

# Technological Districts and the Financing of Innovation: Opportunities and Challenges for Local Banks

MASSIMO ARNONE\* – GIANLUCA FARINA† – MICHELE MODINA‡

*The paper deals with the role that local banks (especially credit cooperative banks) might play in financially supporting the development of technological districts and innovative firms. After introducing the concept and features of technological districts, it focuses on the relations between districts and local banks and between the adoption of innovation and local banking. The central part is an econometric exercise aimed at measuring the weight of high value financial services over the income of a sample of Italian credit cooperative banks. Taking into account the cultural, managerial and organizational requirements of local banks, the work provides insights into how this category of banks can promote innovative financial services to help the development of high-tech districts and maintain a competitive position in relation to the larger banks.*

(J.E.L.: G21, G24).

## 1. Introduction

The paper analyzes the role that local banks (especially credit cooperative banks—CCBs) might play in financially supporting the development of technological districts, and firms therein. In particular, the work highlights the main cultural and organizational difficulties that prevent local banks from competing with larger banks offering the highest value financial services, such as venture capital and private equity, in technology-intensive geographical areas.

The intangible nature of the factors leading to the development of technology districts and the lack of physical assets to be used as collateral for credit lines require a transformation of the traditional sources of funding. Intangible assets cause informational asymmetries between lender (bank) and borrower (the firm in the district) and, therefore, they necessitate

\*University of Palermo, Palermo, Italy. Resarch Fellow—ISSIRFA-CNR.  
E-mail: m.arnone@issirfa.cnr.it

†University of Bergamo, Bergamo, Italy. E-mail: gf2107@hotmail.com

‡University of Molise, Campobasso, Italy. E-mail: michele.modina@unimol.it

the search for new approaches and financial tools to handle the increased credit risk better.

Compared with other categories of banking intermediary, local banks can mitigate the effects of asymmetric information by leveraging greater territorial vocation that allows them to have a greater control of the territory and customers. However, this advantage is offset by the lower propensity of local banks to offer non-traditional services such as merchant banking services. The search for solutions that allow local banks to expand their supply without distorting their essence is the goal of this work that is structured as stated below.

The following paragraph provides a review of the literature related to innovation and bank districts, the relationship between districts and local banks and the financing of innovative firms. The third paragraph is devoted to the empirical analysis and aims to identify how the services of merchant banking and, in particular, private equity transactions contribute to the profitability of cooperative banks. Based on the results of the analysis, the fourth paragraph ends with some concluding remarks regarding the strategies that local banks can adopt to strengthen the role of higher value financial services.

## 2. Related Literature

### 2.1. *Regional Innovation and Technological Districts*

The systemic view of innovation has remote origins as demonstrated by the contributions of Schumpeter (1934), Piore and Sabel (1984), Becattini (1979, 1999), Rullani (1999) and evolutionary economists such as Nelson and Winter (1982), Dosi (1982), Teece *et al.* (1997). These works emphasize the importance within innovation on a regional basis of elements such as the primacy of small and medium-sized firms, the incremental nature of innovation projects and the achievement of greater variety and flexibility compared with large companies.

Lundwall (1992), Nelson and Rosenberg (1993), Lundwall and Johnson (1994), Malerba (2000), Becattini and Dei Ottati (2006), Crespi and Pianta (2007) also take aspects into account related to the external environment highlighting the impact of external economies of the district, the social dimension and the crucial role of learning processes.

These contributions anticipate the model of open innovation theorized by Chesebourge (2003) as opposed to the model of closed innovation hitherto dominant. Cooke (1998) argues that in order to create efficient high-tech poles it is necessary to abandon the linear, centralized, hierarchical model of innovation and move towards a non-linear decentralized, non-hierarchical model. In this context, Cooke defines a regional innovation system (RIS) as a system in which companies, along

with other organizations, are systematically engaged in a process of interactive learning within a specific territorial area. Three elements characterize a RIS: a) interactive learning in which knowledge is conceived as a collective heritage; b) the territorial system seen as an open and complex system involving rules, values, human and material resources; c) economic processes and knowledge that take place within and among enterprises.

The success of a RIS is based on the presence of strong cooperative relationships between all actors and on the interconnections of knowledge coming from both internal and external sources as claimed by Edquist (1997), Nelson and Rosenberg (1993), Cohen and Levinthal (1990), Granstrand *et al.* (1997), Andersson and Karlsson (2004). A second key aspect that characterizes the regional innovation is the spatial concentration of productive and innovative activities. Von Thunen (1826), Weber (1909), Marshall (1920), Christaller (1933), Losch (1940), Isard (1949) and Henderson (1974) resort to geographical factors to explain the genesis of industrial agglomerations.<sup>1</sup>

In the light of the external economy approach presented by Marshall, Krugman (1988, 1991) introduces the concept of agglomeration economies which exist under these conditions: a) the existence of a pool of skilled labor; b) upstream and downstream links of the value chain; c) cognitive spillover due to the greater ease with which the flow of information circulates over short distances rather than larger ones.

In technological districts the concept of intra-organizational innovation plays a key role. This expression defines the ability to enhance the knowledge of the tech-district by identifying the corresponding firm-specific paths of experimentation and interacting with other internal and external partners in the high-tech district. The ability to coordinate the various skills is core to the district's sustainable development and emphasizes the multifaceted nature of technological districts. The triple helix model of Etzkowitz and Leydesdorff (2000) is a useful tool for capturing the essence of technological districts. The theoretical model assumes that the growth of any local economic system is based on continuous interaction amongst three propellers (government, industry and universities) which interact with one another.

Lazzeroni (2004) and Schiavone (2008) emphasize two key aspects in the creation of high-tech poles: the mechanisms of agglomeration and the predominance of science-based sectors. Piccaluga (2003) and Varaldo (2006) point out that, compared with the industrial districts where

<sup>1</sup>Marshall (1920) used the term 'industrial districts' for the first time when referring to the textile and metallurgical mills of Lancashire and Sheffield. According to the British economist, small and medium enterprises of industrial districts were able to keep pace with technological change thanks to the presence of external economies resulting from the mixture of knowledge, values, behaviors and social institutions continually fueled by relationships of trust between businesses, employees and suppliers.

innovation is incremental, technological districts follow a radical innovation, which essentially consists of the incorporation of scientific knowledge into new products or devices. Therefore, the success of technological districts requires the presence in the same territory of actors who produce knowledge (such as universities and research centers) and those who instead benefit from this knowledge.

According to Porter (1998) the technological districts are a geographic concentration of interconnected companies and institutions in a particular field. The geographical proximity makes the supply of inputs convenient (lower transaction costs) and accelerates the production process more quickly thanks to the presence of face-to-face relationships based on trust. Porter includes both the vertical extent of the activities (i.e. distribution channels and customers) and the horizontal extension (i.e. the interconnection between knowledge, technology and common inputs).

For Manskell (2002) the geographical proximity alone is not sufficient to ensure the development of a technological district. If it promotes the sharing and exchange of knowledge and information, the development of the district requires the presence of a structure of government that carries out coordination functions. In this context, Bonaccorsi and Nesci (2006) highlight the 'reservoirs of skills' as the success key, while Cooke and Huggins (2001) muse on the role played by universities, research centres and institutions.

In spite of the name, technological districts are rather different from traditional industrial districts: the latter are born spontaneously by agglomeration of (small) firms in a specific area; technological districts stem from a more recent and usually rapid process, often with a strong catalyst agent, private or public (top-down set-up). While industrial districts come from below, that is, from the local socio-economic context in which they are inserted and the willingness of companies to establish a network (Becattini, 1979; Baccarani and Golinelli, 1993), the formation of tech-clusters is both a result of public investment or the location of a large high-tech enterprise that acts as a bridging institution (Boari and Lipparini, 1999; Lofsten and Lindelof, 2002; Bresnahan *et al.*, 2005). In many cases, they bring together firms without a strict spatial correlation, with one or more big firms acting as hub of the innovation processes (Bertamino *et al.*, 2013). If industrial districts do not have special links with research centres, technological districts form around scientific centres of excellence which help to transfer research results to the industrial system. For this reason they tend more to open outwards beyond the boundaries of their territorial base through internationalization policies.

