LL) firms. Similarly, the indexes' coefficient is positive when adding the interaction term (columns 5-8).

The main difference compared to the pre-crisis period concerns the negative sign of the interaction term between the key indexes and the high tech dummy. More in detail, BCCLOAN is jointly significant with its interaction term both in the pooled and RE estimates (columns 5 and 6). The sum ($\hat{\beta}_1 + \hat{\beta}_3$) is also significant (as shown by the t-test BCCLOAN+INTE). These results still signal the positive effect of BCCs for both low and high tech firms entry, but the estimated impact of the BCCs' presence is now slightly lower for the latter category. On the other hand, according to columns 7 and 8, the sum of the coefficient of BCCBR and the relative interaction term seems to lose significance.[27]

Finally, the regressor HMTI becomes negative and statistically significant in both pooled and RE Tobit models. Akin to Agostino et al. (2020), such evidence supports the idea that entry in high tech industries is particularly difficult in times of economic turmoil. Besides, these results suggest that in the aftermath of the crisis, high technology firms are the first to be *sacrificed* by the BCCs, as they represent riskier investments.

[27] Figure A4 and A5 illustrate that in the post-crisis period the BCC presence exerts for the most a similar impact on firms' creation for any technological category as the confidence bands overlap for almost all levels of the BCC indexes.

The Wald-test of exogeneity, reported at the bottom of Table 2, implies that the results based on pooled and RE Tobit are consistent.

As far as the control variables are concerned, the level of GDP and business density mainly confirm the positive effect on firm creation in the post-crisis period. Similarly, in the aftermath of the crisis, an analogous pattern is confirmed by PATENT, while the measure of bank concentration (HHIbr) negatively affect the entry rate. Finally, DEP seems to negatively impact on business creation.

[TABLE 2]

To summarise, while the presence of BCC seems to be beneficial for firm creation in both periods, the estimated effect varies according to the industry sector to which firms belong. On one hand, in the pre-crisis period, the effect of BCCs presence is stronger on the entries of high-tech firms supporting the idea that, in *normal times*, BCCs represent an important source of finance for innovative and risky firms, and they might play the role of venture capitalists or business angels in a bank-based system. On the other hand, in the aftermath of the crisis, BCCs' presence has a slightly lower impact or tends to become an insignificant determinant for high-tech firms' creation. Thus, during economic turmoil the BCCs risk aversion could prevail, leading to downsizing credit to riskier projects.

5.3 Robustness checks

As a first robustness check, we adopt a Mixed-Effects Tobit regression (Table A3) to estimate equation (1). Focusing on the pre-crisis period, the estimates obtained by Pooled and RE Tobit are confirmed by the Mixed-Effects Tobit regression results (Table A3 – columns 1 and 2). Although only the BCCLOAN parameter is individually positive and significant at 1% level of significance, the sum $(\hat{\beta}_1 + \hat{\beta}_3)$ of each indicator (BCCLOAN, BCCBR) and the relative interaction term is statistically significant at 10% level of significance. On the other hand, in the post-crisis period, the test of joint significance and the sum $(\hat{\beta}_1 + \hat{\beta}_3)$ is significant at 10% level only when considering BCCLOAN (columns 3 of Table A3).

What is more, as a further robustness check, we replicate the analysis by applying all mentioned models (Pooled, RE Tobit and Mixed Tobit) using an alternative BCC index – BCCASS – (Table A4). Consistently with our main findings, the BCCASS coefficient is positive and significant (columns 1, 2 and 3); the sum of

the coefficient of BCCASS and the relative interaction term is always statistically significant at 1% level. These results are confirmed across all the estimation methods adopted, and results are graphically illustrated in Figure A3. Turning to analyse the results obtained in the post-crisis period, in line with the results obtained employing BCCLOAN, the BCCASS coefficient is positive for the low-tech sector (columns 4, 5 and 6). Yet, the interaction term between the BCCASS and the high tech dummy (HMTI) is negative and the index being jointly significant with its interaction term in all the estimations employed (columns from 4 to 6). This evidence further confirms that, in the aftermath of the crisis, the BCCs presence has a lower influence on high-tech firms' entry than on that of low-tech ones.

To summarise, this set of robustness checks corroborates the hypothesis that the BCCs' advantage in gathering *soft information* may promote business creation. Moreover, BCCs appear to favour high tech firms more than other categories in *normal times*; while, in the aftermath of the crisis, BCCs' presence seems to foster more low tech firm's entries or, at least, to exert an analogous influence for any technological category. That is, economic uncertainty might discourage BCCs from investing in riskier projects, preferring low-risk investments.

6.Concluding Remarks

This work investigates whether the presence of cooperative banks affects firms' birth rate in the Italian provinces during the period 2003-2012. The investigation aims to fill a gap in the literature, by analysing the role of BCCs – the local Italian banks *par excellence*, representing a significant part of the national banking system.

According to our evidence, a higher diffusion of BCCs in local credit markets play a positive role in fostering entrepreneurship activities – presumably thanks to both the comparative advantages of cooperative banks in gathering *soft information* and their proximity to member/customers. Our results, robust to several estimation methods, also suggest that the magnitude of the estimated impact of a higher presence of BCCs on business creation is heterogeneous for low and high-tech firms, in the two spans of years we considered. Indeed, in the pre-crisis period, the influence of BCCs diffusion appears to be stronger for high-tech firms – while, in the aftermath of the credit turmoil, it tends to affect more the entry of low-tech firms. This latter finding seems to corroborate the idea that high-technology firms might be *sacrificed* in economic downturn years, as banks tend to ration riskier projects.

To conclude, this empirical work highlights that BCCs might represent a relevant channel to support new business creation – and, in this way, to favour the growth of local communities. The peculiar role of BCCs seems to have been recognised by the Italian policymakers, with the introduction of a recent reform (law 49/2016) aiming at ensuring stability to cooperative banks while preserving their local nature and traditional role. Future research is called to investigate the role of (potential) spill-over effects among close local areas, and to extend our analysis in a cross-country perspective.

References

Acs, Z., 2006. Start-ups and entry barriers: small and medium sized firms population dynamics. *The Oxford handbook of entrepreneurship*, pp.194-224.

Agarwal, S. and Hauswald, R., 2010a. Distance and private information in lending. *The Review of Financial Studies*, *23*(7), pp.2757-2788.

Agarwal, S. and Hauswald, R.B., 2010b. Authority and information.

Agostino, M., Gagliardi, F. and Trivieri, F., 2012. Bank competition, lending relationships and firm default risk: An investigation of Italian SMEs. *International Small Business Journal*, *30*(8), pp.907-943.

Agostino, M., Nifo, A., Trivieri, F. and Vecchione, G., 2020. Rule of law and regulatory quality as drivers of entrepreneurship. *Regional Studies*, *54*(6), pp.814-826.

Ai, C. and Norton, E.C., 2003. Interaction terms in logit and probit models. *Economics letters*, *80*(1), pp.123-129.

Alessandrini, P., Croci, M. and Zazzaro, A., 2009. The geography of banking power: the role of functional distance. In *The Banks and the Italian Economy* (pp. 93-123). Physica-Verlag HD.

