

Branching, lending and competition in Italian banking

ABSTRACT

With the liberalization of legal barriers to bank branching in the early 1990s, both market structure and competitive conditions in Italy changed profoundly as banks expanded their branching networks. This paper provides novel empirical evidence on how changes of the branch network structure at the province level affect the performance and lending activity of banks across the period 1993-2011. In particular, we adopt two modes of analysis. The first focuses on the impact of diversification strategies at the province level on performance, lending and funding strategies. While the second one examines how the increase of big banks' local presence affects single-market bank performance and lending strategies. Our results show that geographical diversification strategies can reduce performance, the adjusted Lerner Index of banks and lending activities, but increase the Lerner Index in deposit markets. Furthermore, we find that the expansion of branches by large-medium sized banks in concentrated markets can reduce the Lerner Index for the deposit market and the amount of loans offered by single-market banks.

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1. Introduction

With the liberalization of legal barriers to the opening of bank branches in 1990 and the elimination of geographic constraints on banking organizations, medium to large size banks expanded their branching networks to new markets in order to exploit economies of scale and consolidate their local market share. However, this expansion has brought with it not only benefits but also costs. Though banks gain market power through their relative physical proximity to borrowing firms and from the private information they obtain from and about firms during the lending relationship (Degryse and Ongena, 2005), it has been demonstrated that their organizational costs can increase as well (Berger and DeYoung, 2006). In general, there seems to be a trade-off in the benefits of relationship-lending between firms and banks, mainly associated with the proximity of banks to prospective clients, versus the risks and costs that come with opening multiple branches in order to attain this proximity. Consequently, it is not certain that these banks will enjoy an increase in overall profitability and monopoly market power in loan and deposit markets.

Expansion and contraction in a bank branching network also has important implications for the competitive dynamics of a local market and the local market power for small banks (e.g. Winston, 1993; Jayaratne and Strahan, 1998; Kroszner and Strahan, 1999). The weakening of small banks' market power, in response to an increase in the number of branches of medium and large banks, can generate negative externalities for local economies where the presence of Small and Medium Enterprises (SMEs) is more spread out. Small banks are more prone to lend to small businesses because they can meet their credit needs more effectively. This is due to having access to better credit information than large banks (Berger and Udell, 2002). Recent papers (Berger et al., 2007; Coccoresse, 2009; Hannan and Prager, 2009; Scott and Dunkelberg, 2010) have shown that the entry of larger and more

efficient banking organizations into local markets can reduce the performance of small banks. However, they have devoted less attention to the effect on small banks' lending strategies of the entry of large/medium banks in the local market through the opening of branches on small local banks. This paper bridges this gap and contributes to the existing literature in several ways. First, we examine the impact of diversification strategies through branches on the monopoly market power for loans and deposits, and on the amount of loans and deposits for all banks. Next, as a further contribution, we examine how and to what extent the expansion of branches in local markets can affect performance, monopoly market power for loans and deposits, and lending activities of small local competitor banks. Understanding the competitive viability of small banks in local markets is particularly important in the European context, where SMEs represent 99% of businesses. From a methodological viewpoint, we make use of both the conventional Lerner index to measure the monopoly market power of banks in the market for loans and deposits, and the new efficiency-adjusted Lerner index proposed by Koetter et al. (2012). We also run a panel data analysis fixed effect and an unconditional instrumental variables (IV) quantile regression, to verify the robustness of the effect of geographical diversification strategies on performance, adjusted Lerner index, lending and funding strategies. Finally, unlike previous studies that are fragmented and in many cases restricted in the scope of their analysis to either efficiency, risk, or performance, we instead take into consideration several geographical measures to examine performance, market power (competition) in loan and deposit markets, and the lending behavior of banks.

To investigate the effects of changes in branch geography on performance and lending strategies, we focus on the Italian banking sector for the period 1993-2011. The Italian banking market represents an ideal natural laboratory for our specific concerns and for more than one reason. The first is that after the removal of legal restrictions to the opening of branches in 1990, the number of branches increased substantially from 17,721 to 34,146 in

2008, while it decreased slightly to 32,881 in 2012, in line with other European market trends.ⁱ This means that there has been consistent change in the geography of the Italian banking system at the province level since 1990. Under the 1936 banking law, lending activities of each bank were geographically restricted to a geographical area of competence. In addition, the law strongly limited the opening of new branches. As a consequence, the distribution of branches at the province level in 1990 was very similar to that in 1936 (Guiso et al., 2004; Minetti et al. 2015). Thus, the liberalization process in 1990 represents the starting point of our analysis, which focuses on the changes of the geography and market structure of the banking system at the province level. Next, Italy is divided into 20 regions and 110 provinces that are characterized by different levels of productivity (the northern part of Italy is typically more developed than the other geographical areas). Therefore, we are able to examine the changes of the local banking structure in provinces with different local economies. Finally, the Italian banking system consists of a combination of local and large/interregional banks, as is the case in other European Countries (for example Germany).ⁱⁱ This allows us to investigate the effect of the entrance of large banks in each local market on the performance, lending and funding strategies on different types of banks, for example large and local ones.

The principal findings are as follows: geographic diversification strategies, and in particular the distance between a bank's headquarters and its branches, appear to reduce the performance and efficiency-adjusted Lerner index. Banks that are more geographically diversified in terms of distance between headquarters and branches tend to experience a lower increase in their loan volumes. In addition, our results also suggest that a high level of bank equity can enhance bank lending activities, but harm monopoly market power in the loan market and deposit market. Finally, a high presence of medium and large banks in a concentrated market appears to enhance the performance of single-market banks, but at the

same time reduces their loans. In addition, it does not affect their monopoly market power in the loan market, while it reduces the Lerner Index for the deposit market.

The rest of the paper is organized as follows: Section 2 reviews the literature; Section 3 discusses the models and the variables used in our empirical analysis; Section 4 describes the data; Section 5 displays and discusses the empirical results; and lastly, Section 6 concludes.

2. Literature Review

A consensus on the benefits of branch diversification is still lacking in the literature. Even though the exploitation of geographic diversification can be important for the competitive viability of a firm (Porter, 1996; Ramaswamy, 1995), it can also lead to “coordination difficulties, information asymmetry and incentive misalignment between headquarters managers and divisional managers” (Lu and Beamish, 2004, p. 600). Diversification can induce value loss because of learning costs (Deng and Elyasiani, 2008), and the reduction of economic performance because of a high degree of competition and lack of lending experience (Acharya et al., 2006; DeLong, 2001).

Berger and DeYoung (2001) find that geographic expansion is not associated with optimal geographic scope because some banks operate efficiently within a single region, while others operate efficiently at the national level or even at an international level. Hirtle (2007) shows that banks with mid-sized branch networks have lower deposits per branch than organizations with both larger and smaller branch networks, and do not achieve cost advantages with respect to larger institutions. He also observes that institutions with mid-sized branch networks have no deposit expense advantage compared to larger institutions. Paradi et al. (2011), focusing on Canadian banks’ national branch networks, show that large branches are less efficient in terms of production, profitability and intermediation efficiency compared to smaller branches, in this way suggesting a decrease in the potential benefits of mergers and acquisitions due to an organization’s operating complexity.

Part of the contrasting results on the effect of branching networks can be attributed with the failure to introduce measures for controlling the distance between a bank's headquarters and its branches (Deng and Elysiyani, 2008), to which the ability of senior management to effectively control the operations of individual branches is also related. In accordance with some studies on branching networks (Berger et al., 1997; Schaffnit et al., 1997; Berger and DeYoung, 2001), branch efficiency depends on the amount of control of the senior management on a bank's operations. Accordingly, Deng and Elysiyani (2008) maintain that local managers are freer to pursue interests divergent from the holding company because the system of internal control becomes less efficient as the distance between the headquarters and its subsidiaries increases. However, Berger and DeYoung (2006) state that the opposite could also be true: if the managers at the headquarters are inept, the increased distance from the headquarters can prevent transmission of their ineffectiveness to the branches. More specifically, they find that technological progress allows banks to exercise more control over affiliated banks.