## 2.2. Districts and Local Banks

The features distinguishing the different concepts of industrial and technological districts are key to understand if and how the role of local

banks in industrial districts can be assumed to be also valid as far as tech-districts are concerned.

Compared to national banks, local banks have played an important role in the development of Italian industrial districts. As pointed out by Fortis (2008); the support of local banks in the development of Italian districts has been crucial. The direct knowledge of the entrepreneur and of his personal and professional history, the proximity of decision centers and the reflections of a set of social interactions have made it possible to reduce the opacity of information that characterizes the relationship between borrower and lender. In this context, the local bank acquires a competitive advantage over larger credit intermediaries and other financial intermediaries (venture capital and private equity operators).

The intense relationship between the bank and the operating area, of which the district is an expression, allows the bank to collect *soft information* which is instrumental in strengthening the credit process thanks to the peer monitoring (Stiglitz, 1990). If a firm adopts unorthodox financial behavior, such conduct may result in negative repercussions on other firms in the district that could suffer a credit crunch for reasons not directly attributable to them. It follows that the members of the district are encouraged to monitor each other to ensure that the quality of their projects is perceived by lenders to be high and not subject to negative externalities.

In addition to peer monitoring, other factors have favoured the higher affinity between local banks and districts that, in some cases, is one of the few real applications of relationship banking.<sup>2</sup>

During the development of traditional districts, financial needs can be met by simple technical forms (often accompanied by personal guarantees given by the entrepreneur). These instruments do not require complex contractual clauses and do not require an active role on the part of the lender (Petersen and Rajan, 2004). At the same time, banks with greater territorial vocation seem more willing to lend on the basis of information gathered from an informal knowledge of the company. While not codified, the soft information fits easily into the creditworthiness process due to the physical proximity between the bank's decision-making center and the point of information collection (branch). The absence of pyramidal structures, typical of the largest banks, and the less stringent operational processes enable the local bank to be more effective in serving the needs of the district's member.

<sup>2</sup>Literature tends to classify the modes of interaction between banks and businesses in two ways: the model of relationship banking and the one of transactional banking. In the first, the frequency and intensity of the relationship between banks and firms allow the collection of private information which is used in the granting of the loan and its economic conditions (Elsas, 2005). In the transaction-based model the credit decision is typically public information and the loan has a specific time and purpose (Boot *et al.*, 2000). For a discussion see Bongini *et al.* (2009) and Modena (2010).

The transformation of the industrial system, the removal of geographic barriers and the growing importance of technological change have altered the characteristics of the districts so far known. The evolution of clusters does not follow a linear path, but takes on new forms which vary depending on the interaction with research centers and the degree of openness to the outside world. This causes a change in the financing needs of firms belonging to districts that is accompanied by an increase in the possibility of failure. It is essential to identify new forms of support (more extensive and flexible than those used so far) and to increase the ability of lenders to identify the long-term success factors of businesses and districts.

The crisis is the third element that redesigns the intensity and duration of the relationship between business, bank and territory. The crisis generates structural fractures that affect the competitive dynamics and make the conditions for accessing the credit market more stringent. The deterioration in the quality of the loan, the pressure on bank capital and the weak economic conditions of the borrower produce a negative impact both on the demand and on the supply side.

In this scenario of uncertainty, local banks have three distinctive elements. In times of economic stress, the smaller geographical diversification of the loan portfolio tends to be reflected in a greater concentration of credit risk. Conversely, the smaller size of the bank tends to mitigate dependence on macroeconomic factors in favour of specific factors of competitiveness (credit selection capacity, better management of soft information, a more intense customer relationship). Likewise, the greater allocation and quality of the asset, which local banks traditionally enjoy, is strategically relevant considering the importance of bank capital as a critical factor for success in the coming years.<sup>3</sup>

However, these elements may not be sufficient to ensure that the local bank maintains the role of promoter of well-being and development in the territory. To continue to support the local economy and the districts, local banks must leverage their key-success factors and develop the ability to read in good time the competitive paradigm that explains the success of businesses. The local bank that wants to continue to act as the engine of the districts must strive for excellence in customer relationships and adopt forward-looking assessment tools (which further enhance the role of soft information) in order to align its credit value proposition to the new needs expressed by districts, especially the technological ones.

<sup>3</sup>As is known, in a commercial bank the capital provided by shareholders allows banks to take the risks inherent in the banking business against which management must produce an adequate return on capital. Since capital is an expensive and limited resource, its scope must be properly managed to find the optimal combination of risk and return. Local banks and, in particular cooperative ones, are not subject to constraints of remuneration. In fact, the amount of capital is generally higher in the co-operative banks because it reflects both the more prudent exercise of banking and the specific regulations related to the principles of mutuality and localism. For a cooperative bank, capital is not so much a factor of remuneration as a dowry generations that is accumulated over time to be transmitted in the future (Fonteyne, 2007).

### 2.3. *The Financing of Innovative Firms*

Focussing on financial support of local banks (and especially credite cooperative banks) to innovation and tech-districts requests to regard the more general topic of the financing of innovative firms from the part of banks, and especially small banks.

New firms and firms undertaking innovation activities face bigger issues in obtaining external financial sources due to increased asymmetric information and moral hazard effects (Acs and Audretsch, 1990). The levels of difficulty and the range of possible solutions will differ in order of the typology of borrower: the problems of existing innovating firms in acquiring sufficient funds for their investments, the reluctance of non-innovators to undertake innovation due to its high cost, and the problems faced by new start-up firms. All of these difficulties arise from the same cause: the nature and the characteristics of innovation and high-tech investments (Hall, 2010).

Investment in innovation usually consists of research and development spending (R&D), design and marketing expenses for bringing a new product to market, investment in the necessary new capital equipment, and investment in training. Three are the main features that make different innovation investments from ordinary ones: a) the bigger portion of R&D costs consists of wages and salaries for high-skilled employees; b) there is an high degree of uncertainty and information about innovation investment arrives over time; c) the innovation output has typically an intangible nature (Hall, 2010).

Some literature, also referred to the Italian markets, suggests that local small banks could be less prone to finance innovation, due to their strict and long-lasting links with local traditional firms, to the willingness to (implicitly) protect existing customer firms from new entrepreneurship, to the lack of specific knowledge about the most innovative sectors (Alessandrini *et al.*, 2008a, 2008b, 2009). On the other hand, recent research suggests that long bank-firm relationships lower the financial constraints of small firms, thus fostering the innovation process (Herrera and Minetti, 2007; Alessandrini *et al.*, 2008a; Micucci and Rossi, 2013); therefore, small banks can exploit to this end the usually longer relationships with their customers.

## 3. EMPIRICAL STUDIES

In this section we provide results of two empirical studies performed.

### 3.1. *Dimensional Factors in the Choices of Financial Diversification of Italian CCBs*

The first empirical study is an analysis of the distribution of financial ratios of CCBs (grouped in quantiles). Thanks to the

availability of the ordered time series of financial ratios for all investigated period, this analysis allows a time comparison on the performance of smaller CCBs (which have lower values of the ratios), average CCBs and larger CCBs (which have the highest values of the ratios).

No adjustment was applied to even out the composition of the sample by eliminating the CCB subject to operations of bank mergers over time. In this way, the results take into account the higher dimensional growth caused by the process of banking concentration.