Alessandrini, P., Presbitero, A.F. and Zazzaro, A., 2006. Banks, distances and financing constraints for firms. *Universita Politecnica delle Marche Economics Working Paper*, (266).

Alessandrini, P., Presbitero, A.F. and Zazzaro, A., 2009. Bank size or distance: what hampers innovation adoption by SMEs?. *Journal of Economic Geography*, *10*(6), pp.845-881.

Alessandrini, P., Zazzaro, A. and Presbitero, A.F., 2008. *Banche e imprese nei distretti industriali*. Università politecnica delle Marche, Dipartimento di economia.

Amiti, M. and Weinstein, D.E., 2018. How much do idiosyncratic bank shocks affect investment? Evidence from matched bank-firm loan data. *Journal of Political Economy*, *126*(2), pp.525-587.

Armington, C. and Acs, Z.J., 2002. The determinants of regional variation in new firm formation. *Regional studies*, *36*(1), pp.33-45.

Audretsch, D.B., Keilbach, M.C. and Lehmann, E.E., 2006. *Entrepreneurship and economic growth*. Oxford University Press.

Backman, M., 2015. Banks and new firm formation. *Journal of Small Business and Enterprise Development*, *22*(4), pp.734-761.

Banerjee, A.V., Besley, T. and Guinnane, T.W., 1994. Thy neighbor's keeper: The design of a credit cooperative with theory and a test. *The Quarterly Journal of Economics*, *109*(2), pp.491-515.

Baumol, W.J., 1996. Entrepreneurship: Productive, unproductive, and destructive. *Journal of business venturing*, *11*(1), pp.3-22.

Benvenuti, M. and Prete, S.D., 2019. *A profit elasticity approach to measure banking competition in Italian credit markets* (No. 1237). Bank of Italy, Economic Research and International Relations Area.

Berger, A.N. and Udell, G.F., 1998. The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of banking & finance*, *22*(6-8), pp.613-673.

Berger, A.N. and Udell, G.F., 2002. Small business credit availability and relationship lending: The importance of bank organisational structure. *The economic journal*, *112*(477), pp.F32-F53.

Berger, A.N., Demsetz, R.S. and Strahan, P.E., 1999. The consolidation of the financial services industry: Causes, consequences, and implications for the future. *Journal of Banking & Finance*, *23*(2-4), pp.135-194.

Berger, A.N., Miller, N.H., Petersen, M.A., Rajan, R.G. and Stein, J.C., 2005. Does function follow organisational form? Evidence from the lending practices of large and small banks. *Journal of Financial economics*, *76*(2), pp.237-269.

Berggren, B. and Silver, L., 2010. Financing entrepreneurship in different regions: The failure to decentralise financing to regional centres in Sweden. *Journal of Small Business and Enterprise Development*, *17*(2), pp.230-246.

Berggren, B., Lindström, G. and Olofsson, C., 2001. Growth and Financing in Swedish SMEs.

Besley, T. and Coate, S., 1995. Group lending, repayment incentives and social collateral. *Journal of development economics*, *46*(1), pp.1-18.

Black, B.S. and Gilson, R.J., 1998. Venture capital and the structure of capital markets: banks versus stock markets. *Journal of financial economics*, *47*(3), pp.243-277.

Bonaccorsi di Patti, E., Dell'Ariccia G.(2004),«Bank Competition and Firm Creation». *Journal of Money, Credit and Banking*, pp.225-251.

Bongini, P., Di Battista, M.L. and Zavarrone, E., 2007. The value of relationship lending: Small banks in an era of consolidation. *Economic Notes*, *36*(3), pp.209-230.

Boot, A.W., 2000. Relationship Banking: What Do We Know? *Journal of Financial Intermediation*.

Boot, A.W., Thakor, A.V. and Udell, G.F., 1991. Secured lending and default risk: equilibrium analysis, policy implications and empirical results. *The Economic Journal*, pp.458-472.
Brambor, T., Clark, W.R. and Golder, M., 2006. Understanding interaction models: Improving empirical analyses. *Political analysis*, *14*(1), pp.63-82.
Buis, M.L., 2010. Stata tip 87: Interpretation of interactions in nonlinear models. *The stata journal*, *10*(2), pp.305-308.
Carpenter, R.E. and Petersen, B.C., 2002. Capital market imperfections, high-tech investment, and new equity financing. *The Economic Journal*, *112*(477), pp.F54-F72.
Carree, M., Santarelli, E. and Verheul, I., 2008. Firm entry and exit in Italian provinces and the relationship with unemployment. *International Entrepreneurship and Management Journal*, *4*(2), pp.171-186.
Cassar, G., 2004. The financing of business start-ups. *Journal of business venturing*, *19*(2), pp.261-283.
Cesarini, Francesco, Giovanni Ferri, and Michele Giardino. "Credito e sviluppo: banche locali cooperative e imprese minori." *Il Mulino, Bologna* (1997).
Chiesa, G., Palmucci, F. and Pirocchi, I., 2009. La struttura finanziaria delle PMI: paradigmi e realtà.
Cole, R.A., 1998. The importance of relationships to the availability of credit. *Journal of Banking & Finance*, *22*(6-8), pp.959-977.
Cole, R.A., Goldberg, L.G. and White, L.J., 2004. Cookie cutter vs. character: The micro structure of small business lending by large and small banks. *Journal of financial and quantitative analysis*, *39*(2), pp.227-251.
Collender, R.N. and Shaffer, S., 2003. Local bank office ownership, deposit control, market structure, and economic growth. *Journal of Banking & Finance*, *27*(1), pp.27-57.
Cornelißen, T. and Sonderhof, K., 2009. Partial effects in probit and logit models with a triple dummy-variable interaction term. *The Stata Journal*, *9*(4), pp.571-583.
Dahl, M.S. and Sorenson, O., 2009. The embedded entrepreneur. *European management review*, *6*(3), pp.172-181.
Davidsson, P., Lindmark, L. and Olofsson, C., 1994. New firm formation and regional development in Sweden. *Regional Studies*, *28*(4), pp.395-410.
De Bonis, R., Ferri, G. and Rotondi, Z., 2015. Do firm–bank relationships affect firms' internationalisation?. *International Economics*, *142*, pp.60-80.
De Bruyn, R. and Ferri, G., 2005. *Le ragioni delle banche popolari: motivi teorici ed evidenze empiriche*. Disefin.
De Leeuw, J. and Meijer, E., 2008. Introduction to multilevel analysis. In *Handbook of multilevel analysis* (pp. 1-75). Springer, New York, NY.
Degryse, H. and Ongena, S., 2005. Distance, lending relationships, and competition. The Journal of Finance, 60(1), pp.231-266.
Demidenko, E., 2013. *Mixed models: theory and applications with R*. John Wiley & Sons.
Dermine, J., 2000. Bank mergers in Europe: the public policy issues. *JCMS: Journal of Common Market Studies*, *38*(3), pp.409-425.
Di Patti, E.B. and Gobbi, G., 2001. The changing structure of local credit markets: are small businesses special?. *Journal of Banking & Finance*, *25*(12), pp.2209-2237.
Diamond, D.W., 1984. Financial intermediation and delegated monitoring. *The review of economic studies*, *51*(3), pp.393-414.
Diamond, D.W., 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of political Economy*, *99*(4), pp.689-721.
Dörr, S., Raissi, M. and Weber, A., 2018. Credit-supply shocks and firm productivity in Italy. *Journal of International Money and Finance*, *87*, pp.155-171.
Draghi, M., 2009. Solidarietà nella crisi. Il credito cooperativo nelle economie locali. *Celebrazione del Cinquantesimo d CreditUmbria–Città della Pieve*, *10*.
Eliasson, J., 2016. Inter-industry differences in local banks' effect on new firm formation: A regional study of entrepreneurship in Sweden.
Elsas, R. and Krahnen, J.P., 1998. Is relationship lending special? Evidence from credit-file data in Germany. *Journal of Banking & Finance*, *22*(10-11), pp.1283-1316.
Elyasiani, E. and Goldberg, L.G., 2004. Relationship lending: a survey of the literature. *Journal of Economics and Business*, *56*(4), pp.315-330.
Fama, E.F. and Jensen, M.C., 1983. Agency problems and residual claims. *The journal of law and Economics*, *26*(2), pp.327-349.