While the distance between a bank's headquarters and its branches has been utilized in a number of previous studies, the relative dispersion of the branch network in the territory has been overlooked. In the case of branches that are far away from each other, a bank can suffer high monitoring costs depending on the cultural and structural characteristic dissimilarities of the local markets where it operates. Agency costs are more likely to emerge because it can be more difficult to moderate and compare the activities of branch managers operating in different areas. In the case of relatively close branches, the installation of an additional branch generates a negative externality on the market share of the incumbent branches, especially when the existing network is large (Chiappori et al., 1995).

However, geographically diversified banks are more likely to experience multimarket contacts, which can induce them to pursue a strategy of collusion in order to gain benefits

from reciprocal concessions and stronger negotiating positions with rivals (Li and Greenwood, 2004). Coccorese and Pellicchia (2009, 2013) show that multimarket contact reduces competition in the Italian banking system. Drawing on these previous arguments, we formulate the following hypotheses:

H1.a: Geographical diversification has a negative impact on performance.

H1.b: The distance between a bank's headquarters and its branches has a negative impact on performance.

H1.c: Geographical diversification has a negative impact on monopoly market power.

H1.d: The distance between a bank's headquarters and its branches has a negative impact on monopoly market power.

In the banking sector, geographic proximity to clients represents an important competitive advantage, especially in the case of small business loans, where transaction costs, such as transportation and information costs exist and are non-negligible (Dell'Ariccia, 2001). Banks need to collect information about local economic conditions and customers in order to assess their credit profile. Banks' proximity to clients can be an important factor in overcoming asymmetric information problems. On the other hand, recent technological innovations (such as e-banking and phone-banking) have facilitated the transmission of information across large distances, in this way altering the manner in which a bank enters a market and decreasing the proximity of banks relative to their clientele (Cerqueiro et al., 2009). Corvoisier and Gropp (2009) find, for example, that the internet reduces the sunk costs of entering a market for a panel of Euro-area countries, since banks can provide their customers with deposits without the cost of setting up "brick and mortar" branches.

With regard to our analysis, the expansion of the branching network and geographic diversification strategy can amplify the existing asymmetric problems between banks and borrowers. This is particularly true when there are a high number of small firms in a local market as in the case of the Italian industrial system. Small firms are typically more opaque than their larger counterparts, and get access to credit through relationship lending. However, relationship lending is a costly and unmonitored activity that creates organizational frictions and agency costs in highly hierarchically organized banks (Uchida et al., 2008). This is a reason why highly hierarchically organized banks tend to be reluctant to invest in such relationships.

While an increase in the number of branches can generate agency costs and organization inefficiencies, at the same time branches represent the main channel through which banks collect deposits and provide loans to customers. Therefore, an increase of the geographical presence of branches over a territory can enhance both loan making and deposit taking for a bank. However, a long distance between the headquarters of a bank and its branches can undermine relationships with the local industry, and adversely impact the amount of loans provided to customers. Smaller and less geographically diversified banks often have an established reputation in the local community, especially in the case of a high number of SMEs in the local market (as is common in Europe and to an even higher extent in Italy). In addition, they have a specific (and long-term) knowledge of local clients, which cannot easily be imitated by competitors.

Drawing from these conclusions, we formulate the following hypotheses:

H2.a: Geographical diversification has a positive effect on the quantity of loans and on market power in the loan market.

H2.b: Geographical diversification has a positive impact on the quantity of deposits and on market power in the deposit market.

H2.c: The distance between a bank's headquarters and its branches has a negative effect on the quantity of loans and on market power in the loan market.

H2.d: The distance between a bank's headquarters and its branches has a negative effect on the quantity of deposits and on market power in the deposit market.

Park and Pennacchi (2009) argue that the retail loan and deposit rates set by banks in a particular market depend on the market's distribution of multi-market banks and small banks alongside market concentration. In particular, they argue that because of the access to low-cost wholesale funds, large multi-market banks can promote competition in retail loans, and as a result consumer loan rates decrease as the multi-market bank shares increase, while they offer retail depositors lower deposit interest rates. Consequently, small banks can benefit in terms of profits in the case of the presence of multi-market banks because they compete less aggressively for retail deposits than small single-market banks do. At the same time, however, they suffer from an increase in competition in the retail loan market. Even though the net effect on the profit of small banks is ambiguous, an increase in the number of multi-market banks is more likely to reduce single-market bank profits. In this regards, Hannan and Prager (2009) state that the prices offered by multi-market banks do not reflect changes in concentration in the local banking market, but are determined by conditions prevailing outside that particular local market. Therefore, they maintain that in this context small single-market banks have less scope for profitably by adjusting their prices in response to an increase in concentration. Specifically, they found that the traditionally predicted relationship between the prices of small single-market banks and market concentration is weakened as the presence of multi-market banks in a local market increases. Focusing on the Italian banking system, Coccoresse (2009) finds that the market power of single-market banks can decrease as nearby competition and the local presence of big banks increase.

The overall effect of geographic diversification on the amount of deposits offered by large banks is still controversial. From one viewpoint, in accordance with Park and Pennacchi (2009), we should expect an increase in deposits for small banks as they will offer higher interest rates to depositors compared to larger banks. From another viewpoint, multi-market banks offer multiple services and have a strong reputation that can work as a catalyst for new consumers. Based on this view, we should expect a decrease in the amount of deposits for small banks because of the entrance of medium-large banks in a local market.

Our third and fourth hypotheses are formulated as follows:

H3.a: The performance and market power for loans decrease as the number of branches of medium and large banks in a local market increases.

H3.b: The performance and market power for deposits decrease as the number of branches of medium and large banks in a local market increases.

H4.a: The quantity of loans of small local banks decreases as the number of branches of medium and large banks in a local market increases.

H4.b: The quantity of deposits of small local banks decreases as the number of branches of medium and large banks in a local market increases.

3. Methodology

3.1. The relationship between performance, diversification strategies and market structure

Our model includes several measures of geographic diversification and local banking features. Therefore, it offers a more comprehensive and potentially more reliable set of results on the relationship between geographic diversification, performance, adjusted Lerner Index, and loan and deposit strategies. Our first model is as follows:

$$Y_{it} = \beta_0 + \beta_1 GD_{it-1} + \beta_2 DISTANCE_{it-1} + \beta_3 MC_{it-1} + \beta_4 NPLs_{it-1} + \beta_5 EQTA_{it-1} + \beta_6 ENTRY_{it-1} + \beta_7 HHI_{it-1} + \alpha_t + \lambda_i + \varepsilon_{it}$$

(1)

In particular, there are six dependent variables (DVs henceforth) used in separate implementations of the model at (1). These are: (i) return on assets (denoted ROA), (ii) efficiency-adjusted Lerner Index (Adj LE); (iii-iv) Lerner Index for loans and deposits (LE_L and LE_D), (v) the change of loans from period t-1 and t, $\Delta loan_{it}$, and (vi) the change in deposits $\Delta Deposit_{it}$ ⁱⁱⁱ. DVs (i-ii) refer to H1.a and H1.b, while DVs (iii-vi) to H2.a and H2.b. As follows, we report all the implementations of Model 1.

ROA_{it}	Adj LE _{it}	LE _L	LE _D	$\Delta loan_{it}$	$\Delta Deposit_{it}$
GD	GD	GD	GD	GD	GD
DISTANCE	DISTANCE	DISTANCE	DISTANCE	DISTANCE	DISTANCE
MCw	MCw	MCw	MCw	MCw	MCw
NPLs	NPLs	NPLs	NPLs	NPLs	NPLs
EQTA	EQTA	EQTA	EQTA	EQTA	EQTA
ENTRY	ENTRY	ENTRY	ENTRY	ENTRY	ENTRY
HHIw	HHIw	HHIw	HHIw	HHIw	HHIw

Note: All the independent variables are at $t-1$.