The distribution by quartiles of the first indicator of profitability (R1) shows a clear preference of CCBs, including the smallest ones (i.e. the ones in the 1st quartile) for the adoption of business models that focus on the traditional corporate lending. The differences with the values found for banking groups have declined since 2009 for smaller banks as they have suffered more for the competition with large banks (7502 percent before the crisis down to 6761 percent in 2011, with an overall decline of  $-17$  percentage points). For their part, the banking groups reveal lower values of this indicator of profitability, confirming their greater profitability by diversifying sources of income in the securities brokerage. The presence of lower intermediation margins for CCBs can be traced to their particular governance (mutuality and participatory nature). In fact, it leads to a lower propensity of banks to exploit their market power towards shareholders, customers and other stakeholders. In contrast, large banks, in recent years, have become more biased in favour of consulting business, securities trading, derivatives dealing and other financial activities within the sector of corporate banking (Mazzoli, 2011). The recent years seem to have caused a slowdown in the profitability of all Italian CCBs whatever their size. The largest CCBs (i.e. the 4th quartile), thanks to a faster recovery in 2010 compared to CCBs belonging to other size classes, have suffered a minor percentage contraction of their profits linked to the traditional credit intermediation, passing from an incidence of 90,77 percent before the crisis to 8790 percent in 2011 (a decrease of  $-9$  percentage points). The CCBs of 2nd quartile pass from 8115 percent in 2006 to 7665 percent (with a reduction of about  $-14$  percentage points), and finally the CCBs of the 3rd quartile pass from 8431 percent in 2006 to 80 percent (a decrease of  $-11$  percentage points) (Table 1).

The distribution by quartiles of the second indicator of profitability (R2) shows that the risk of revenues erosion linked to the brokerage securities due to the particularly onerous management costs is a danger of lower intensity for smaller CCBs (1st and 2nd quartile) compared to banking groups, while for the larger CCBs (3rd and 4th quartile) the same effect is strongest. These two latter size classes of CCBs, during the



Table 1: The Profitability Ratios

	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile	Groups
Year	R1 <sub>CCB</sub> *	R1 <sub>CCB</sub> *	R1 <sub>CCB</sub> *	R1 <sub>CCB</sub> *	R1
2006	75.02	81.15	84.31	90.77	59.03
2007	76.10	82.69	84.81	93.45	61.32
2008	79.07	84.07	86.81	92.74	73.54
2009	66.55	72.97	76.92	81.70	62.29
2010	67.61	74.31	78.45	89.88	60.48
2011	61.98	76.65	80.00	87.90	61.15
Year	R2 <sub>CCB</sub> *	R2 <sub>CCB</sub> *	R2 <sub>CCB</sub> *	R2 <sub>CCB</sub> *	R2
2006	53.01	60.99	66.35	85.46	58.06
2007	50.57	58.03	63.45	87.24	66.13
2008	53.80	62.60	68.33	85.31	73.33
2009	60.13	67.30	76.02	88.92	58.86
2010	63.51	72.52	79.26	103.10	64.18
2011	53.20	69.63	75.35	97.18	64.19

R1: Interest margin on brokerage margin. Average values for classes quartiles.

R2: Cost to income ratio. Average values for classes quartiles.

Elaboration on data from Federcasse.

considered period (2006–2011), have higher values of the cost-to-income ratio than the major Italian banking groups.

In particular, the smallest CCBs (1st quartile) have benefited from a greater stability of the management costs equal passing from a value of 5301 percent, immediately prior to the international crisis, to a value of 5320 percent in 2011. For all other classes of CCBs, the values of the cost-to-income ratio differed by more than 10 percentage points from the pre-crisis values. This higher percentage of this incidence of management costs can be attributed to the growth strategy that the largest CCBs have implemented centered on strengthening their distribution network. This development has caused, in according with management policies adopted by the CCBs, an acceleration in the growth of the staff in order to get the best information about the community, the region and the local economy.<sup>4</sup> Nevertheless, confirming the preference of the local banks in favour of traditional business models focused on families and small businesses, the intermediated funds per employee and per branch remained below the average level of the competitors over the past few years.

<sup>4</sup>In this regard, Carretta (2011) argues that ‘single-cell’ banks are in fact almost non-existent, except for those newly formed, and the average structure of a CCB now has 10 branches and over 70 employees.

### 3.2. *Local Banks and Innovative Finance: An Empirical Analysis*

This section analyses whether cooperative credit banks have been able to grasp the challenge of innovation (not just financial) that has become an indispensable condition as a result of the international crisis.

The decision to focus on cooperative banks may be justified by the evidence that territorial factors have a rather significant weight on the genesis and also on the normal operation of any technology district. Among these factors, we remember the concentration of high-tech firms with a strong potential for innovation, the geographical and relational proximity and the services of financial advisory to support their growth. For these reasons, we believe that cooperative banks may assume the role of privileged interlocutor for firms specializing in ‘science-based’ sectors, such as the firms within the technological districts.

CCBs have been compared with large banks that assume the organizational structure of banking groups. We have chosen to make this comparison since these banking groups have in common with local banks a strong propensity to assume the operational identity of the commercial bank. This finding is further confirmed by the statistics for the first half of 2013 produced by the Observatory European Banking Report (EBR) of the Italian Banking Association (ABI). According to these data, the major Italian banking groups, despite the difficult economic environment, link their performance to retail funding and disbursement of loans to households and businesses, unlike their main European competitors (that are more active on the front of investments). In particular, the equity structure of the major banking groups has the following features:

- loans to the private sector account for over 60 percent of total assets against a European average of 38.5 percent (30 percent for French, German and English groups);
- direct deposits exceeds more than 61 percent of liabilities compared to a European average of around 49 percent (around 40 percent for French and German groups)

In 2011, the last year for which financial statements related to the whole universe of credit cooperative banks in Italy is available, the capital structure of the CCBs had the following features:

- loans to customers to customers represent over 72 percent of total assets. In particular, this effect has not slowed down despite the economic downturn (Arnone *et al.*, 2013)
- direct funding is more than 76 percent of liabilities. Even for CCB direct deposits has been stable in the years immediately following to the outbreak of the international crisis (Arnone *et al.*, 2013).

The data given above are perfectly consistent with that part of literature which, through the empirical analysis, aims at verifying the existence of a statistically significant correlation between certain factors such as the size, competition, governance, organization, function risk management, the application of ICT credit scoring and the riskiness of Italian banks.

The empirical analyzes focuses on the period 2006–2011 which includes the years straddling the two phases of the international crisis, the financial (2006–2008) and greater structural strength (2009–2011). We will propose a comparison between the CCBs and banking groups on the basis of differences in their organization and size.

### 3.2.1. *The Sample*

We take as object 14 Italian banking groups among those that, according to the classification proposed by the ABI, are dimensionally larger and have produced the most of income flows.

This sample represents approximately 59 percent of the universe of banks operating in late 2012. At this date, the investigated banking groups, in increasing order of their market share, are: Banca Marche, Banca Sella, Banca Popolare Emilia Romagna, Banca Popolare di Milano, Banca Popolare di Sondrio, Banca Popolare di Vicenza, Carige, Credem, Credito Valtellinese, Intesa Sanpaolo, Monte Paschi di Siena, UBI, Unicredit.

The observed CCBs are 143 and represent about 34 percent of the universe of CCBs in 2006 and 35 percent in 2012.

These banks were selected using two criteria. First, we excluded from the universe of cooperative credit the banks which, during the period investigated, have been the subject of merger and acquisition. Secondly, we considered only those banks for which we had the availability of financial statements complete with the notes containing the information required for the construction of the explanatory variables in the empirical model estimated. This last criterion was also used for the selection of the major Italian banking groups.