Fotopoulos, G. and Spence, N., 1997. Net entry of firms into Greek manufacturing: the effects of business conditions. *Small Business Economics*, *9*(3), pp.239-253.
Fritsch, M. and Schilder, D., 2008. Does venture capital investment really require spatial proximity? An empirical investigation. *Environment and Planning A*, *40*(9), pp.2114-2131.
Gagliardi, F., 2009. Financial development and the growth of cooperative firms. *Small Business Economics*, *32*(4), pp.439-464.
Garofoli G (1994) New firm formation and regional development. Regional Studies 28(4):381–394.
Gereffi, G., Humphrey, J. and Sturgeon, T., 2005. The governance of global value chains. *Review of international political economy*, *12*(1), pp.78-104.
Ghatak, M., 2000. Screening by the company you keep: Joint liability lending and the peer selection effect. *The Economic Journal*, *110*(465), pp.601-631.
Gibbons, S. and Overman, H.G., 2012. Mostly pointless spatial econometrics?. *Journal of Regional Science*, *52*(2), pp.172-191.
Guesnier, B., 1994. Regional variations in new firm formation in France. *Regional studies*, *28*(4), pp.347-358.
Guiso, L., Sapienza, P. and Zingales, L., 2004. Does local financial development matter?. *The Quarterly Journal of Economics*, *119*(3), pp.929-969.
Hall, J. and Hofer, C.W., 1993. Venture capitalists' decision criteria in new venture evaluation. *Journal of business venturing*, *8*(1), pp.25-42.
Hansmann, H. (1996), *The Ownership of Enterprise*, Cambridge, MA: The Belknap Press of Harvard University Press.
Hesse, H. and Cihak, M., 2007. *Cooperative banks and financial stability*. International Monetary Fund.
Hoff, K. and Stiglitz, J.E., 1990. Introduction: Imperfect information and rural credit markets: Puzzles and policy perspectives. *The world bank economic review*, *4*(3), pp.235-250.
Hox, J.J., 2013. Multilevel regression and multilevel structural equation modeling. *The Oxford handbook of quantitative methods*, *2*(1), pp.281-294.
Hox, J.J., Moerbeek, M. and Van de Schoot, R., 2010. *Multilevel analysis: Techniques and applications*. Routledge.
Jensen, M.C. and Meckling, W.H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, *3*(4), pp.305-360.
Jiménez, G., Salas, V. and Saurina, J., 2009. Organisational distance and use of collateral for business loans. *Journal of Banking & Finance*, *33*(2), pp.234-243. adoption by SMEs?. *Journal of Economic Geography*, *10*(6), pp.845-881.
Kalmi, P., 2013. Catching a wave: the formation of cooperatives in Finnish regions. *Small Business Economics*, *41*(1), pp.295-313.
Kaufmann, S. and Valderrama, M.T., 2008. Bank lending in Germany and the UK: are there differences between a bank-based and a market-based country?. *International Journal of Finance & Economics*, *13*(3), pp.266-279.
Klapper, L., Laeven, L. and Rajan, R., 2004. *Business environment and firm entry: Evidence from international data*. The World Bank.
Kwast, M.L., 1999. Bank mergers: what should policymakers do?. *Journal of banking & finance*, *23*(2-4), pp.629-636.
Kwast, M.L., Starr-McCluer, M. and Wolken, J.D., 1997. Market definition and the analysis of antitrust in banking. *The Antitrust Bulletin*, *42*(4), pp.973-995.
La Rocca, M., La Rocca, T. and Cariola, A., 2011. Capital structure decisions during a firm's life cycle. *Small Business Economics*, *37*(1), pp.107-130.
Lehmann, E. and Neuberger, D., 2001. Do lending relationships matter?: Evidence from bank survey data in Germany. *Journal of Economic Behavior & Organization*, *45*(4), pp.339-359.
Lumpkin, G.T. and Dess, G.G., 1996. Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of management Review*, *21*(1), pp.135-172.
McCulloch, C., 2008. Shayle R Searle S, Neuhaus J. Generalized, Linear, and Mixed Models.
McMillen, D.P., 2010. Issues in spatial data analysis. *Journal of Regional Science*, *50*(1), pp.119-141.
Michelacci, C. and Silva, O., 2007. Why so many local entrepreneurs?. *The Review of Economics and Statistics*, *89*(4), pp.615-633.
Murphy, K.M., Shleifer, A. and Vishny, R.W., 1991. The allocation of talent: Implications for growth. *The quarterly journal of economics*, *106*(2), pp.503-530.