In particular, GD_{it-1} , is a measure of geographic dispersion. Consistent with previous studies (Deng and Elyasiani, 2008; Dick, 2006; Alessandrini et al., 2009), this measure considers the number of branches, and the number of provinces where banks operate. We employ a standard measure of geographical dispersion, the Berry Index, that takes the following form:

$$GD_i = 1 - \sum_i (n_{ij} / \sum_j n_j)^2 \quad (2)$$

where n_{ij} is the number of branches belonging to bank i in $j=1,\dots,110$ provinces. The Berry Index is a measure that ranges between 0 and 1, and is equal to 1 if a bank is fully diversified. $DISTANCE_{it-1}$ is a distance measure (street distance in kilometres) between a bank's headquarters and its branches. It is computed as the distance between the two zip codes, instead of the two exact locations. Hence, the weighted distance measure is calculated as the total distance between a bank's headquarters and its branches, with weights being the bank's branches in a province as a share of total branches of the same bank. MCw_{it-1} , is the market coverage of a bank in each local market calculated as the average share of branches in all the provinces where bank i operates at time t . $NPLs$ is a proxy for the risk management quality, which measures the ability to reduce the ratio of the amount of non-performing loans to total loans. In addition, a greater proportion of bad loans could be related to a more risk-taking strategy that banks undertake to survive in a more competitive market (Degl'Innocenti et al., 2014). It is calculated as the ratio of non-performing loans to total loans. $EQTA_{it-1}$ is the level of bank capitalization and is measured by the equity-to-total assets ratio (Equity/Assets). Some banking studies maintain that a higher proportion of capital over assets signals greater safety and soundness and can allow a well-capitalised bank to get funds more easily in the financial markets (Berger, 1995; Maudos and Fernández de Guevara, 2004; Pasiouras and Kosmidou, 2007). Recently, Berger and Bouwman (2013) show for a sample of US banks that capital helps small banks to increase their market share and the probability of their survival at all times (during banking crises, market crises, and normal times), while capital enhances the performance of medium and large banks primarily during banking crises. However, capital also represents a lost opportunity for a bank. Overall, empirical studies provide mixed results on the relationship between equity/assets and bank profitability (Chronopoulos et al., 2015). Banks with high capital levels are less limited in the amount of loans that they can hold, and more confident that losses can be covered. Therefore

$EQTA_{it-1}$ is dropped from the model when the dependent variable is the amount of deposits. $ENTRY_{it-1}$ is a measure of the entry of banks in each province, which is calculated as the ratio of the sum of branch entries in each local market where a bank i operates minus its own new branches in the same market divided by the total number of branches in that market. $HHIw_{it-1}$ denotes the average value of the Herfindahl–Hirschman indexes of concentration of branches calculated in each local market in which bank i is located at time t .^{iv} Our expectation is that there is a positive relationship between a high concentration of branches in a province and performance since the overall degree of competition is reduced in accordance with the classical Structure-Conduct-Performance (SCP) paradigm.^v Compared to HHI, $ENTRY$ is a measure of geographic structure that takes into account the number of branches opened during the year and the number of branches closed in the market for the same period.^{vi} This can be seen as a proxy to measure the contestability of the market and the expected sign is negative.

To overcome the problem of extreme values $\Delta loan_{it}$ and $\Delta Deposit_{it}$ are winsorized at 95%.^{vii} We employ a panel data model with time (α) and bank (λ) fixed effects. While bank fixed effects detect time-invariant omitted variables, instead time dummies control for the business cycle and other factors that could have affected the performance and lending decision of banks. In order to adjust the standard errors for possible dependence in the residuals, we follow the procedure indicated by Peterson (2009), Cameron et al. (2011) and Thomson (2011). In particular, standard errors are clustered by bank ID, in this way allowing for error correlations for the same bank in different years. All the independent variables are lagged to properly capture the effect of geographic diversification and local market structure on the dependent variable. Banks can open branches at every moment of the year. Thus, we expect to observe a change in the organization and lending strategies in the year after branch expansion.

The data on branches is confined to the location of each branch for each bank of the database, and does not contain information regarding the size or number of employees of the branch. Nonetheless, we control for the average size of branches by following Humphrey et al. (2006). The average size of branches is calculated based on the number of employees of a bank to the number of branches. The dummy variable *Large_Branch* is calculated as equal to 1 if the labour/branch ratio of each bank is higher than those at the county level calculated for all the banks for each year.^{viii} A further specification of Model 1 consists of analysing the impact of geographical diversification strategies of cooperative and saving banks on performance and adjusted Lerner Index. Both cooperative and saving banks have usually a geographical focus as they get their competitiveness from a tight relationship lending with local business. By expanding geographically, they can lose their competitive advantages of being a local lender who collects soft information compared to larger counterparts who might not have access to the same degree of local information. This analysis allows us to measure the benefit or cost to move from a geographical focus to a more diversified focus.

Finally, our second Model (equation 3) tests whether the changes in the local market features and the increase of the market coverage of medium and large banks in each province affects the performance, amount of loans and deposits, and Lerner Index for loans and deposits of small and local banks (which are cooperative and saving banks that operate solely in one market). Following Coccorese (2009) and Hannan and Prager (2009) we restrict our analysis to single-market banks. Our model is as follows:

$$Y_{it} = \beta_0 + \beta_1 MC_LargeB_{it-1} + \beta_2 HHI_{it-1} + \beta_3 HHI_{it-1} \times MC_LargeB_{it-1} + \beta_4 MC_{it-1} + \beta_5 NPLs_{it-1} + \beta_6 EQTA_{it-1} + \beta_7 PSIZEL_{jt-1} + \alpha_i + \lambda_i + \varepsilon_{it}$$

(3)

There are six DVs used in separate implementations of the model at (3). These are: (i) return on assets (denoted ROA), (ii) efficiency-adjusted Lerner Index (Adj LE); (iii-iv) Lerner Index for loans and deposits (LE_L and LE_D), (v) loans over total assets (LNTA) and (vi) deposits over total assets (DPTA). The competitive pressure exerted by the increase of medium and large banks in a local market is calculated as the number of branches owned by medium and large banks divided by the total number of branches in each province at time t (MC_LargeB_{it-1}).^{ix} In line with Park and Pennacchi (2009) and Hannan and Prager (2009), we include the interaction between HHI and MC_LargeB. This means that the effect of HHI on performance, lending and funding strategies can be weakened by the increase of the presence of medium-large banks in the province. HHI and MC are unweighted variables. PSizeL is calculated as the total amount of loans offered by the banking system in all the provinces where a bank operates divided by the total amount of loans at the national level. All the other variables are defined in the same manner as those of Model 1. A panel data model with bank (α) and time dummies (λ) is employed.

3.2 Endogeneity Issue

Several recent studies have ignored the issue of endogeneity (see for example Berger and De Young, 2001; Berger et al., 2010; Buch et al. 2013). As Miller (2006) points out, the existence of such an endogeneity issue is uncertain a priori. There is, however, a possible link between the performance of a bank and its decision to diversify. Either a high or low performance can encourage a bank to expand its branch network. In the case of strong performance, a bank could decide to extend its competitive advantage to new markets or to consolidate its position in the markets where it is already present. Alternatively, in the case of weak performance, a bank could expand its branch network to seek out new profit opportunities. A bank can for example decide to expand geographically because of high profit

opportunities within target local markets (Magri et al., 2005), rather than being driven by its performance. By measuring the local market's competitiveness, it is possible to control for factors that can affect banks' diversification decisions. Market coverage, concentration index and market size address this issue as they measure the underlying competitive structure of the markets where a bank operates. As also highlighted by Miller (2006), there could be a selection bias if only diversified firms are included in the analysis. By also examining undiversified banks (local banks) this issue is addressed.

The problem of endogeneity can be more relevant when we consider the performance or the adjusted Lerner Index as a dependent variable in our Model 1. These are measures of overall performance based on what managers can consider to be diversification opportunities. Both these measures take into account operational and administrative costs based on which a manager can decide to expand a bank's branch network. Opening branches increases a bank's organizational costs considerably (Berger and DeYoung, 2006). Therefore, past and expected high performance or/and market power mean more sources to cover such additional costs. In this context, banks are more likely to be able to pursue a diversification strategy.

Bank fixed effects allow the detection of time-invariant factors such as culture. We also empirically test the potential endogeneity issues between diversification and performance in Section 5.2. Section 3.3 then discusses the instrumental variable panel quantile estimation to verify the robustness of our results.