With reference to their geographical location, we considered CCBs both in the Centre/North and in South Italy and we covered all those regions where there are success technological districts and where dynamic risk capital market is consolidated (such as Lombardy, Emilia Romagna, Piedmont, Veneto, Lazio and Tuscany in central and northern Italy). The sample represents 71 percent of the universe of cooperative located in the Centre/North Italy and 30 percent in southern Italy.

Among the regions of central/northern Italy, the region of Lombardy is marked by the largest number of cooperative banks (25), while in the southern regions, Sicily stands out (20).

On the basis of market data contained in the Venture Capital Monitor by AIFI in 2011, almost 50 percent of the venture capital market is centered in

Lombardy and Tuscany. In particular, Lombardy confirms to be the market leader with 28 percent, while Tuscany (which sees tripling operations on its territory compared to 2010) recorded a significant forward leap in the investment activity with 21 percent. Another noteworthy phenomenon is the 30 percent threshold reached by southern Italy, now growing steadily for several years (15 percent in 2009, 16 percent in 2010).

The financial sector placed under observation is the merchant banking sector because it is the most representative of the market risk capital.

### 3.2.2. *The Model*

In order to monitor the level of diffusion of innovative finance transactions between the cooperative credit banks, we chose to estimate a panel model as it allows to monitor different units of observation (i.e. the 157 banks) at different instants of time as opposed to other approaches (e.g. the classic model OLS—Ordinary Least Squares). Among a panel model with fixed effects (or fixed effect estimator or within) and the random-effects (or random effects that takes into account the between component), we opted for the first, since the main objective is not to determine if there are significant differences in the approach to advanced financial services among individual banks (namely the component between), but if there are differences between the two different organizational models of banking intermediaries, that is, CCBs and banking groups in terms of a greater or lesser financial diversification of their supply model. These differences between the two categories of banking intermediaries investigated can be caused, for example, by the incidence of intangible factors related to the quality of bank management, the presence/absence of a portfolio of skills that Forestieri (2011) distinguishes between basic technical skills (tax, legal, technological and industrial skills), technical skills (industrial, macroeconomic, financial, accounting, mathematics, statistics, computer and legal), experience-related skills, relational skills and finally managerial skills.

Since we did not have a proxy to monitor each of these skills, it was decided to treat the quality of the management of the bank and each of these abilities as the individual effects, like unknown constants ( $a_i$ ) of a generic panel model with fixed effects. These individual effects represent the intercept of a fixed-effects panel model and vary from one observation to another:

$$y_{it} = a_i + X'_{it}\beta + \varepsilon_{it}$$

They vary for each of the 157 banks that are part of the sample and therefore, can not be considered as random variables that are the result of a random draw from a below population.

The lack of information on intangible assets of local banks is solved by using a fixed effects estimator (or within estimator) because this estimate can be obtained by estimating a regression in which each variable assume the form of the corresponding deviations from the average individual.

Through this pre-processing of the variables (both dependent and explanatory variables), the individual effects are eliminated:

$$y_{it} - \bar{y}_i(x_{it} - \bar{x}_i)' \beta + (\varepsilon_{it} - \bar{\varepsilon}_i)$$

The OLS estimator obtained on each of the coefficients of the panel model transformed formally assumes the following expression:

$$\beta_{FE} = \left[ \sum_{i=1}^N \sum_{t=1}^T (x_{it} - \bar{x}_i)(x_{it} - \bar{x}_i)'\right]^{-1} \sum_{i=1}^N \sum_{t=1}^T (x_{it} - \bar{x}_i)(y_{it} - \bar{y}_i)$$

The model aims to evaluate the relationship between a dependent variable indicative of profitability composition of local banks and the independent variables, established through the breakdown of the economic 'net revenues from services' using the information contained in the bank's balance sheet and in the notes. As proposed by Capizzi (2007) the economic aggregate 'net revenues' is broken down into a series of subheadings that can bring the range of products and services offered to customers: (1) investment services, (2) financial advisory services, (3) merchant banking services, (4) securities trading for own account. Given the purposes of this paper, it was decided to dwell exclusively on the third class of products. Taking advantage of this breakdown of net revenues, it is possible to ask whether, in the years of the global crisis, the cooperative banks have expanded or not the ability to diversify their supply model. In other words, if the profitability of the cooperative banks, when compared to that of large banks, is more influenced by the traditional credit intermediation or rather by the brokerage securities.

### 3.2.3. Variables and Expected Signs

All explanatory variables in the model are expressed as a percentage of net revenues from services.

The dependent variable, expressing bank profitability, is constructed as the ratio of net interest income and operating income. It assesses the ability of the bank to offset the lower contribution from money management with the larger contribution from the services. This ratio expresses, in essence, a measure of how the process of wealth creation of the bank depends on the activity of traditional credit intermediation. The reciprocal of this indicator summarizes the contribution to profitability by the high value added

brokerage services: in the presence of a constant interest margin, higher values suggest a greater ability of the bank to generate gross profitability through the brokerage.

In general, the merchant banking segment includes the acquisition of investments in venture capital firms, the provision of loans, the funding operations and the provision of financial services as main types of activities.

The explanatory variables mainly relate to financial transactions on equities, debt securities and bonds; especially with reference to the collection side, the financial statements of merchant banks typically indicate a strong component represented by securities.

Table 2 shows the explanatory variables of the estimated panel model, including their analytical form and the references of the parts of the notes used in their construction.

The first variable (TDRS) provides information on the contribution of the purchase and sale of bond which are the main methods used for financing operations by general merchant banks. The dynamics of this variable provides guidance on one of the typical activities carried out as part of merchant banking through the subscription of convertible or not bonds<sup>5</sup> (Table 3).

The second variable (TCRS) provides information on the percentage average incidence of financial assets available for sales. It focus on the contribution made by the merchant banking through the acquisition of investments in the social capital of funded firms.

The third variable (CFRS) provides information on the percentage average incidence of commissions generated by the use of financial covenants, that is, clauses which guarantee the right to redeem shares in case of non achievement of preset economic-financial objectives.

The last variable (DRS) provides a measurement of the percentage average impact of the financial assets and, in particular, of the dividends arising from participating interests in firms.

<sup>5</sup>The convertible bonds have the advantage of facilitating the monitoring of the performance management of the target company for a certain period of time and make the decision to enter the social governance of the firms after evaluating such investment as rewarding opportunity. In addition, the bonds having as main characteristic the duration namely the fact to facilitate the provision of financial resources in the medium/long term (thereby ensuring a more effective management of liquidity risk) also allow you to achieve balance sheet instrumental to the achievement of 'balance of income (or loss). These equilibrium conditions are also crucial for the survival of a merchant bank (and not just for the traditional intermediary bank). Therefore, the greater or lesser incidence of bond on the intermediary's ability to generate profit, it may help to express some considerations on a third type of merchant banking namely the provision of ancillary services of a financial nature. In this category you can include organizing pooled for the placement of bonds and capital increases, the accompaniment to listing on regulated markets, the search for funding for equity investments, consulting for the organization of OPA, advice for treasury management and foreign policy, the search for partners (all services that assume a certain importance in M&A).

Table 2: The Explanatory Variables of the Estimated Model

Type of operation merchant banking	Proxy variable	Expected sign	Analytical expression (%)*	Sections of the notes
Operation funding	TDRS	+	Bonded debts/Revenues from services	Part C - Section 4- Item 80
Acquisition of investments	TCRS	+	Equities/Revenues from services	Part C - Section 4- Item 80
Financial covenants	CFRS	+	Guarantees/Revenues from services	Part B – Other informations
Dividends	DFRS	+	Dividends /Revenues from services	Part C - Section 3 - Item 70

Source: Our elaboration. \*All variables are expressed as a percentage of net revenues from services.