Nyström, K., 2007. An industry disaggregated analysis of the determinants of regional entry and exit. *The Annals of Regional Science*, *41*(4), pp.877-896.
Ongena, S. and Smith, D.C., 2000. Bank relationships: a review. *Performance of financial institutions: Efficiency, innovation, regulation*, *221*.
Parker, S.C., 2004. *The economics of self-employment and entrepreneurship*. Cambridge University Press.
Paulson, A.L. and Townsend, R., 2004. Entrepreneurship and financial constraints in Thailand. *Journal of Corporate Finance*, *10*(2), pp.229-262.
Pesaran, M.H., 2004. General diagnostic tests for cross section dependence in panels.
Petersen, M.A. and Rajan, R.G., 1994. The benefits of lending relationships: Evidence from small business data. *The journal of finance*, *49*(1), pp.3-37.
Petersen, M.A. and Rajan, R.G., 1995. The effect of credit market competition on lending relationships. *The Quarterly Journal of Economics*, *110*(2), pp.407-443.
Petersen, M.A. and Rajan, R.G., 2002. Does distance still matter? The information revolution in small business lending. *The journal of Finance*, *57*(6), pp.2533-2570.
Pinheiro, J.C. and Bates, D.M., 2000. Linear mixed-effects models: basic concepts and examples. *Mixed-effects models in S and S-Plus*, pp.3-56.
Pollard, J.S., 2003. Small firm finance and economic geography. *Journal of Economic Geography*, *3*(4), pp.429-452.
Raudenbush, S.W. and Bryk, A.S., 2002. *Hierarchical linear models: Applications and data analysis methods* (Vol. 1). Sage.
Robinson, W.S., 2009. Ecological correlations and the behavior of individuals. *International journal of epidemiology*, *38*(2), pp.337-341.
Rogers, T.M., 2012. Bank market structure and entrepreneurship. *Small Business Economics*, *39*(4), pp.909-920.
Romano, C.A., Tanewski, G.A. and Smyrnios, K.X., 2001. Capital structure decision making: A model for family business. *Journal of business venturing*, *16*(3), pp.285-310.
Rosenthal, S.S. and Strange, W.C., 2003. Geography, industrial organisation, and agglomeration. *review of Economics and Statistics*, *85*(2), pp.377-393.
Sanyal, P. and Mann, C.L., 2010. *The financial structure of start-up firms: The role of assets, information, and entrepreneur characteristics* (No. 10-17). Working Papers.
Schumpeter, J. and Backhaus, U., 2003. The theory of economic development. In *Joseph Alois Schumpeter* (pp. 61-116). Springer, Boston, MA.
Searle, S.R., Casella, G. and McCulloch, C.E., 1992. Variance components john wiley and sons. *Inc. New York*.
Stefani, M.L., Vacca, V.P., Coin, D., Del Prete, S., Demma, C., Galardo, M., Garrì, I., Mocetti, S. and Pellegrino, D., 2016. Le Banche Locali E Il Finanziamento Dei Territori: Evidenze Per L'Italia (2007-2014)(When Local Banks Lend to Local Communities: Evidence from Italy (2007-2014)). Bank of Italy Occasional Paper, (324).
Stein, J.C., 2002. Information production and capital allocation: Decentralised versus hierarchical firms. *The journal of finance*, *57*(5), pp.1891-1921.
Stiglitz, J.E. and Weiss, A., 1981. Credit rationing in markets with imperfect information. *The American economic review*, *71*(3), pp.393-410.
Stiglitz, J.E., 1990. Peer monitoring and credit markets. *The world bank economic review*, *4*(3), pp.351-366.
Storper, M. and Venables, A.J., 2004. Buzz: face-to-face contact and the urban economy. *Journal of economic geography*, *4*(4), pp.351-370.
Sutaria, V. and Hicks, D.A., 2004. New firm formation: Dynamics and determinants. *The Annals of Regional Science*, *38*(2), pp.241-262.
Tagliacarne Institute (2012). Atlante di competitività delle province italiane. Rome.
Takáts, E., 2004. Banking consolidation and small business lending.
Udell, G.F., 2008. What's in a relationship? The case of commercial lending. *Business Horizons*, *51*(2), pp.93-103.
Valverdie, S.C., Humphrey, D. and Fernandez, F.R., 2003. Deregulation, bank competition and regional growth. *Regional Studies*, *37*(3), pp.227-237.
Wärneryd, K.E., Davidsson, P. and Wahlund, R., 1987. *Some Characteristics of Swedish Self-employed*. Ekonomiska forskningsinstitutet vid Handelshögsk.(EFI).

Weinstein, D.E. and Yafeh, Y., 1998. On the costs of a bank-centered financial system: Evidence from the changing main bank relations in Japan. *The journal of Finance*, *53*(2), pp.635-672.
Williams, R., 2012. Using the margins command to estimate and interpret adjusted predictions and marginal effects. *The Stata Journal*, *12*(2), pp.308-331.
Winton, A. and Yerramilli, V., 2008. Entrepreneurial finance: Banks versus venture capital. *Journal of Financial Economics*, *88*(1), pp.51-79.
Wooldridge, J.M., 2002. Econometric analysis of cross section and panel data MIT Press. *Cambridge, MA*, *108*.
Wyman, O., 2008. Cooperative bank: customer champion. *Oliver Wyman Financial Services, London*.

TABLE 1. Tobit results (2003-2008)

	1	2	3	4	5	6	7	8
	No Interaction				BCCLOAN*HMTI		BCCBR*HMTI	
	Entry (All)	Entry (LL)	Entry (All)	Entry (LL)	Pooled	RE	Pooled	RE
BCCLOAN	0.0016**	0.0082***			0.0080***	0.0081***		
	0.0272	*0.0000*			*0.0000*	*0.0000*		
BCCBR			-0.0008	0.0036**			0.0033*	0.0034*
			0.309	*0.0255*			*0.0567*	*0.0763*
HMTI		0.0153***		0.0151***	0.0167***	0.0173**	0.0168***	0.0174***
		0.0003		*0.0004*	*0.003*	*0.0112*	*0.0022*	*0.0094*
INTBCCLOAN					0.0004	0.0006		
					0.7138	*0.702*		
INTBCCBR							0.0007	0.0008
							0.6261	*0.6432*
GDP	0.0014**	0.0090***	0.0011*	0.0081***	0.0090***	0.0095***	0.0081***	0.0086***
	0.0197	*0.0000*	*0.0500*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
UNRATE	-0.0001	-0.0012***	-0.0001	-0.0012***	-0.0012***	-0.0013***	-0.0012***	-0.0012***
	0.4201	*0.0007*	*0.6369*	*0.0011*	*0.0007*	*0.0006*	*0.0011*	*0.0009*
DENS	-0.0014**	0.0019**	-0.0015***	0.0017*	0.0019**	0.0019	0.0017*	0.0018
	0.0106	*0.0393*	*0.0088*	*0.06*	*0.038*	*0.2848*	*0.0577*	*0.3174*
EDU	0.0012***	0.0025***	0.0013***	0.0026***	0.0025***	0.0023***	0.0026***	0.0024***
	0.0012	*0.0005*	*0.0009*	*0.0004*	*0.0005*	*0.0035*	*0.0004*	*0.0029*
FSIZE	-0.0013	-0.0066***	-0.0015	-0.0073***	-0.0066***	-0.0060**	-0.0073***	-0.0065***
	0.2948	*0.0048*	*0.2116*	*0.002*	*0.0047*	*0.0102*	*0.0019*	*0.005*
PATENT	0.0017**	0.0049***	0.0014**	0.0047***	0.0049***	0.0049***	0.0047***	0.0047***
	0.0108	*0.0001*	*0.0322*	*0.0002*	*0.0001*	*0.0002*	*0.0002*	*0.0004*
INFRA	-0.0004	0.0006	-0.0004	0.0003	0.0006	0.0006	0.0003	0.0003
	0.3275	*0.4427*	*0.3185*	*0.6735*	*0.4424*	*0.4393*	*0.6725*	*0.6612*
OPEN	0.0001***	0.0002***	0.0001***	0.0002***	0.0002***	0.0002***	0.0002***	0.0002***
	0.0003	*0.0000*	*0.0002*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
HHIbr	0.0029	0.0076	0.0004	0.0076	0.0076	0.0034	0.0078	0.0044
	0.7999	*0.7699*	*0.9753*	*0.7727*	*0.7678*	*0.889*	*0.7695*	*0.8574*
DEPPOP	-0.0026	-0.0167***	0.0031	-0.0042	-0.0167***	-0.0175***	-0.0042	-0.0048
	0.2229	*0.0000*	*0.1128*	*0.2511*	*0.0001*	*0.0003*	*0.2533*	*0.2547*
EXIT	0.0783***	0.0686***	0.0786***	0.0712***	0.0685***	0.0652***	0.0710***	0.0674***
	0.0000	*0.0058*	*0.0000*	*0.0043*	*0.0059*	*0.0015*	*0.0044*	*0.0011*
ENTRYOT	0.1581***	0.1212***	0.1586***	0.1241***	0.1212***	0.0872***	0.1241***	0.0886***
	0.0000	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
Observations	7,354	7,305	7,354	7,305	7,305	7,305	7,305	7,305
F-test (BCCLOAN, INTE)					14.271	22.529		
					0.0000	*0.0000*		
t-test (BCCLOAN+INTE)					5.046	4.399		
					0.0000	*0.0000*		
F-test (BCCBR, INTE)							2.667	4.566
							0.0694	*0.1019*
t-test (BCCBR+INTE)							2.239	2.03
							0.0125	*0.0211*
Wald test of exogeneity					0.654		2.539	
					0.7208		*0.2808*	
Amemiya-Lee-Newey Test					6.687		3.415	
					0.2450		*0.6362*	