3.3 Testing distributional heterogeneity

To enhance our empirical analyses and add robustness to our results, we employ a quantile regression mechanism to estimate possible heterogeneous impacts of geographic diversification and local banking on the entire distribution of ROA and efficiency adjusted Lerner Index. We also apply a quantile regression when LE_L , LE_D , $\Delta loan_{it}$, and $\Delta Deposit_{it}$ are dependent variables in Model 1. Among available methods in panel quantile regression, we employ Powell's (2016) unconditional instrumental variable (IV) panel quantile estimation method because it solves a fundamental problem posed by alternative fixed-effect quantile estimators: inclusion of individual fixed effects alters the interpretation of the estimated coefficient on the treatment variable. Letting D_{it} represent policy variables, X_{it} represent control variables, Z_{it} represent instruments, and Y_{it} represent the dependent variable, then equations (1) and (3) can be generalized to the following IV unconditional panel quantile regression equation as in Powell (2016):

$$y_{it} = d'_{it}\beta(u^*_{it}), \quad (4)$$

In equation (6), $u^*_{it}|Z_{it}, X_{it} \sim u^*_{it}|X_{it}$, $u^*_{it} \sim U(0,1)$.

Moreover, $P(Y_{it} \leq D'_{it}\beta(\tau)|Z_{it}, X_{it}) = P(Y_{it} \leq D'_{it}\beta(\tau)|X_{it}) = \tau X_{it}$, where τ denotes the quantile of the distribution. Powell (2016) maintains the non-separable disturbance property implicit in conditional quantile regression. The exogeneity assumption is that within-individual changes in the policy variables, they do not provide information about changes in the disturbance term, u^*_{it} .

3.4 The measure of monopoly market power

In order to measure the monopoly market power of a bank, we make use of the Lerner Index (*LERNER*) largely used in the banking literature (recently, Carbo´ et al., 2009; Koetter

et al. 2012; Forssbäck and Shehzad, 2015). It measures the extent to which a bank is able to set a price above its marginal cost. The formula is expressed as follows:

$$\text{LERNER}=(P_{it} - MC_{it})/ P_{it} \quad (5)$$

where P_{it} is the price and MC_{it} is the marginal cost. Since we aim to analyze the effect of local banking structure on the market power in loan and deposit markets, we calculate two Lerner Indexes for both loans and deposits. Specifically, in the Lerner index for loans, P_{it} is the ratio of interest income (P_{Lit}), while in the Lerner index for deposits it is the ratio of interest expenses on deposits (P_{Dit}). The marginal costs for deposits, MC_{Dit} , and loans, MC_{Lit} are derived from the translog cost function that we specify following Maudos and De Guevara et al. (2007), Williams (2012), and Forssbäck and Shehzad (2015) with two inputs and two outputs:

$$\begin{aligned} \text{Ln}(TC_{it})= & \gamma_0 + \gamma_L \ln Loans_{it} + \gamma_D \ln Dep_{it} + \sum \gamma_h \ln W_{hit} + \frac{1}{2} \sum \gamma_{hm} \ln W_{hit} \ln W_{mit} + \frac{1}{2} \gamma_{DD} (\ln Dep_{it})^2 + \\ & \frac{1}{2} \gamma_{LL} (\ln Loans_{it})^2 + \gamma_{LD} \ln Dep_{it} \ln Loans_{it} \\ & + \sum \gamma_{hL} \ln W_{hit} \ln Loans_{it} + \sum \gamma_{hD} \ln W_{hit} \ln Dep_{it} + t_1 T + t_2 T^2 + t_L T \ln Loans_{it} + \\ & t_D T \ln Dep_{it} + t_h T \ln W_{hit} + u_{it} + v_{it} \end{aligned} \quad (6)$$

for $h \neq m$

where TC is the sum of personnel expense and other administrative expenses; $\ln Loans_{it}$ is the log of customer loans; $\ln Dep_{it}$ is the log of customer deposits; $\ln W_{hit}$ are the capital and labour prices which are respectively calculated as the ratio of number of employees/personnel expenses and other administrative expenses/fixed assets; T is a time trend. Following Koetter et al. (2012), we estimate the equation using an SFA approach (Kumbhakar & Lovell, 2000)^x. We apply both the symmetry of the second order parameters and the restrictions of linear

homogeneity in input prices. In accordance with Solís and Maudos (2008), MC_{Lit} and MC_{Dit} are then specified as follows:

$$\partial TC_{it} / \partial \ln Loans_{it} =$$

$$MC_{Lit} = [\gamma_L + \gamma_{LL} \ln Loans_{it} + \gamma_{LD} \ln Dep_{it} + \sum \gamma_{hL} \ln W_{hit} + t_L T] (TC_{it} / Loans_{it}) \quad (7)$$

$$\partial TC_{it} / \partial \ln Dep_{it} =$$

$$MC_{Dit} = [\gamma_D + \gamma_{DD} \ln Dep_{it} + \gamma_{LD} \ln Loans_{it} + \sum \gamma_{hD} \ln W_{hit} + t_D T] (TC_{it} / Dep_{it})$$

As an additional robust measure of monopoly market power, we also calculate the efficiency-adjusted Lerner index (Eq. 10) proposed by Koetter et al. (2012):

$$Adj LE = (\widehat{PBT} + \widehat{TC} - MC * TA) / (\widehat{PBT} + \widehat{TC}) \quad (8)$$

where \widehat{TC} is the predicted total operating cost, \widehat{PBT} are the predicted profits before taxes, TA is total assets and MC is marginal costs. In order to predict both total operating cost and profits before taxes, we specify cost and profit functions, with one output (total assets) and three inputs. Specifically, in addition to the capital price and labour price (as defined before), we include the price of financial capital defined as the ratio of interest expenses to customer deposits (See Appendix 1). Thus, total cost includes interest expenses, administrative expenses, and personnel expenses in this specification. Finally, in order to handle losses in the stochastic profit frontier we apply the approach of Bos and Koetter (2011).

4. Dataset and Descriptive Statistics

Our dataset includes 12,371 observations over the period 1993-2011. Within the total number of observations, 6,338 refer to banks that are only located in one single province. The panel is

unbalanced, due to consolidation, new entries and bankruptcies. We exclude banks that are specialized in leasing and investment banking activities from the dataset. Furthermore, we exclude banks for which the amount of deposits or equity is equal to zero.

The dataset we build is drawn from three different sources: the Bank of Italy, the Italian Banking Association (ABI) and ISTAT. Information on bank's branches was obtained from the Bank of Italy. The bank-level variables have been constructed using data obtained from the Italian Banking Association. The analysis is conducted at the bank level using yearly data. Finally, the data on local market structure was collected from ISTAT. Table 1 illustrates the descriptive statistics of the dataset used in the empirical analysis while Table 2 reports the correlation table with significance levels. Table A1 in Appendix 2 shows the trend for the efficiency-adjusted Lerner index, and the Lerner index for loans and deposits over time.

<Insert Table 1 about here>

<Insert Table 2 about here>

5. Empirical findings

5.1 Geographic Expansion, Market Features and Performance

Results are reported in Tables 3 to 6. Specifically, Table 3 presents three specifications: the first one is our baseline model, the second one considers only cooperatives and saving banks, while the third one considers banks with large branches. Table 3 shows the regression results for Eq. 1, where ROA and Adj LE are dependent variables.

<Insert Table 3 about here>

Our results do not confirm H1.a, which predicts a negative impact of geographical diversification, GD, on performance while they confirm H1.b, which predicts a negative impact of DISTANCE on performance. In particular, $DISTANCE_{it-1}$, is negatively related to the adjusted-Lerner Index and performance for the first specification and the latter one.

Instead, we did not find any significant result for DISTANCE when we restrict our sample to cooperative and saving banks. This is plausible since they are local banks that are geographically restricted to a small local area. Therefore, DISTANCE should be less relevant for this type of bank. Overall, these findings are in line with Deng and Elyasiani (2008) who find a value reduction associated with distance between a bank's headquarters and its branches.

Focusing on H1.c, we find that GD has a negative impact on monopoly market power for Specification I, which includes the entire dataset, and for Specification III, which considers only banks that have large branches. Instead, we found that GD affects negatively and significantly on the monopoly market power of cooperative and saving banks. A possible explanation for our results can be attributed to the fact that the Italian local market presents several dissimilarities in terms of productive structure. A high dispersion of branches over the territory can therefore reduce the familiarity of a bank with the local economy and increase the organizational costs and agency costs. This is especially important for cooperative and saving banks. For those we observe a reduction of market power when they expand their network in different and distant local markets. Shifting our attention to H1.d, we find again that DISTANCE impacts negatively on the monopoly market power in the case of the database that includes all banks (as in the case of H1.b) and banks with only large branches. Our result is in line with other studies on the banking sector that show that specialization in a local market can increase performance (Mercieca et al., 2007). Furthermore, our findings show that the performance of banks with a large network can also suffer from diversification. This is plausible since agency costs are higher as the size of branches and the complexity of the organization increase.