On top of these variables, dummy variables (Bank) have been added that were crossed with each of the defined above explanatory variables in order to discriminate the two organizational models of intermediary bank placed under observation. In this way, we tried to isolate and estimate the impact of organizational differences on profitability, taking due account of the specific strengths and weaknesses of the local banks in relation to banking groups included in the study.

Moreover, this discrimination has made it possible to take into account another peculiarity of CCB. In accordance with the local logic that mark the identity of ‘*Relationship Banks*’ typical of CCBs, the operations of these banks has been directed primarily towards a customer base composed primarily of small firms (i.e. with less than 50 employees). This evidence is confirmed by the contributions of EURICSE (2011), Bresolin *et al.* (2012) that analyze the totality of the CCBs in Italy. In this sense, the trading of

Table 3: Analysis 1—First Step

Dependent variable: Profitability <sup>a</sup>			
Explanatory variables	Estimates (β)	Standard Error	t-ratio
TDRS <sub>CCBs</sub>	0.0000877	0.0018409	0.05
TDRS <sub>Groups</sub>	−0.0010616*	0.0004807	−2.21
TCRS <sub>CCBs</sub>	0.0002613	0.0321711	0.01
TCRS <sub>Groups</sub>	−0.0231633*	0.0044287	−5.23
CFRS <sub>CCBs</sub>	−0.0007864	0.0056945	−0.14
CFRS <sub>Groups</sub>	0.0033859*	0.0006061	5.59
DFRS <sub>CCBs</sub>	0.2259713	1.514215	0.15
DFRS <sub>Groups</sub>	0.0738016*	0.0135193	5.46
COSTANT	6.243097	0.091343	68.35

<sup>a</sup>The dependent variable is the ratio interest margin and brokerage margin.

\*The values are significant at a confidence level α of 5%.

bonds and equity securities are treated as merchant banking activities and not, as for larger banks, as finance and capital markets activities.

Delayed time dummy variables, considered as independent explanatory variables or multiplied with the other variables of the model, were not included because it is believed they would not have added information to the purposes of the analysis. The analysis, moreover, does not try to verify whether the ability to diversify its supply by the individual CCBs has changed from year to year and even if there was a certain persistence in the level of profitability of these banks (as measured by the lag of the variable dependent).

Another reason for which have not been included temporal explanatory variables in the panel model is that, given the specific nature of its activities, the assessment of management profile of any merchant bank can not be separated from timing differences in the cycle of acquisition and cessation of the investments. Such differences are caused by the trend of economy, of the managerial skills, and above all by the operational strategies adopted by the merchant bank. Therefore an analysis of the temporal evolution of the main economic aggregates would have had a little value for our purposes.

With reference to the direction of the relationship between the dependent variable and the explanatory variables of the model, a positive sign of the variable TDRS indicates an increase in the available liquidity for banks that also allows them to be able to achieve higher levels of profitability by carrying out the credit intermediation activities. This is because, as pointed out by Ruozi (2011); the asset, economic and financial balances of any intermediary bank are to be analyzed in a systemic perspective. Conversely the presence of a negative sign.

A positive sign of the variables TCRS and DFRS indicates that the investments made by the bank in equity securities and participating interests in non financial firms have produced economic returns in order to reach a financial balance function to a higher level of profitability (income balance). In other words, the increase of revenues from services resulting from the assumption of equity interests in the capital of non financial firms allow an enlargement of portfolio (which in the thinking of Ferrari *et al.* (2005) is composed of only two activities: interest margin and net revenues from services) and thus the wealth produced by the bank is to be attributed more to the brokerage and less than traditional lending.

A positive sign of the variable CFRS is an indication that an increase of real and financial covenants accompanying the credits guarantees greater security of equity investment. This increase may produce significant economic returns for the bank that begin to operate even more in the business of brokerage securities, and not only in the traditional corporate lending. A greater use of collateral may in fact allow CCBs to accept a



higher credit risk because they would face significant losses in the event that the loans would not be paid (Del Prete *et al.*, 2013).

3.2.4. *Mathematical Formulation*

The first panel model is given by the following:

$$Profitability = \sum_{i=1}^{157} \beta_i * Bank + \varepsilon_{it}$$

In more extended form:

$$\begin{aligned}
 Profitability = & \beta_1 + \beta_1 \sum_{i=1}^{157} \sum_{t=2006}^{2011} TDRS_{it} * Bank \\
 & + \beta_2 \sum_{i=1}^{157} \sum_{t=2006}^{2011} TCRS_{it} * Bank + \beta_3 \sum_{i=1}^{157} \sum_{t=2006}^{2011} CFRS_{it} * Bank \\
 & + \beta_4 \sum_{i=1}^{157} \sum_{t=2006}^{2011} DRS_{it} * Bank + e_{it}
 \end{aligned}$$

To fully answer our research questions, we also considered an extension of this model obtained by including dummy variables according to the CCB classification for quartiles (that were multiplied with each of the explanatory variables). In this way we have tried to capture the effects of differences in bank size on its propensity to invest in financial innovation.

According to these changes, the second panel model takes the following formalization:

$$Profitability = \sum_{i=1}^{157} \beta_i * Size + \varepsilon_{it}$$

In more extended form:

$$\begin{aligned}
 Profitability = & \beta_1 + \beta_1 \sum_{i=1}^{157} \sum_{t=2006}^{2011} TDRS_{it} * Size \\
 mo > & + \beta_2 \sum_{i=1}^{157} \sum_{t=2006}^{2011} TCRS_{it} * Bank + \beta_3 \sum_{i=1}^{157} \sum_{t=2006}^{2011} CFRS_{it} * Size \\
 & + \beta_4 \sum_{i=1}^{157} \sum_{t=2006}^{2011} DRS_{it} * Size + e_{it}
 \end{aligned}$$

#### 4. Results

The dataset consists of 4710 observations as five variables for each of the six years considered (2006–2011) were monitored for each of the 157 sampled banks. The relationship between each explanatory variable and each dependent variable is observed through both statistical and economic interpretation.

With reference to each of the explanatory variables, it was possible to detect the differences of the behavior between the two types of banking intermediaries.

The results obtained for the first explanatory variable (TDRS) show that only banking groups have relied on the sale of bonded debts in order to increase their levels of economic performance. At a confidence level  $\alpha$  of 5 percent, the coefficients estimated for this first explanatory variable differ significantly from zero. The negative signs, in relation to banking groups, may indicate that the bonded debts have suffered impairment as the underlying firm receiving the loan proved unable to fulfill its commitments towards the intermediary. In other words, these bonds have been marked by an increased risk of default that has caused an erosion of profit margins of large banks.

With regard to the second variable (TCRS), results shows that only banking groups seem to pay more attention to profitability of management services (i.e. the components of brokerage margin) rather than the profitability of money management (i.e. the components of interest margin). The p-value associated with the beta coefficients are estimated to be less than the confidence level  $\alpha$  (5 percent), thus prompting the rejection of the null hypothesis. These results are fully consistent with the conclusions of Tutino *et al.* (2012).

Regarding the third set of variables (CFRS), again large banks differentiate from small banks as they show values significantly different from zero. The p-value associated with the estimated coefficients for each of the explanatory variables of the model are lower than the confidence level of 5 percent, confirming a stronger ability to diversify its supply model and then the shape of the profitability of the largest banks. The standard error is less than half of its estimated coefficients, within the region of rejection of the null hypothesis. The banking groups show a preference for receiving collateral for lending rather than resort to other mechanisms for the protection of investments such as the ability to play an active part in the appointment of the management, the right to appoint one or more members on the Board of Administration of the company or even the use of contractual clauses that do not qualify as financial covenants. The lack of significance of this variable for CCBs may be associated with a marginal diversification of customers, privileging through the provision of credit the SMEs that are characterized by higher information opacity.