For the description of variables see Table A1. Except for column 1 and 3, the dependent variable is always ENTRYLL. Superscripts ***, ** and * denote statistical significance at the 1, 5 and 10 percent level, respectively. The pvalues of the tests are given In italics. The standard errors (not reported) are robust to heteroskedasticity and autocorrelation. The statistical significance of the sums of random variables (BCCLOAN+INTE; BCCBR+INTE) is assessed by computing the relative standard errors. Years and sector dummies always included but not reported. Wald test of exogeneity and Amemiya-Lee-Newey Test are obtained from the IV estimates, not reported in this table.

TABLE 2. Tobit results (2009-2012)

	1	2	3	4	5	6	7	8
	No Interaction				BCCLOAN*HMTI		BCCBR*HMTI	
	Entry (All)	Entry (LL)	Entry (All)	Entry (LL)	Pooled	RE	Pooled	RE
BCCLOAN	0.0049***	0.0071***			0.0073***	0.0069***		
	0.0000	*0.0044*			*0.0050*	*0.0035*		
BCCBR			-0.0006	0.0022			0.0028	0.0029
			0.5588	*0.3174*			*0.2196*	*0.2003*
HMTI		-0.0130***		-0.0132***	-0.0144**	-0.0146**	-0.0174***	-0.0178***
		0.0038		*0.0034*	*0.0199*	*0.0295*	*0.0035*	*0.0068*
INTBCCLOAN					-0.0005	-0.0005		
					0.7662	*0.7857*		
INTBCCBR							-0.0017	-0.0018
							0.3142	*0.3473*
GDP	0.0014**	0.0052***	0.0006	0.0042***	0.0052***	0.0052***	0.0042***	0.0042***
	0.0268	*0.0000*	*0.3265*	*0.0000*	*0.0000*	*0.0001*	*0.0000*	*0.0009*
UNRATE	-0.0001	-0.0001	-0.0001	0.0000	-0.0001	-0.0001	0.0000	0.0000
	0.4702	*0.8783*	*0.7611*	*0.9575*	*0.8794*	*0.8486*	*0.9610*	*0.9185*
DENS	-0.0013**	0.0031***	-0.0013**	0.0031***	0.0031***	0.0031	0.0031***	0.0031
	0.043	*0.003*	*0.0441*	*0.0034*	*0.0031*	*0.1173*	*0.0038*	*0.1169*
EDU	0.0001	-0.001	0.0002	-0.0009	-0.001	-0.001	-0.0009	-0.0009
	0.7778	*0.1192*	*0.6452*	*0.171*	*0.1192*	*0.1133*	*0.1707*	*0.1649*
FSIZE	0.0002	0.0033	0.0000	0.0029	0.0033	0.0036	0.0029	0.0032
	0.9036	*0.1926*	*0.9877*	*0.2563*	*0.1918*	*0.1225*	*0.2537*	*0.1691*
PATENT	0.0034***	0.0063***	0.0028***	0.0062***	0.0063***	0.0062***	0.0062***	0.0061***
	0.0000	*0.0000*	*0.0001*	*0.0000*	*0.0000*	*0.0000*	*0.0000*	*0.0000*
INFRA	-0.0001	-0.001	-0.0001	-0.0011	-0.001	-0.0011	-0.0011	-0.0012
	0.8469	*0.1686*	*0.9049*	*0.1501*	*0.1689*	*0.1363*	*0.1495*	*0.117*
OPEN	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001*
	0.5495	*0.1774*	*0.3490*	*0.1041*	*0.1775*	*0.1072*	*0.1043*	*0.0727*
HHIbr	-0.0077	-0.0474	-0.0271*	-0.0653**	-0.0475	-0.0536*	-0.0653**	-0.0707**
	0.6234	*0.1264*	*0.0783*	*0.0304*	*0.1261*	*0.0662*	*0.0305*	*0.0142*
DEPPOP	-0.0096***	-0.0121**	0.0011	-0.0021	-0.0121**	-0.0119**	-0.0021	-0.0027
	0.0001	*0.0174*	*0.6084*	*0.6253*	*0.0173*	*0.0139*	*0.6189*	*0.5130*
EXIT	0.0323**	-0.0275	0.0329**	-0.0266	-0.0274	-0.0322	-0.0262	-0.0315
	0.0171	*0.2087*	*0.0154*	*0.2222*	*0.2098*	*0.1170*	*0.2284*	*0.1248*
ENTRYOT	0.1654***	0.0932***	0.1692***	0.0982***	0.0931***	0.0811***	0.0981***	0.0848***
	0.0000	*0.0008*	*0.0000*	*0.0004*	*0.0008*	*0.0005*	*0.0004*	*0.0003*
Observations	5,326	5,281	5,326	5,281	5,281	5,281	5,281	5,281
F-test (BCCLOAN, INTE)					4.069	8.811		
					0.0171	*0.0122*		
t-test (BCCLOAN+INTE)					2.58	2.57		
					0.0050	*0.0050*		
F-test (BCCBR, INTE)							0.953	1.961
							0.3853	*0.3750*
t-test (BCCBR+INTE)							0.269	0.459
							0.3937	*0.3228*
Wald test of exogeneity					0.838		1.702	
					0.6574		*0.4269*	
Amemiya-Lee-Newey Test					4.382		4.267	
					0.3568		*0.3711*	

For the description of variables see Table A1. Except for column 1 and 3, the dependent variable is always ENTRYLL. Superscripts ***, ** and * denote statistical significance at the 1, 5 and 10 percent level, respectively. The pvalues of the tests are given In italics. The standard errors (not reported) are robust to heteroskedasticity and autocorrelation. The statistical significance of the sums of random variables (BCCLOAN+INTE; BCCBR+INTE) is assessed by computing the relative standard errors. Years and sector dummies always included but not reported. Wald test of exogeneity and Amemiya-Lee-Newey Test are obtained from the IV estimates, not reported in this table.