The market coverage, MC, is also significantly and negatively related to performance in the case of banks with large branches. These results suggest that high numbers of branches

located in the same province, and therefore with a high proximity, generate more costs than competitive benefits. In accordance with Chiappori et al. (1995), we argue that, for a bank already present in a province, the increase in the number of branches in the same province generates negative externalities for the market share for its other branches. Consequently, bank performance can suffer as well.

The relationship between several independent variables and the adjusted Lerner Index are economically significant. A one standard deviation increase of weighed distance is associated with a 1.6% (2.3×0.007) decrease in the adjusted Lerner Index. These results are consistent with those of previous papers on geographical diversification of banks (Berger et al., 2010; Deng and Elesyani, 2008; Dick, 2006). In the case of banks with large branches, the decrease in the adjusted Lerner Index is around 2.4%. As concerns the savings and cooperative banks, a one standard deviation increase of geographical diversification can decrease the adjusted Lerner Index for a figure of 2% (-0.0572×0.3).

The *NPLs* variable is negatively and significantly related to performance. As we explained in the methodological section, *NPLs* is a proxy of the risk management quality. This suggests that an excessive risk-taking strategy together with “bad management” can harm the performance of a bank. From an economic viewpoint, this means that a one standard deviation increase of *NPLs* can decrease the ROA of 0.12% (-0.04×0.03).

<Insert Table 4 about here>

Table 4 shows the results relative to the impact of geographical strategies and local market characteristics on both changes in the amount of loans and monopoly market power in the loan market. We find that geographical strategies do not impact significantly on the monopoly market power in the loan market. Therefore, we do not find support for our H2.a. As suggested by Park and Pennacchi (2009), multi-market banks tend to promote competition in the loan market by fixing lower interest rates on loans. As a counter effect, banks that

become highly geographically diversified share more markets with the competitors. An increase of multi-market contacts between large institutions can offer them incentives for anti-competitive behaviour. In this context, banks tend to not compete with each other and fix a high-interest rate on loans. In our dataset, these contrasting phenomena can detect the impact of geographical strategies on monopoly market power of a bank. As predicted by H2.c, we find that the distance between a bank's headquarters and its branches can reduce the growth of loans. From an economic perspective, our results indicate that a one standard deviation increase of DISTANCE is associated with a 1.4 % (-0.006×2.3) decrease in growth of loans.

In accordance with the conventional view of risk-return trade-off (Chronopoulos et al., 2015), we find a negative relationship between capitalization (EQTA) and monopoly market power. Furthermore, we also find that banks with a "bad management", high NPLs, experience a lower increase of loans compared to other banks. This means that a high investment volume can be driven by high investment efficiency and quality.

<Insert Table 5 about here>

Table 5 shows the results relative to the impact of geographical strategies and local market characteristics on both changes in the amount of deposits and monopoly market power in the deposit market (H2.b and H2.d). Geographical diversification, distance and market concentration of branches in the same province reduce deposits offered to customers. This result does not support H2.b, which predicts that GD has a positive effect on the amount of deposits and monopoly market power in the deposit market. GD only positively and significantly affects LED_g while it has a negative and significant impact on $\Delta \ln Dep$. As highlighted by Chiappori et al. (1995), a possible explanation for this result is that over-branching can increase competitive pressure by reducing each branch's market power in the deposit market. This can push banks to pay a high interest rate on deposits. Furthermore, as

pointed out by Park and Pennacchi (2009) and Hannan and Prager (2009), larger and more diversified banks enjoy wholesale funding advantages. Therefore, a bank that increases its size and network can also collect funds through different channels and not only through the deposit channel. This can explain why we do not find any significant impact of GD on $\Delta \ln \text{Dep}$.

Our findings also show that EQTA affects negatively and significantly on LED, while NPLs impacts positively and significantly on LED. Finally, the coefficient of the weighted HHIw, the measure of branches' concentration in the local markets where a bank operates, does not present any significant relationship with the adjusted Lerner Index, or monopoly market power in loans and deposits (Table 4-5). From an economic perspective, our results indicate that a one standard deviation increase of geographical diversification is associated with a 1% (-0.038×0.3) decrease in growth of deposits. Instead, a one standard deviation increase of distance between a bank's headquarters and its branches is associated with a 0.3% (-0.0105×0.3) decrease in growth of deposits. Finally, a one standard deviation increase of geographical diversification is associated with a 2.4% (0.079×0.3) increase in Lerner Index in the deposit market.

Table 6 shows the results for Equation (3).

<Insert Table 6 about here>

We focus on the competitive dynamics in local markets by analysing the impact of the market share of medium and large banks on the performance of single-market banks. Compared to previous studies (Hannan and Prager, 2009; Coccoresse, 2009), we examine the impact of the entrance of large banks in a province on lending strategies, the adjusted Lerner Index and monopoly market power on loans and deposits by instead solely focusing on

performance. Furthermore, the analysis of Hannan and Prager (2009) is mainly focused on the performance of urban and rural banks, whereas we take into account single-market banks that operate in variegated urban and economic environments. Following Park and Pennacchi (2009) and Hannan and Prager (2009) we calculate the interaction between HHI and MC_LargeB, the market coverage of medium-large banks.

After controlling for firm and time effects, our results show that the coefficients of HHI×MC_LargeB, NPLs and EQTA are all negatively and significantly related to ROA for single-market banks. Our findings also show that the joint combination of a high concentration of banks and high presence of medium-large banks enhances the performance of single-market banks, as predicted by the structure-conduct-performance paradigm. In contrast to our expectations, we find that the presence of medium-large banks intensifies this relationship. This outcome is not consistent with previous studies on the US banking system. For example, Berger et al. (2007) find that the profitability of single-small banks is negatively related to multi-market bank presence in the 1990s, because multi-market banks experienced unprecedented technological progress in lending, which provides them with an advantage compared to their smaller counterparts. Our results may suggest that small banks do not compete with large and medium banks and do not share the same type of clients. Consistently, the banking literature acknowledges the importance of bank organizational form and complexity for credit allocation. Highly hierarchically organized banks tend to experience more organizational frictions in lending information to opaque borrowers, which are typically small and innovative firms (Berger and Udell, 2002; Uchida et al., 2008). The gathering of soft information is a costly and unobservable investment for local officers (Alessandrini et al., 2010) and generates agency and incentive problems throughout the banking organisation, especially if several managerial layers (Berger and Udell, 2002). Therefore, large banks are more prone to lend to larger and more transparent firms (Berger et

al., 2005; Uchida et al., 2008), rather than financing small and innovative businesses. In contrast, small banks allocate more lending to small businesses than large banks. Small banks are able to meet the credit needs of small businesses more effectively due to their access to better credit information and ability to manage soft information (Berger and Udell 2002; Uchida et al., 2008). Therefore, small banks can still preserve a privileged position in lending to SMEs compared to large banks. This view finds further confirmation when we look at the relationship between the presence of large-medium bank in the province and the Lerner Index for loans and deposits of single-market banks. In contrast to H3.b, the entrance of medium-large banks do not affect the monopoly market power of single-market banks in the loan market. We find that single-market banks experience a drop in the Lerner Index in the deposit market, due to an increase in the number of medium-large banks in this market. As argued by Park and Pennacchi (2009), medium and large banks tend to harm competition in retail deposit markets. Thus, the presence of multi-market banks generates an anti-competitive effect on retail deposits. Furthermore, consistently with H4.a, we find that the amount of loans to total assets of single-market banks decreases as the market coverage of medium and large banks increases together with the market concentration (See Specification 3 of Model 2, Table 6). Large banks are also more diversified: the availability of a full range of products (factoring, international payments, consultant activities etc.) by a single provider is perceived as a factor of product quality, which can in turn bolster the reputation of a bank. Finally, we do not find support for H4.b.