The positive signs associated with the variable CFRS for CCBs might be explained by the ability of local banks, even in presence of a less transparent customer, to obtain the foreseen remuneration at the time which the loans were granted in reliance on the assets of the firm. In other words, the local banks have managed to minimize the risk of a decline in the assets of the target firm receiving the loan. In the case of large banks, the negative signs associated with this variable, however, may be traced to the presence of a failure to repay the bondholders.

With reference to the last variable (DRS), the contributions of financial assets available for sale and investments in the form of coupons and dividends appear rather marginal for cooperative credit banks. With a p-value of 5 percent, the estimated coefficients are not in fact significantly different from zero. The associated standard error is greater than half the value of the estimated coefficients leading to low values of t-Student. Unlike the negative sign of the variable TCRS for banking groups, this variable has a positive sign, indicating that the large banks have been able to meet the objective of the remuneration of associated dividends with participating interests and capital gains.

The inclusion of the dimensional variables brought results that are similar to the ones just outlined. We continue to get statistically significant results only for banking groups. This confirms that the size factor can be interpreted as an inhibiting factor the propensity of local banks to invest in financial innovation (Table 4).

## 5. Conclusions

The end of the last decade has produced important effects on the real and financial economy and on the relationship between banks and companies. The greater pressures from competition have made small and medium-sized Italian companies much more fragile on international markets, especially in the manufacturing sectors. In this macroeconomic environment, activities such as scientific research, the transfer of new technologies and knowledge and innovation investments emerge as key factors to support the development of technological districts, and firms therein. The more complex financial needs of high-tech clusters require banks operating in these territories to expand their offer proposition in order to include innovative services, such as those related to venture capital and private equity.

The empirical analysis carried out in this paper has highlighted that local banks play a minor role in financing innovative firms. Local banks must re-think their business model in order to maintain their key role in supporting Italian districts (including the more tech-oriented ones). Each bank faces significant challenges that require a redefinition of its

Table 4: Analysis 2–Second Step

Dependent variable: Profitability <sup>a</sup>			
Explanatory variables	Estimates ( $\beta$ )	Standard error	t-ratio
TDRS <sub>1st</sub> Quartile	0.0012526	0.004789	-0.08
TDRS <sub>2nd</sub> Quartile	-0.0001357	0.0091267	-0.01
TDRS <sub>3rd</sub> Quartile	-0.0003795	0.0033485	-0.11
TDRS <sub>4th</sub> Quartile	0.0012526	0.0055804	0.22
TDRS <sub>Big</sub> Banks	-0.0010616*	0.0004844	-2.19
TCRS <sub>1st</sub> Quartile	0.0002827	0.1492483	0.00
TCRS <sub>2nd</sub> Quartile	-0.0145217	0.2253208	-0.06
TCRS <sub>3rd</sub> Quartile	0.0009842	0.0344104	0.03
TCRS <sub>4th</sub> Quartile	-0.019075	0.1690387	-0.11
TCRS <sub>Big</sub> Banks	-0.0231633*	0.0044629	-5.19
CFRS <sub>1st</sub> Quartile	-0.0012464	0.022816	-0.05
CFRS <sub>2nd</sub> Quartile	-0.0012443	0.0096969	-0.13
CFRS <sub>3rd</sub> Quartile	-0.0002331	0.0751074	-0.00
CFRS <sub>4th</sub> Quartile	0.0003172	0.0222271	0.01
CFRS <sub>Big</sub> Bnaks	0033859*	0.0006108	5.54
DFRS <sub>1st</sub> Quartile	0.2169926	3.355685	0.06
DFRS <sub>2nd</sub> Quartile	0.5952976	8.49215	0.07
DFRS <sub>3rd</sub> Quartile	0.3602262	7.21619	0.05
DFRS <sub>4th</sub> Quartile	0.2197267	2.031322	0.11
DFRS <sub>Big</sub> Banks	0.0738017*	0.0136237	5.42
COSTANT	0.250148	0.1158105	53.97

<sup>a</sup>The dependent variable is the ratio interest margin and brokerage margin.

\*The values are significant at a confidence level  $\alpha$  of 5 %.

competitive position. This approach is particularly important for value-added banking services.

Any bank wishing to finance innovative firms must be able to design a productive process that can be broken down into different stages, each of which requires activities, resources, knowledge and well-defined professional profiles. In the early stages, it is useful to exploit the benefits deriving from relationships with external professionals and advisors. In the later stages, it is important to avoid potential opportunistic behavior. In carrying out these activities, local banks can leverage the informational advantages associated with being a traditional lender (Baravelli, 2001, 2003) and the presence of a capillary and less bureaucratic structure (Anolli *et al.*, 2008). On the contrary, they suffer some major weaknesses: a modest ability to negotiate with the target company (lack of senior staff), the lack of knowledge on risk management and evaluation issues especially in the most innovative sectors and a poor track record.

To explore the market successfully, local banks must leverage the advantage of being a territory-oriented bank for promoting the co-investment logic and developing a widespread value chain approach.

The co-investment logic would lead to a significant increase in the ability to intervene in support of innovative firms where the default risk is higher. In this regard, the creation of a joint national-local fund could be useful. This mechanism, known as an up slide leverage scheme, allows small local banks to co-invest in a national fund; in case of loss, they bear a pre-defined portion of the losses, but they benefit asymmetrically from the return. With reference to the creation of a common value chain, the solid presence in the territory of local banks can foster the private equity activity in technological districts. Territorial knowledge can contribute significantly to enhance origination activities, while the decentralization of the private equity process (screening, evaluation, due diligence) in a logic of co-responsibility among private equity funds and local banks helps to lower operating costs and to create awareness towards small and innovative companies.

Considering the importance of this topic, further research should include in the model panel: a) explanatory variables on the characteristics of regional firms such as age, size, turnover, number of employees, sector specialization; b) a proxy of the intensity of the bank-firm relationship obtained by administering a structured questionnaire to local banks (supply side) and firms operating in science-based sectors (demand side). Some limitations of this study should also be underlined. First of all, the results may have been influenced by the setting in which the research was carried out. Therefore, attention should be paid when the results are generalized to contexts characterized by a different degree of diversification in the banking supply model.

## REFERENCES

- Z. ACS – D. B. AUDRETSCH (1990), *Innovation and Small Firms*, Cambridge, MA: MIT Press.
- S. AGARWALD – R. HUASWALD (2006), *Distance and Information in Lending Decisions*. Giugno: Mimeo.
- P. ALESSANDRINI (2013), “Local credit systems in regions with different stages of development”, *Moneta e Credito*, 49(196), pp. 567–600.
- P. ALESSANDRINI – A. F. PRESBITERO – A. ZAZZARO (2008a), “Bank Size or Distance: What Hampers Innovation Adoption by SMEs?” *MoFiR working paper*, No. 2.
- P. ALESSANDRINI – A. F. PRESBITERO – A. ZAZZARO (2008b), “Banche e imprese nei distretti industriali”, *Quaderno di ricerca*, no. 309, Università di Ancona.
- P. ALESSANDRINI – A. F. PRESBITERO – A. ZAZZARO (2009), “Banks, Distances and Firms’ Financing Constraints”, *Review of Finance*, 13, pp. 261–307.
- P. ALESSANDRINI – A. PRESBITERO – A. ZAZZARO (2010), “Bank Size or Distance: What Hampers Innovation Adoption by SMEs?” *Journal of Economic Geography*, 19(6), pp. 645–881.
- P. ALESSANDRINI – M. CROCI – A. ZAZZARO (2005), “La geografia del potere bancario: il ruolo delle distanze funzionali”, *Moneta e Credito*, LVIII (232), pp. 109–153.
- M. ANDERSSON – C. KARLSSON (2004), “Regional Innovation Systems in Small and Medium-sized Regions”. Paper No. 10, *CESIS Working Paper*, KTH Royal Institute of Technology.
- M. ANOLLI – A. BANFI – G. PRESTI – M. RESCIGNO (2008), *Banche, servizi di investimento e conflitti di interesse*, Bologna, il Mulino.
- M. ARNONE – M. MODINA – A. QUINTILIANI (2013), “Il ruolo delle banche locali e del relationship lending in scenari economici in profondo cambiamento”. *ARETHUSE Rivista di studi economico-gestionali*, 2(2), pp. 91-106, Società Editrice Esculapio, Bologna.
- C. BACCARANI – G. M. GOLINELLI (1993), “Tratti del divenire dei distretti industriali”, *Quaderni dell’Istituto Tagliacare*, no. 8, pp. 15–46.
- C. BACCARANI – G. GOLINELLI – E. RULLANI (2013), *Le CCB banche di territorio. Il mutualismo per la costruzione del futuro*. Torino: Cedam Editore.
- A. BANFI – M. BIASIN – M. ORIANI – G. M. RAGGETTI (2011), *Economia degli intermediari finanziari*. Torino: Editore Isedi.
- E. BERETTA – S. DEL PRETE (2013) “Banking Consolidation and Bank-Firm Credit Relationships: the Role of Geographical Features and Relationship Characteristics”, Banca d’Italia, Temi di discussione, no. 901, February.
- A. N. BERGER – G. F. UDELL (2002), “Small Business Credit Availability and Relationship Lending: the Importance of Bank Organizational Structure”, *The Economic Journal*, 112, pp. F32–F53.
- P. BONGINI – M. L. DI BATTISTA – L. NIERI (2009) “Relationship banking: una soluzione antica contro la crisi recente?” *Bancaria*, no. 5.