TABLE A1 - Description and summary statistics of the variables used in the estimations

VARIABLE	DESCRIPTION	Mean	StdD	Min	Max	Obs	Mean	StdD	Min	Max	Obs
		2003-2008					2009-2012				
ENTRY[a]	Entry rate: newly registered firms over the stock of existing firms	3.23	2.87	0	19.74	12,443	2.55	2.88	0	17.86	8,449
ENTRYLL[a]	Entry rate: newly registered limited liability (LL) firms over the stock of existing LL firms	1.35	2.63	0	23.53	12,334	1.18	2.30	0	18.92	8,374
BCCLOAN[a]	Bcc provincial total loan over Bank provincial total loan	7.07	5.35	0.07	22.85	12,233	7.96	5.44	0.31	24.07	8,382
BCCBR[a]	Bcc provincial number of branches over Bank provincial number of branches	10.86	7.19	0.31	32.43	12,233	12.11	7.37	0.78	32.77	8,382
BCCASS[a]	Bcc provincial total asset over Bank provincial total asset	6.83	5.04	0.06	21.36	12,233	7.73	5.25	0.25	23.33	8,382
HMTI	Dummy = 1 for high and medium technology industries (see table note)	0.35	0.48	0	1	12,951	0.33	0.47	0	1	8,856
GDP[b]	Provincial real gross domestic product	12,122	16,642	1,385	123,069	12,951	14,382	21,353	1,627	155,383	8,856
UNRATE[a]	Provincial unemployment rate	7.05	4.17	1.87	20.66	10,717	8.78	4.05	2.09	26.78	8,808
DENS[c]	Business Density: Provincial stock of firms over provincial surface (sq.km)	0.15	0.43	0	14	12,951	0.12	0.36	0	11	8,856
EDU[b]	Share of population (20–24 years) with high school diploma (regional level)	8.24	1.32	5.58	12.08	10,763	9.52	1.33	7.10	12.80	8,856
FSIZE[c]	Average number of employees in manufacturing firms headquartered in province	33.91	22.29	5	226	12,951	17.65	9.37	4	74	8,856
PATENT[c]	Provincial patent applications to the EPO (per million inhabitants)	72.12	67.04	1	310	10,606	62.79	58.71	1	290	6,540
INFRA	Infrastructural endowment (regional level)	-0.003	1.230	-1.847	5.503	12,951	-0.034	1.135	-3.304	5.835	8,856
OPEN[a]	Provincial export and import over GDP	38.47	24.58	1.75	190.93	10,717	39.27	26.95	1.90	162.17	8,808
HHIbr	Herfindahl-Hirschman index on bank number of branches	0.11	0.05	0.06	0.51	12,233	0.11	0.04	0.06	0.42	8,382
DEPPOP	Number of BCCs deposit in province over provincial population	1.17	0.94	0.02	3.99	12,233	1.46	1.10	0.06	4.56	8,382
EXIT[a]	Exit rate: ceased firms over the stock of existing firms	5.49	4.14	0	31.25	12,443	5.49	4.48	0	37.50	8,449
ENTRYOT[a]	Entry rate of firms others than the LL ones (OT), over the stock of existing OT firms	4.04	3.91	0	27.27	12,185	3.27	3.76	0	23.53	8,077

Both dependent variables ENTRY and ENTRYLL are defined at sector level (two-digit ATECO code: ATECO_2002 for the years from 2003-2008 and ATECO_2007 for the period 2009-2012), in each Italian province. (a) In percentage; (b) In millions of euro; (c) In unit. To rule out potential outliers, we eliminate the observations lying in the first and last percentile of the distributions of ENTRY, EXIT, ENTRYOT and of the three BCC indexes . High-technology industries include: aircraft and spacecraft; pharmaceuticals; office, accounting and computing machinery; radio, TV and communications equipment; medical, precision and optical instruments. Medium-high technology sectors are: electrical machinery and apparatus; motor vehicles, trailers and semi-trailers; chemicals excluding pharmaceuticals; railroad and transport equipment; machinery and equipment. While the OECD taxonomy relies on four-digit sectors, our HMTI dummy is defined considering industries at the two-digit level, as our data are available only at such level of disaggregation.

TABLE A2a - Correlation matrix (2003-2008)

	BCCLOAN	BCCBR	HMTI	GDP	UNRATE	DENS	EDU	FSIZE	PATENT	INFRA	OPEN	HHIbr	DEPPOP	EXIT	ENTRYOT
BCCLOAN	1														
BCCBR	0.8706	1													
HMTI	0.002	-0.0012	1												
GDP	-0.1246	-0.1391	-0.0037	1											
UNRATE	-0.2681	-0.0779	-0.0058	-0.1474	1										
DENS	-0.0241	-0.0537	-0.0067	0.2933	-0.1104	1									
EDU	0.0678	-0.0579	0.0031	0.1376	-0.5157	0.0497	1								
FSIZE	0.0556	0.0337	0.0012	0.1262	-0.3527	0.0717	-0.0323	1							
PATENT	0.1615	0.0234	0.0078	0.298	-0.6462	0.147	0.2223	0.3099	1						
INFRA	0.0131	0.1137	-0.0064	-0.1721	-0.0827	-0.0636	0.0783	0.196	-0.1529	1					
OPEN	0.1105	-0.0379	0.0069	0.1839	-0.4744	0.1646	0.1944	0.221	0.4834	-0.1505	1				
HHIbr	-0.248	-0.2548	0.0009	-0.2581	0.0616	-0.1171	-0.1278	0.0453	-0.2275	0.0916	-0.1806	1			
DEPPOP	0.9251	0.8033	0.002	-0.0235	-0.3999	0.0115	0.1542	0.1297	0.2826	0.0308	0.1933	-0.2809	1		
EXIT	0.0248	-0.0079	-0.0757	-0.0145	-0.0537	0.0552	0.1031	-0.0723	-0.0019	-0.0079	0.0184	-0.009	0.0218	1	
ENTRYOT	0.0298	-0.0027	0.0693	-0.0065	-0.0807	0.0789	0.0579	0.0371	0.0675	0.0078	0.0829	-0.0237	0.0424	0.1823	1

For the description of the variables see Table A1.

TABLE A2b - Correlation matrix (2009-2012)

	BCCLOAN	BCCBR	HMTI	GDP	UNRATE	DENS	EDU	FSIZE	PATENT	INFRA	OPEN	HHIbr	DEPPOP	EXIT	ENTRYOT
BCCLOAN	1														
BCCBR	0.8726	1													
HMTI	-0.0014	-0.0038	1												
GDP	-0.1507	-0.1434	0.0018	1											
UNRATE	-0.2918	-0.1044	-0.0104	-0.0981	1										
DENS	-0.0115	-0.0449	0.0122	0.2611	-0.1157	1									
EDU	0.0701	-0.0551	0.0045	0.1948	-0.4675	0.0641	1								
FSIZE	0.1406	0.0684	0.0086	0.2292	-0.5525	0.1048	0.1712	1							
PATENT	0.2095	0.0835	0.0108	0.2337	-0.6145	0.1678	0.2241	0.5126	1						
INFRA	0.0772	0.1183	-0.0036	-0.063	-0.2963	0.0083	0.1487	0.2296	0.0279	1					
OPEN	0.0978	0.0094	0.0076	0.106	-0.4999	0.1318	0.2353	0.4383	0.4482	0.0193	1				
HHIbr	-0.2397	-0.2332	-0.0012	-0.2523	0.0808	-0.1404	-0.0498	-0.0669	-0.2511	0.0444	-0.181	1			
DEPPOP	0.9258	0.818	0.0022	-0.0285	-0.4119	0.0205	0.127	0.2633	0.3424	0.1165	0.1693	-0.2854	1		
EXIT	-0.0206	-0.02	-0.0455	-0.0086	0.0092	0.0477	-0.0492	0.0322	-0.0014	-0.0188	0.0012	0.013	-0.0321	1	
ENTRYOT	0.0491	0.0157	-0.14	-0.0095	-0.0956	0.0688	0.0608	0.0658	0.0896	-0.0054	0.0833	-0.0343	0.0496	0.1939	1

For the description of the variables see Table A1.