The relationship between $HHI \times MC_LargeB$ and the dependent variables are economically significant. For example, a one standard deviation increase of $HHI \times MC_LargeB$ is associated with a 2.6% (0.67×0.04) decrease in the ratio loans to total assets. The reduction of the Lerner Index in the deposit market appears to be more consistent, 2.2% (-0.547×0.04).

5.2 Endogeneity bias and distributional effects

We empirically test the potential endogeneity issues between diversification and performance. First of all, we run the Durbin-Wu-Hausman test for endogeneity. As several other papers that have studied the Italian banking system (Alessandrini et al., 2010, Minetti et al., 2015) have done, we follow Guiso et al. (2004) for the choice of the instruments. In particular, we use the number of branches per 10,000 inhabitants in 1936 and the number of cooperative banks in the province per 100,000 inhabitants. As argued by Alessandrini et al. (2010) and Minetti et al. (2015), the structure of the banking system in 1936 is correlated to the geographical distribution of branches in the 1990s. As the banking market structure can affect a bank's diversification strategy, this means that the structure of the banking system in 1936 could also potentially affect a bank's diversification strategy. However, the banking structure in 1936 is not correlated to the current economic environment and is therefore unlikely to affect the current performance and market power of a bank. The Durbin-Wu-Hausman test for endogeneity is not significant for any of our specifications. This suggests that diversification strategies are not endogenous with respect to performance and the adjusted Lerner Index. Our instruments are not weak as they impact significantly on the geographical diversification variable (See Appendix 3).

5.3 Distributional effects

In Tables 7, 8 and 9 we have presented quantile regression estimates for the impact of geographic diversification and local banking on ROA, efficiency-adjusted Lerner Index, Adj LE, (Table 7), loan growth and Lerner Index for loans, LE_L , (Table 8), deposit growth and Lerner Index for deposits, LE_D (Table 9).

<Insert Table 7 about here>

<Insert Table 8 about here>

<Insert Table 9 about here>

Similar to the mean-based IV panel regression, we also use Bank Branches_1936 (the number of branches per 10,000 inhabitants in 1936) and Cooperative Banks_1936 (the number of cooperative banks in the province per 100,000 inhabitants) as our instruments. The estimation is carried out in two steps; in the first step, performance variable is regressed upon the instruments and other possible exogenous regressors. In the second step, the endogeneity free regressor is used in the final quantile regression. Although we have estimated for all quantiles τ between 0 and 1, we are reporting in Tables 7-9 only the results of 50th quantile or the median (to save space). Several interesting results emerge. To begin with, our IV panel quantile results are similar to ones obtained using the conventional mean-based IV panel regression although the statistical significance of the coefficients are stronger than the former. One of the reasons being that estimation at the median, for large samples, can approximate the results from the mean-regression with some bias (positive or negative). Moreover, at the median, the observations which estimate the functions are possibly well-behaved and pertain to the estimation from the mean.

Table 7 (col. 1 with ROA as dependent variable) we observe that the effect of GD is negative and highly significant. Comparing the results with the same variable in Table 3 (col. 1) we find that (i) the effect of GD at median quantile is generally negative but displays positive effects for ROA (col. 2). The results seem to be robust across specifications and replacement of the dependent variable by Adj LE and the first two models with ROA as dependent variable. Notably, NPLs impacts negatively on ROA and the Adj LE for all the quantiles, in this way strengthening the results of Table 3. In addition, we find that EQTA positively and significantly affects ROA and Adj LE at the median quantile. Furthermore, we

find that DISTANCE impacts negatively on ROA, Adj LE, $\Delta \ln \text{Loans}$, LE_L , $\Delta \ln \text{Dep}$ and LE_D . A point on the smaller coefficients for covariates such as DISTANCE needs to be made. The smaller coefficients are firstly due to non-rescaling of the variables (it is possible to have smaller coefficients due to the sheer and variables magnitudes of dependent and explanatory variables). In Table 8 we examine the distributional effects of geographic diversification and local banking structure on loan growth. From Table 4 (without instrumentation) it is clear that the effect of GD is variable (negative/positive) and insignificant throughout specifications. In contrast, these estimates are highly statistically significant in Table 8. Notably, the effects of DISTANCE are significant at 1% level in most instances and for all quantiles. Similarly, HHI_w is also highly significant and displays large positive effects at 90th than at 25th and 50th quantiles on average for LE_L . By focusing on Table 9, we find that positive effect of GD on growth of deposits. Interestingly, MC_w now appears to be significant related to LE_D at the median quantile ($\tau = 0.5$). Furthermore, NPLs and EQTA result to be respectively positively and negatively related to LE_D for almost all the quantiles as in Table 5.

6. Conclusion

The reduction, or even removal of legal barriers to bank branching, has contributed to changes in the market structure and the competitive conditions of the banking sector. As this paper examines the dynamics of competitive behaviour and local market structure of Italian banks during the period 1993 to 2011, it has relevance for both policy makers and the viability of local banking. One reason for this is that this paper examines the effect of local geographic strategies, measured in terms of geographic dispersion and average distance between the headquarters of a bank and its branches, and branch density on performance, loan origination, deposit collection and monopoly market power. Another reason is that it analyzes the effect of market coverage of medium and large banks and local market

concentration of branches on the competitive viability and lending of single-market banks. First, we have applied a panel data fixed effects model. Next, we have rerun our main models by using unconditional instrumental variables (IV) quantile regression to verify the robustness of the effect of geographical diversification strategies on performance, adjusted Lerner index, lending and funding strategies under full distributional assumptions.

Our findings show that the distance between the headquarters of a bank and its branches decreases the performance, the growth of loans, and deposits of banks. Moreover, our findings indicate that an increase of capitalization can increase the lending activities of a bank, but harm its monopoly market power in both the deposit and loan market. Our results further indicate that an increase of medium-large banks' branches in highly concentrated markets impacts negatively on the lending of single-market banks. Finally, the heightened presence of large and medium banks in concentrated markets does not affect the Lerner Index of single-market banks in the loan market, while it decreases the Lerner Index in the deposit market.

This suggests that antitrust authorities should be mindful that the entrance of medium and large banks in a local market and the consolidation of their market share can increase the level of competition in the deposit markets. At the same time, it may be appropriate for these authorities to take into account the fact that the increase of the share of local market branches of medium and large banks in highly concentrated markets can harm the lending activities of small banks without reducing their price of loans. This is an important warning since these type of banks play a pivotal role for SMEs to access credit. Thus, the reduction of their lending activities could potentially harm the local economic development, especially in areas where SMEs are more spread-out.

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Appendix 1

Cost and Profit Translog Function

Our model assumes the following form:

$$\begin{aligned} \ln(TC_{it}) = & \gamma_0 + \gamma_{TA} \ln TA_{it} + \sum \gamma_h \ln W_{hit} + \\ & \frac{1}{2} \sum \gamma_{hm} \ln W_{hit} \ln W_{mit} + \frac{1}{2} \gamma_{TA} (\ln TA_{it})^2 + \sum \gamma_{hTA} \ln W_{hit} \ln TA_{it} + t_1 T + t_2 T^2 + \\ & t_{TA} \ln TA_{it} + t_h T \ln W_{hit} + u_{it} + v_{it} \end{aligned} \quad (1A)$$

for $h \neq m$.

Total costs (TC_{it}) includes other administrative expenses, personnel expenses and interest expenses. TA_{it} is total assets; W_{1it} is the ratio of personnel expenses to the total number of employees; W_{2it} is the ratio of other administrative expenses to fixed assets; and W_{3it} the ratio of interest expenses to customer deposits; T is the time trend. We normalized with respect to W_{3it} to impose linear homogeneity on the input prices. In the profit translog function we use profits before taxes as the dependent variable.