- M. BARAVELLI (2001), *Strategie competitive nel corporate banking*, Roma: Edibank.
- M. BARAVELLI – P. FELICCIOTTO – S. MAZZÙ (2002), *Banche e rischio di credito in Sicilia: riorganizzazione della funzione creditizia e nuova relazione tra banche e imprese*, Rome: Egea.
- M. BARAVELLI (2003), *Strategia e organizzazione della banca*, Milano: Egea.
- G. BECATTINI (1979), “Dal settore industriale al distretto industriale. Alcune considerazioni sull’attività di indagine dell’economia industriale”, *Rivista di Economia e Politica Industriale*, 1, pp. 7–21.
- G. BECATTINI (1999), “La fioritura della piccola impresa e il ritorno dei distretti industriali”, *Economia e Politica Industriale*, 103, pp. 5–16.
- G. BECATTINI – G. DEI OTTATI (2006), “L’economia italiana negli anni novanta: un confronto tra aree di grande impresa e distretti industriali”, *Economia e Politica Industriale*, 33(1), pp. 5–24.
- F. BERTAMINO – R. BRONZINI – M. DE MAGGIO – D. REVELLI (2013), “The Italian Technological Districts: Characteristics and Firms’ Performance”, mimeo.
- A. BONACCORSI – F. NESCI (2006), *I distretti tecnologici in Europa*. Milano: Franco Angeli.
- C. BOARI – A. LIPPARINI (1999), “Networks within Industrial Districts: Organizing Knowledge Creation and Transfer by Means of Moderate Hierarchies”, *Journal of management and Governance*, 3(4), pp. 339–360.
- P. BONGINI – M. L. DI BATTISTA – L. NIERI (2009), “Relationship banking: una soluzione antica contro la crisi recente?” *Bancaria*, 5, pp. 2–20.
- A. W. A. BOOT – A. V. THAKOR (2000), “Can Relationship Banking Survive Competition?” *Journal of Finance*, 55, pp. 679–713.
- G. BRACCHI – R. DEL GIUDICE (2009), “Il private equity nel nuovo contesto economico-finanziario”, *Dopo la crisi. L’industria finanziaria italiana tra stabilità e sviluppo*, eds. Bracchi G. and Masciandaro D., Roma, Edibank: XIV Rapporto della Fondazione Rosselli.
- G. BRACCHI (2011), *Il private equity e l’economia italiana*, Egea: Milan.
- E. BRANCATI (2014), “Innovation, financial constraints and relationship lending: firm-level evidence in times of crisis”, *CASMEF Working Paper Series*, 3.
- BRESOLIN C., VELLER A., ZAGHINI G. (2012), “Le emissioni obbligazionarie bancarie delle banche di credito cooperativo: un confronto con i principali gruppi bancari e modello distributivo”, *Cooperazione di Credito*, 208, pp. 61–96.
- T. BRESNAHAN – A. GAMBARDELLA – A. SAXENIAN (2005), “Old Economy’ Inputs for ‘New Economy’ Outcomes: Cluster Formation in the New Silicon Valleys”, *Industrial and Corporate Change*, 10(4), pp. 793–815.
- A. CARRETTA (2011), *Il credito cooperativo. Storia, diritto, economia, organizzazione*, Bologna: Edizione Il Mulino.
- V. CAPIZZI (2007), *L’investment banking in Italia*, Roma: Edibank.
- H. CHESSEBOURG (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Cambridge, MA: Harvard Business School Press.
- W. CHRISTALLER (1933), *Central Places in Southern Germany*, Jena: Fischer.
- C. CLEMENTE (2001), “Il confronto competitivo tra CCB e altre banche concorrenti”, *Cooperazione di Credito*, no. 173–174, pp. 403–420.
- C. CLEMENTE (2002), *Il confronto competitivo nelle banche locali*, Mestre Venezia: Metakom Edizioni.

- W. COHEN – D. LEVINTHAL (1990), “Absorptive Capacity: a New Perspective on Learning and Innovation”, *Administrative Science Quarterly*, 35(1), pp. 128–152.
- P. COOKE (1998), “Regional Systems of Innovation: an Evolutionary Perspective”, *Environmental Planning*, 30(9), pp. 1563–1584.
- P. COOKE – R. HUGGINS (2001), “Il cluster dell’alta tecnologia di Cambridge”, *Sviluppo locale*, no. 16, pp. 34–60.
- F. CRESPI – M. PIANTA (2007), “Demand and Innovation in European Industries”, *Economics*, 24, p. 1.
- S. DEL PRETE – M. PAGNINI – P. ROSSI – V. VACCA (2013), “Getting Organized to Lend in a Period of Crisis: Findings from a Survey of Italian Banks”, Bank of Italy Occasional Paper n. 154, April.
- T. DE LA TORRE – M. S. MARTINEZ PERIA – S. L. SCHMUCKLER (2008), “Bank Involvement with SMEs: Beyond Relationship Banking”, *Policy Research Working Paper*, 4649, June.
- M. DE LERMA – G. GABBI – M. MATTHIAS (2007), *Credit Spread Pricing and the Qualitative Rating Process*, Montreal: Mimeo.
- M. DI ANTONIO (2011), *Redditività sostenibile*, Genova, 25 Febbraio: Intervento al Convegno ADEIMF.
- A. DI CLEMENTE (2013), *Verso una nuova architettura internazionale di vigilanza finanziaria. L’impatto delle nuove regole su banche e imprese italiane*, Roma: Aracne Editrice.
- S. DI COLLI – A. GIRARDI (2012), “Restrizione creditizia durante la crisi 2008- 2009 e il ruolo anticiclico delle banche di credito cooperativo”, *Quaderni di Ricerca del Credito Cooperativo*, no. 3, April.
- G. DOSI (1982), “Technological Paradigm and Technological Trajectories”, *Research Policy*, 11, pp. 147–162.
- Euricse—European Research Institute on Cooperative and Social Enterprises (2011), “La cooperazione in Italia”.
- C. EDQUIST (1997), *Systems of Innovation: Technologies, Institutions and Organizations*, London: Pinter.
- R. ELSAS (2005), “Empirical Determinants of Relationship Lending”, *Journal of Financial Intermediation*, 14, pp. 32–57.
- H. ETZKOWITZ – L. LEYDESDORFF (2000), “The Dynamics of Innovation: from National Systems and Mode 2 to a Triple Helix of University–Industry–Government Relations”, *Research Policy*, 29, pp. 109–123.
- P. FERRARI – R. RUOZI (2005), *La raccolta bancaria diretta. Tendenze evolutive, politiche e strumenti, dinamiche gestionali*, Milano: Bancaria Editrice.
- G. FORESTIERI (2011), *Corporate & Investment Banking*, Milano: Egea Editore.
- W. FONTEYNE (2007), “Cooperative Banks in Europe—Policy Issues”, International Monetary Fund Working Paper, no. 159, pp. 1–68.
- M. FORTIS (2008), *Banche territoriali, distretti e piccole e medie imprese*, Bologna, Il Mulino.
- G. GABBI – M. MATTHIAS (2013), *Relationship lending. Le informazioni qualitative nel processo di credito*, Milano: Egea Editore.
- C. GIANNETTI (2012), “Relationship Lending and Firm Innovativeness”, *Journal of Empirical Finance*, 19(5), pp. 762–781.