TABLE A3. Mixed Tobit regressions (2003-2008 and 2009-2012)

	1	*2*	*3*	*4*
	2003-2008		**2009-2012**	
	BCCLOAN*HMTI	BCCBR*HMTI	BCCLOAN*HMTI	BCCBR*HMTI
BCCLOAN	0.0065**		0.0051	
	0.0333		*0.1454*	
BCCBR		0.0034		0.003
		0.2766		*0.3742*
HMTI	0.0173***	0.0175***	-0.0140**	-0.0169***
	0.0018	*0.0012*	*0.0198*	*0.0040*
INTBCCLOAN	0.0005		-0.0003	
	0.6984		*0.8278*	
INTBCCBR		0.0007		-0.0015
		0.6259		*0.3552*
GDP	0.0095***	0.0089***	0.0046**	0.0039*
	0.001	*0.0024*	*0.0322*	*0.0630*
UNRATE	-0.0016***	-0.0016***	-0.0001	-0.0001
	0.0013	*0.0017*	*0.827*	*0.8486*
DENS	-0.0008	-0.0009	0.002	0.002
	0.5807	*0.5668*	*0.279*	*0.2811*
EDU	0.0009	0.0009	-0.0016	-0.0014
	0.5213	*0.5413*	*0.1348*	*0.1774*
FSIZE	-0.0035	-0.0036	0.0045	0.0043
	0.3662	*0.3586*	*0.2101*	*0.2381*
PATENT	0.0042**	0.0041**	0.0056***	0.0056***
	0.0254	*0.0328*	*0.0012*	*0.0015*
INFRA	0.0006	0.0004	-0.0015	-0.0016
	0.681	*0.7765*	*0.194*	*0.1704*
OPEN	0.0002**	0.0002**	0.0001*	0.0001*
	0.0317	*0.0278*	*0.0686*	*0.0650*
HHIbr	-0.015	-0.009	-0.0694	-0.0808*
	0.7104	*0.8294*	*0.1216*	*0.0713*
DEPPOP	-0.0149*	-0.0054	-0.0099	-0.0045
	0.0736	*0.4332*	*0.1837*	*0.4955*
EXIT	0.0486**	0.0493**	-0.0299	-0.0295
	0.0173	*0.0159*	*0.1457*	*0.1514*
ENTRYOT	0.0846***	0.0844***	0.0753***	0.0760***
	0.0000	*0.0000*	*0.0011*	*0.001*
Observations	7,305	7,305	5,281	5,281
F-test (BCCLOAN, INTE)	5.093		2.119	
	0.0783		*0.3464*	
t-test (BCCLOAN+INTE)	2.2526		1.3337	
	0.0121		*0.0911*	
F-test (BCCBR, INTE)		1.67		1.383
		0.4337		*0.5006*
t-test (BCCBR+INTE)		1.283		0.42
		0.0996		*0.3369*

For the description of variables see Table A1. The dependent variable is always ENTRYLL. Superscripts ***, ** and * denote statistical significance at the 1, 5 and 10 percent level, respectively. The pvalues of the tests are given In italics. The standard errors (not reported) are robust to heteroskedasticity and autocorrelation. The statistical significance of the sums of random variables (BCCLOAN+INTE; BCCBR+INTE) is assessed by computing the relative standard errors. Years and sector dummies always included but not reported.

TABLE A4. Results using BCCASS (2003-2008 and 2009-2012)

	1	*2*	*3*	*4*	*5*	*6*
		2003-2008			**2009-2012**	
	Pooled	RE Tobit	MixedTobit	Pooled	RE Tobit	MixedTobit
BCCASS	0.0101***	0.0101***	0.0080***	0.0091***	0.0087***	0.0065**
	0.0000	*0.0000*	*0.0074*	*0.0001*	*0.0001*	*0.0387*
HMTI	0.0165***	0.0170**	0.0167***	-0.0143**	-0.0147**	-0.0139**
	0.0035	*0.0123*	*0.0025*	*0.0218*	*0.0291*	*0.0202*
INTBCCASS	0.0003	0.0004	0.0003	-0.0004	-0.0005	-0.0003
	0.8306	*0.8110*	*0.8146*	*0.7835*	*0.7809*	*0.8364*
GDP	0.0103***	0.0107***	0.0104***	0.0065***	0.0064***	0.0055**
	0.0000	*0.0000*	*0.0003*	*0.0000*	*0.0000*	*0.0124*
UNRATE	-0.0015***	-0.0015***	-0.0018***	-0.0002	-0.0002	-0.0002
	0.0000	*0.0000*	*0.0005*	*0.5967*	*0.5740*	*0.6755*
DENS	0.0026***	0.0026	-0.0007	0.0033***	0.0033*	0.0021
	0.0015	*0.1391*	*0.6307*	*0.0014*	*0.0938*	*0.2634*
EDU	0.0025***	0.0023***	0.001	-0.0007	-0.0008	-0.0014
	0.0006	*0.0038*	*0.4885*	*0.2536*	*0.2253*	*0.1837*
FSIZE	-0.0069***	-0.0063***	-0.0036	0.003	0.0034	0.0044
	0.003	*0.0066*	*0.3359*	*0.2296*	*0.1459*	*0.2103*
PATENT	0.0049***	0.0051***	0.0044**	0.0068***	0.0066***	0.0058***
	0.0001	*0.0001*	*0.02*	*0.0000*	*0.0000*	*0.0007*
INFRA	0.0007	0.0007	0.0007	-0.0008	-0.0009	-0.0014
	0.3547	*0.3475*	*0.6185*	*0.2771*	*0.2221*	*0.2401*
OPEN	0.0002***	0.0002***	0.0002**	0.0001	0.0001*	0.0001*
	0.0000	*0.0000*	*0.0162*	*0.1094*	*0.0682*	*0.0540*
HHIbr	0.019	0.0146	-0.0072	-0.0315	-0.0383	-0.0581
	0.4658	*0.5438*	*0.8578*	*0.3166*	*0.1947*	*0.1917*
DEPPOP	-0.0214***	-0.0221***	-0.0183**	-0.0157***	-0.0154***	-0.0126*
	0.0000	*0.0000*	*0.0254*	*0.0008*	*0.0006*	*0.0647*
EXIT	0.0677***	0.0644***	0.0483**	-0.0261	-0.0311	-0.0298
	0.0065	*0.0017*	*0.0181*	*0.2326*	*0.1304*	*0.1481*
ENTRYOT	0.1198***	0.0867***	0.0849***	0.0915***	0.0801***	0.0752***
	0.0000	*0.0000*	*0.0000*	*0.0010*	*0.0006*	*0.0011*
Observations	7,305	7,305	7,305	5,281	5,281	5,281
F-test (BCCASS, INTE)	23.134	35.97	7.644	7.9	17.027	4.297
	0.0000	*0.0000*	*0.0218*	*0.0003*	*0.0002*	*0.1166*
t-test (BCCASS+INTE)	6.312	5.448	2.733	3.609	3.55	1.917
	0.0000	*0.0000*	*0.0031*	*0.0001*	*0.0001*	*0.0275*
Wald test of exogeneity	2.957			1.063		
	0.4646			*0.5875*		
Amemiya-Lee-Newey Test	5.936			4.157		
	0.3125			*0.3852*		