Appendix 2

Table A1. Mean of Efficiency-adjusted Lerner Index (Adj LE), Lerner Index for Loans (LE_L) and Deposits, (LE_D)

YEAR	Adj LE	St. Err.	LE_L	St. Err.	LE_D	St. Err.
1993	0.161	0.007	0.871	0.002	0.736	0.004
1994	0.157	0.004	0.852	0.002	0.688	0.004
1995	0.124	0.004	0.850	0.002	0.675	0.005
1996	0.126	0.005	0.845	0.002	0.696	0.004
1997	0.145	0.005	0.820	0.002	0.644	0.005
1998	0.195	0.005	0.789	0.003	0.543	0.006
1999	0.242	0.006	0.731	0.004	0.295	0.009
2000	0.210	0.007	0.750	0.004	0.382	0.008

2001	0.185	0.009	0.753	0.004	0.468	0.007
2002	0.205	0.009	0.728	0.004	0.407	0.008
2003	0.246	0.008	0.712	0.004	0.306	0.009
2004	0.244	0.009	0.691	0.005	0.247	0.010
2005	0.218	0.008	0.689	0.004	0.262	0.010
2006	0.187	0.009	0.720	0.004	0.396	0.010
2007	0.080	0.012	0.748	0.005	0.540	0.009
2008	0.039	0.009	0.765	0.004	0.615	0.008
2009	0.147	0.013	0.670	0.005	0.395	0.010
2010	0.192	0.009	0.627	0.005	0.241	0.011
2011	0.153	0.008	0.659	0.004	0.341	0.011

Appendix 3

Table A.2 Durbin-Wu-Hausman test for endogeneity: Geographic Diversification vs Performance and Adj. Lerner Index

VARIABLES	(1) GD	(2) ROA	(3) Adjusted Lerner Index
Bank Branches_1936	0.0134*** [0.003]		
Cooperative Banks_1936	0.1552*** [0.043]		
GD		-0.0005 [0.002]	-0.0231 [0.026]
MCw	0.2508 [0.159]	-0.0328 [0.025]	-0.6965 [0.356]
NPLs	-0.0557 [0.072]	-0.0400*** [0.007]	-0.0201 [0.069]
EQTA	-0.2167*** [0.064]	0.0027 [0.011]	0.0372 [0.080]
ENTRY	0.0114*** [0.002]	0.0004*** [0.000]	0.0041*** [0.002]
HHIw	0.0749 [0.136]	-0.0139** [0.007]	0.2080** [0.095]
Residuals (Model 1)		-0.0026 [0.003]	-0.0097 [0.041]
Constant	0.2626*** [0.017]	0.0022 [0.001]	0.1329*** [0.017]

Observations	12,371	12,371	12,371
TIME DUMMY	YES	YES	YES
BANK DUMMY	YES	YES	YES
<i>Durbin-Wu-Hausman test (p-value)</i>		0.3182	0.8134

Note: Bank Branches_1936 (the number of branches per 10,000 inhabitants in 1936) and Cooperative Banks_1936 (the number of cooperative banks in the province per 100,000 inhabitants) are the instruments. GD is geographic diversification calculated with the Berry Index; MCw is the market coverage weighted for loan volume; NPLs is the amount of non-performing loans; EQTA is equity over total assets; ENTRY is the net number of new branches over total branches in each province; HHIw is the concentration of branches in each province weighted for loan volume. Standard errors are clustered by Bank ID and are reported in brackets. All the variables are lagged. *** p<0.01, ** p<0.05

Table A.3. Durbin-Wu-Hausman test for endogeneity: Distance vs Performance and Adj Lerner Index

VARIABLES	(1) DISTANCE	(2) ROA	(3) Adjusted Lerner Index
Bank Branches_1936	0.1170*** [0.025]		
Cooperative Banks_1936	1.1943*** [0.283]		
DISTANCE		-0.0002 [0.001]	-0.0176 [0.016]
MCw	5.4417*** [1.745]	-0.0313 [0.022]	-0.5834 [0.360]
NPLs	-1.0226 [0.732]	-0.0403*** [0.007]	-0.0368 [0.071]
EQTA	-2.7392*** [0.675]	0.0022 [0.011]	-0.0079 [0.092]
ENTRY	-0.0505*** [0.013]	0.0004** [0.000]	0.0031 [0.002]
HHIw	-0.8768 [1.530]	-0.0141** [0.007]	0.1937** [0.091]
Residuals (Model 1)		-0.0004 [0.001]	0.0080 [0.017]
Constant	5.9528*** [0.195]	0.0036 [0.008]	0.2341** [0.100]
Observations	12,371	12,371	12,371
TIME DUMMY	YES	YES	YES

BANK DUMMY	YES	YES	YES
<i>Durbin-Wu-Hausman test (p-value)</i>		0.6836	0.6391

Note: Bank Branches_1936 (the number of branches per 10,000 inhabitants in 1936) and Cooperative Banks_1936 (the number of cooperative banks in the province per 100,000 inhabitants) are the instruments. DISTANCE is the logarithm of the distance between the two zip codes at the province level; MCw is the market coverage weighted for loan volume; NPLs is the amount of non-performing loans; EQTA is equity over total assets; ENTRY is the net number of new branches over total branches in each province; HHwI is the concentration of branches in each province weighted for loan volume. Standard errors are clustered by Bank ID and are reported in brackets. All the variables are lagged. *** p<0.01, ** p<0.05

Table 1. Descriptive Statistics

VARIABLES	OBS	Mean	Std. Dev.	Mdn	Quantile	
					Q1	Q3
ROA	12371	0.01	0.01	0.01	0	0.01
LNTA	12371	0.69	0.14	0.7	0.59	0.8
DPTA	12371	0.58	0.11	0.57	0.5	0.65
Loans	12371	12.08	1.88	11.81	10.71	13.16
Deposits	12371	11.9	1.81	11.61	10.65	12.84
Total Assets	12371	12.48	1.79	12.21	11.22	13.45
GD	12371	0.23	0.3	0	0	0.44
DISTANCE	12371	4.35	2.3	4.62	3.14	5.86
MC	12371	0.06	0.02	0.05	0.04	0.07
MC_LargeB (*)	6,338	0.49	0.22	0.54	0.22	0.66
PSizeL	12371	0.08	0.18	0.01	0.01	0.04
NPLs	12371	0.02	0.03	0.01	0.01	0.03
EQTA	12371	0.12	0.06	0.11	0.09	0.14
HHI	12371	0.1	0.04	0.1	0.08	0.12
Adj LE	12371	0.17	0.21	0.19	0.1	0.28
LEL	12371	0.75	0.11	0.77	0.7	0.83
LED	12371	0.47	0.26	0.53	0.32	0.68

Note: ROA is the return on equity; LNTA is total loans over total assets; DPTA is total deposits over total assets; Loans is the logarithm of total loans to customers; Deposits is the logarithm of total deposits to customers; Total assets is the logarithm of total assets; GD is the geographic distribution of branches in all the provinces; DISTANCE is the weighted distance (logarithm of total km) measure as the total distance between a bank's headquarters and its branches, with weights being the bank's branches in a province as a share of total branches of the same bank; MC is the average market

coverage calculated as the share of branches owned by a bank in a province; MC_LargeB is the % of branches owned by medium and large banks in a province; PSizeL is calculated as the total amount of loans offered by the banking system in all the provinces where a bank operates divided by the total amount of loans at the national level; NPLs is the amount of nonperforming loans to total loans; EQTA is the ratio of equity to total assets; HHI is the average market concentration of branches in all the local markets where a bank operates; Adj LE is the efficiency-adjusted Lerner index calculated following Koetter et al. (2012); LEL is the Lerner Index for loans; LED is the Lerner Index for deposits.

(*) The data reported is for single-market banks.

Table 2. Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
ROA	1	1.000													
LNTA	2	-0.217	1.000												
DPTA	3	-0.044	-0.173	1.000											
GD	4	-0.108	0.291	0.133	1.000										
DISTANCE	5	-0.058	0.147	0.069	0.442	1.000									
MC	6	-0.014	-0.363	0.115	-0.072	-0.043	1.000								
MC_LargeB	7	-0.168	0.111	0.126	0.249	0.069	-0.081	1.000							
NPLs	8	-0.122	-0.189	0.052	-0.043	-0.027	0.263	0.106	1.000						
EQTA	9	0.074	-0.149	-0.221	-0.268	-0.157	-0.033	-0.058	-0.087	1.000					
ENTRY	10	-0.066	0.007	0.013	-0.024	-0.179	0.052	0.120	-0.020	0.152	1.000				
HHI	11	-0.027	-0.081	0.140	0.157	0.107	0.171	0.306	0.196	-0.104	-0.185	1.000			

Adj LE	12	0.434	-0.099	-0.270	-0.216	-0.092	-0.509	-0.256	-0.084	0.041	-0.060	-0.124	1.000		
LEL	13	0.342	-0.298	-0.128	-0.272	-0.132	0.287	-0.301	0.122	-0.109	-0.059	0.002	0.451	1.000	
LED	14	0.216	-0.153	-0.188	-0.051	0.003	0.366	-0.267	0.071	-0.207	0.007	-0.024	0.226	0.771	1.000

Note: ROA is the return on equity; LNTA is total loans over total assets; DPTA is total deposits over total assets; GD is the geographic distribution of branches in all the provinces; DISTANCE is the logarithm of total km between a bank's headquarters and its branches divided by the number of branches it owns; MC is the average market coverage calculated as the share of branches owned by a bank in a province; MC_LargeB is the % of branches owned by medium and large banks in a province; NPLs is the amount of non-performing loans to total loans; EQTA is the ratio of equity to total assets; ENTRY is the total net entry in each province; HHI is the average market concentration of branches in all the local markets where a bank operates; Adj LE is the efficiency-adjusted Lerner index calculated following Koetter et al. (2012); LEL is the Lerner Index for loans; LED is the Lerner Index for deposits.