- O. GRANSTRAND – P. PATEL – K. PAVITT (1997), “Multi-technology Corporations: Why They Have Distributed Rather than Distinctive Core Competencies”, *California Management Review*, 39, pp. 8–25.
- B. H. HALL (2010), “The Financing of Innovative Firms”, *Review of Economics and Institutions*, 1(1), pp. 1–30.
- J. V. HENDERSON (1974), “The Size and Types of Cities”, *American Economic Review*, 64(4), pp. 640–656.
- A. M. HERRERA – R. MINETTI (2007), “Informed Finance and Technological Change: Evidence from Credit Relationships”, *Journal of Financial Economics*, 83(1), pp. 223–269.
- W. ISARD (1949), “The General Theory of Location and Space-Economy”, *Quarterly Journal of Economics*, LXIII, pp. 476–506.
- W. ISARD (1956), *Location and Space-Economy: a General Theory Relating to Industrial Location, Market Areas, Land Use, Trade, and Urban Structure*, Cambridge, MA, MIT Press.
- P. KRUGMAN (1998), “What’s New about the New Economic Geography?” *Oxford Review of Economic Policy*, 14, p. 2.
- P. KRUGMAN (1991), *Geography and trade*, Cambridge: MA, MIT Press. pp. 7–17.
- M. LAZZERONI (2004), *Geografia della conoscenza e dell'innovazione tecnologica*, Milano: Franco Angeli.
- A. LOSCH (1940), *The Economics of Location*, Jena: Fischer.
- H. LOFSTEN – P. LINDELOF (2002), “Science Parks and the Growth of New Technology-Based Firms–Academic–Industry Links, Innovation and Markets”, *Research Policy*, 31, pp. 859–876.
- B. A. LUNDWALL (1992), Introduction, in *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*, ed. B. A. Lundwall, London: Pinter.
- B. A. LUNDWALL – B. JOHNSON (1994), “The Learning Economy”, *Journal of Industry Studies*, 1(2), pp. 23–42.
- F. MALERBA (2000), *Economia dell'innovazione*, Roma: Carocci.
- A. MARSHALL (1920), *Industry and Trade*, London: Macmillan.
- P. MANSKELL (2002), “Knowledge Creation and Diffusion in Geographic Clusters”, *International Journal of Innovation Management*, 2, pp. 213–237.
- M. MAZZOLI (2011), “La rilevanza macroeconomica del credito cooperativo in Italia”, in *Il credito cooperativo. Storia, diritto, economia, organizzazione*, ed. A. Carretta, Bologna: Edizione Il Mulino.
- G. MICUCCI – P. ROSSI (2012), “Financing R&D Investments: Relationship Lending or Financial Markets?” Workshop on Innovation in Italy, Banca d'Italia, Perugia, 13–14 December.
- M. MODINA (2010), “Ricorso al debito e rapporto banca-impresa: un inquadramento teorico”, in *Imprese, banche e finanza*, eds. G. Birindelli and M. Modina, Milano: Franco Angeli.
- P. E. MISTRULLI – L. CASOLARO (2008), “Distance, lending technologies and interest rates” (<http://www.rcfea.org/papers/2008/Mistrulli.pdf>).
- R. NELSON – S. WINTER (1982), *An Evolutionary Theory of Economic Change*, Cambridge, MA: Harvard University Press.

- R. NELSON – N. ROSENBERG (1993), “Technical Innovation and National Systems”, in *National Innovation Systems: a Comparative Analysis*, ed. R. Nelson, NEW YORK Oxford University Press.
- M. A. PETERSEN – R. G. RAJAN (1994), “The Benefits of Lending Relationships: Evidence from Small Business Data”, *Journal of Finance*, 49, pp. 3–37.
- A. PICCALUGA (2003), Distretti tecnologici in Italia, esperienze attuali e prospettive, MIUR.
- M. PIORE – C. SABEL (1984), *The Second Industrial Divide*, New York: Basic Books.
- M. PORTER (1998), “Clusters and New Economics of Competition”, *Harvard Business Review*, 76(6), pp. 77–91.
- E. RULLANI (1999), “La diversità italiana alla prova del post-fordismo”, *Economia e Politica Industriale*, 103, pp. 57–71.
- R. RUOZI (2011), *Economia della banca*, Milano: Editore Egea.
- F. SCHIAVONE (2008), *Conoscenza, imprenditorialità, reti: valore e innovazione nei distretti tecnologici*, Padova: Cedam.
- J. SCHUMPETER (1934), *The Theory of Economic Development*, eds. Munchen-Leipzig, Duncker Humblot, Cambridge, MA: Harvard University Press.
- J. E. STIGLITZ (1990), “Peer Monitoring and Credit Markets”, *World Bank Economic Review*, 4, pp. 351–366.
- D. TEECE – G. PISANO – A. SHUEN (1997), “Dynamic Capabilities and Strategic Management”, *Strategic Management Journal*, 18(7), pp. 509–534.
- F. TUTINO – C. COLASIMONE – G. C. BRUGNONI (2012) *Il credito alla clientela in Italia e la recente crisi finanziaria: andamento, qualità e modello di intermediazione. Evidenze empiriche per dimensione di banca*, Banca, Impresa e Società, n.3, pp. 365-99.
- R. VARALDO (2006), “Il nuovo modello competitivo e aziendale dei distretti industriali”, *Economia e Politica Industriale*, 1, pp. 25–42.
- J. VON THUNEN (1826), *The Isolated State*, London: Pergamon Press.
- A. WEBER (1909), *Theory of the Location of Industries*, Chicago: University of Chicago Press.

### Non-technical Summary

The paper deals with the role that local banks (especially credit cooperative banks) might play in financially supporting the development of technological districts and innovative firms. The central part is an econometric exercise aimed at measuring the weight of high value financial services over the income of a sample of Italian credit cooperative banks. This empirical analysis highlighted that local banks play a minor role in financing innovative firms. Any local bank wishing to finance innovative firms must be able to design a productive process that can be broken down into different stages, each of which requires activities, resources, knowledge and well-defined professional profiles. It will be useful to exploit the benefits deriving from relationships with external professionals and advisors and to avoid potential opportunistic behavior. The local banks

must leverage the advantage of being a territory-oriented bank for promoting the co-investment logic and developing a widespread value chain approach. In carrying out these activities, local banks can leverage the informational advantages associated with being a traditional lender and the presence of a capillary and less bureaucratic structure. On the contrary, they suffer some major weaknesses: a modest ability to negotiate with the target company, the lack of knowledge on risk management and evaluation issues especially in the most innovative sectors and a poor track record.