For the description of variables see Table A1. The dependent variable is always ENTRYLL. Superscripts ***, ** and * denote statistical significance at the 1, 5 and 10 percent level, respectively. The pvalues of the tests are given In italics. The standard errors (not reported) are robust to heteroskedasticity and autocorrelation. The statistical significance of the sums of random variables (BCCASS+INTE) is assessed by computing the relative standard errors. Years and sector dummies always included but not reported. Wald test of exogeneity and Amemiya-Lee-Newey Test are obtained from the IV estimates, not reported in this table.

Figures A1-A3. Tobit results (2004-2008)

Figure A1 - BCCLOAN*HMTI

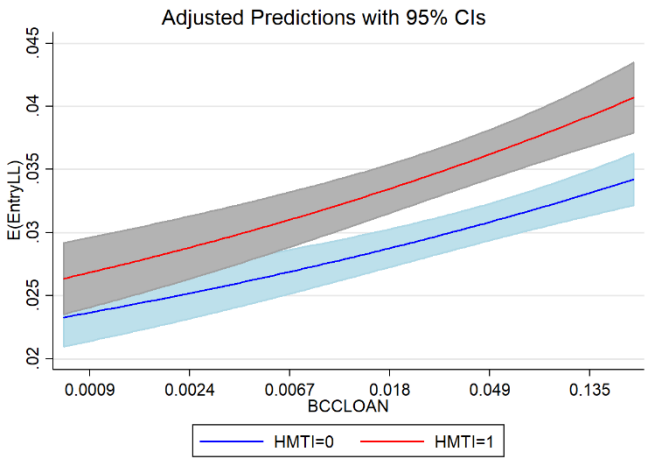


Figure A2 - BCCBR*HMTI

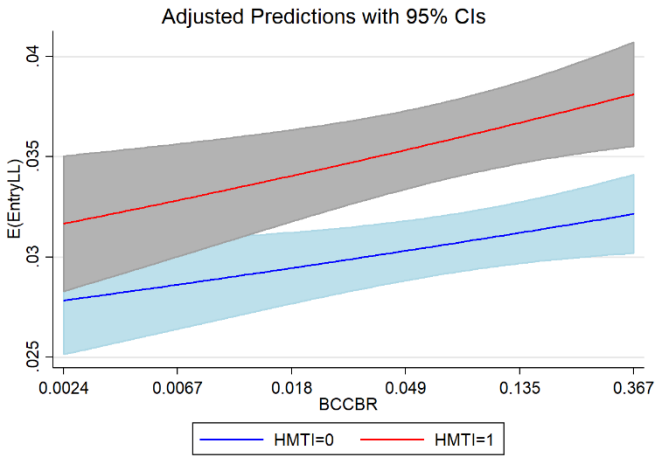
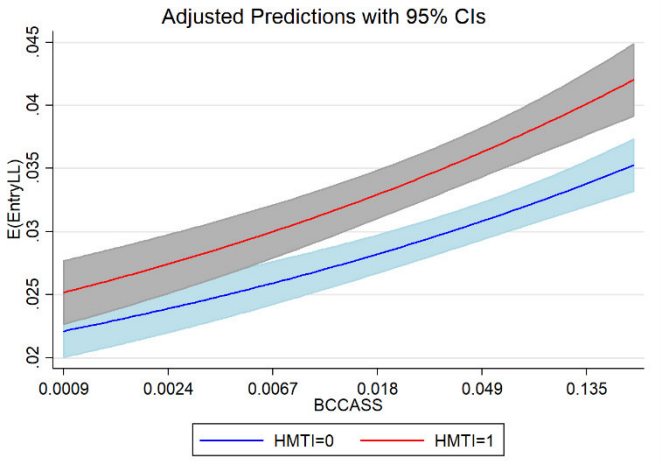


Figure A3 - BCCASS*HMTI



Figures A4-A6. Tobit results (2009-2012)

Figure A4 - BCCLOAN*HMTI

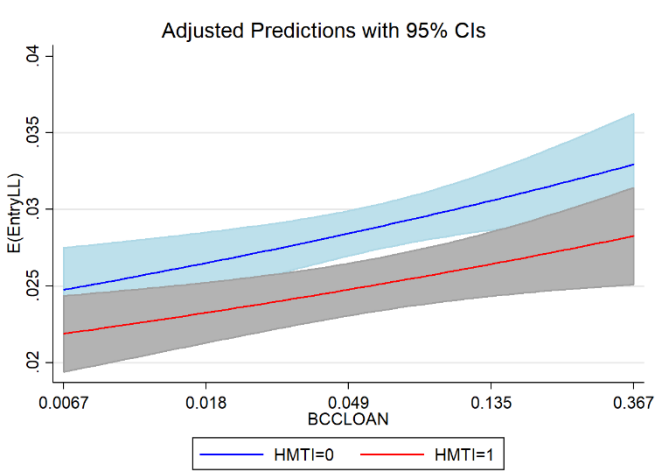


Figure A5 - BCCBR*HMTI

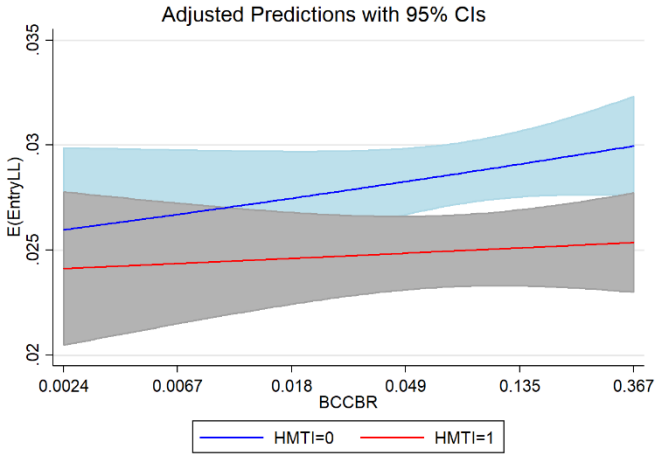


Figure A6 - BCCASS*HMTI