Table 3. The Impact of Geographic Diversification and Local Banking Structure on ROA and efficiency-adjusted Lerner index (Adj LE)

VARIABLES	(1)	(2)	(3)	(1)	(2)	(3)
	ROA	ROA	ROA	Adj LE	Adj LE	Adj LE
GD	-0.0015 [0.002]	-0.0008 [0.001]	-0.0028 [0.003]	-0.0183 [0.022]	-0.0572** [0.022]	0.0062 [0.030]
DISTANCE	-0.0005*** [0.0001]	-0.0001 [0.000]	-0.0007*** [0.0002]	-0.0070*** [0.002]	-0.0032 [0.002]	-0.0071** [0.003]
MCw	-0.0278 [0.023]	0.0018 [0.046]	-0.0543** [0.022]	-0.6403 [0.351]	-0.8186 [0.452]	-1.2214*** [0.450]
NPLs	-0.0396*** [0.007]	-0.0328*** [0.007]	-0.0330*** [0.009]	-0.0151 [0.068]	-0.0463 [0.074]	0.1129 [0.084]
EQTA	0.0009 [0.010]	-0.0063 [0.006]	0.0130 [0.016]	0.0181 [0.078]	0.0115 [0.061]	-0.0212 [0.127]
ENTRY	0.0003** [0.000]	0.0003*** [0.000]	0.0002 [0.000]	0.0032** [0.002]	0.0030** [0.001]	-0.0003 [0.002]
HHIw	-0.0130** [0.007]	-0.0054 [0.006]	-0.0100 [0.009]	0.2150** [0.092]	0.1506 [0.089]	0.0717 [0.139]
Constant	0.0052*** [0.001]	0.0026** [0.001]	0.0059*** [0.002]	0.1703*** [0.018]	0.1907*** [0.014]	0.1975*** [0.033]
Observations	12,371	9,265	6,228	12,371	9,265	6,228
R-squared	0.156	0.295	0.100	0.226	0.340	0.221
Bank Dummy	YES	YES	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES	YES	YES

Note: The Table reports the coefficient estimates from equation 1. It specifically presents the results of the determinants of bank profitability measured by ROA and the efficiency-adjusted Lerner Index, Adj LE, (Koetter et al., 2012). All explanatory variables enter the regressions with a one year lag. GD is geographic diversification calculated with the Berry Index; DISTANCE is the weighted distance between the headquarters and the branches; MCw is the market coverage weighted for loan volume; NPLs is the amount of non-performing loans; EQTA is equity over total assets; ENTRY is the net number of new branches over total branches in each province; HHIw is the concentration of branches in each province weighted for loan volume. Standard errors are clustered by bank ID. Specification I includes all banks; specification II includes only the cooperative and saving banks, while specification III only banks with large branches includes only banks with large branches. ** $p < .05$, *** $p < .01$.

Table 4. The Impact of Geographic Diversification and Local Banking Structure on Loan Growth ($\Delta \ln \text{Loans}$) and Lerner Index for Loans (LEL)

VARIABLES	(1) $\Delta \ln \text{Loans}$	(2) $\Delta \ln \text{Loans}$	(1) LEL	(2) LEL
GD	-0.0135 [0.016]	0.0031 [0.024]	0.0036 [0.015]	0.0148 [0.023]
DISTANCE	-0.0061*** [0.002]	-0.0069** [0.003]	-0.0016 [0.001]	-0.0013 [0.002]
MCw	0.3188 [0.210]	0.3524 [0.288]	0.0242 [0.233]	-0.0633 [0.338]
NPLs	-0.1436** [0.065]	-0.0627 [0.081]	-0.0342 [0.036]	-0.0232 [0.063]
EQTA	0.2662*** [0.056]	0.2454*** [0.057]	-0.2156*** [0.041]	-0.2348*** [0.066]
ENTRY	0.0040*** [0.001]	0.0035 [0.002]	0.0005 [0.001]	-0.0009 [0.001]
HHIw	-0.0241 [0.075]	-0.0279 [0.118]	0.0283 [0.052]	0.0831 [0.087]
Constant	0.0311** [0.015]	0.0246 [0.024]	0.6889*** [0.011]	0.6748*** [0.021]
Observations	12,371	6,228	12,371	6,228
R-squared (within)	0.140	0.124	0.666	0.608
Bank Dummy	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES

Note: The Table reports the coefficient estimates from equation 1. $\Delta \ln \text{Loans}$ is the change of loans (expressed in logarithm) from t and $t-1$. LEL , Lerner Index for loans. All explanatory variables enter the regressions with a one year lag. GD is geographic diversification calculated with the Berry Index; DISTANCE is the weighted distance between the headquarter and the branches; MCw is the weighted market coverage; NPLs is the amount of non-performing loans; EQTA is equity over total assets; ENTRY is the net number of new branches over total branches in each province; HHIw is the weighed concentration of branches in each province; Standard errors are clustered by bank ID. ** $p < .05$, *** $p < .01$. Specifications I includes all banks, while specification II includes only banks with large branches.

Table 5. The Impact of Geographic Diversification and Local Banking Structure on Deposit Growth ($\Delta \ln \text{Dep}$) and Lerner Index for Deposits LED

VARIABLES	(1) $\Delta \ln \text{Dep}$	(2) $\Delta \ln \text{Dep}$	(1) LED	(2) LED
GD	-0.0380** [0.015]	-0.0165 [0.021]	0.0799** [0.031]	0.0988** [0.041]
DISTANCE	-0.0105*** [0.002]	-0.0108*** [0.003]	-0.0056 [0.003]	-0.0046 [0.004]
MCw	-0.5058** [0.215]	-0.6331** [0.260]	0.4715 [0.466]	0.2269 [0.734]
NPLs	-0.0386 [0.046]	-0.0099 [0.057]	0.3063*** [0.104]	0.3089** [0.149]
EQTA			-0.7532*** [0.084]	-0.6579*** [0.110]
ENTRY	0.0039*** [0.001]	0.0028 [0.002]	0.0031 [0.002]	0.0024 [0.003]
HHIw	0.0479 [0.074]	-0.0317 [0.109]	0.3174** [0.137]	0.5076** [0.208]
Constant	0.1272*** [0.011]	0.1220*** [0.019]	0.3801*** [0.027]	0.3469*** [0.043]
Observations	12,371	6,228	12,371	6,228
R-squared (within)	0.077	0.105	0.633	0.633
Bank Dummy	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES

Note: The Table reports the coefficient estimates from equation 1. $\Delta \ln \text{Dep}$ is the change of deposits (expressed in logarithm) from t and $t-1$. LED , Lerner Index for deposits. All explanatory variables enter the regressions with a one year lag. GD is geographic diversification calculated with the Berry Index; NPLs is the amount of non-performing loans; EQTA is equity over total assets; DISTANCE is the weighted distance between the headquarter and the branches; MCw is the weighted market coverage; ENTRY is the net number of new branches over total branches in each province; HHIw is the weighed concentration of branches in each province; Standard errors are clustered by bank ID. ** $p < .05$, *** $p < .01$. Specifications I includes all banks, while specification II includes only banks with large branches.

Table 6. ROA, Adj Lerner Index, Loans over Total Assets (LNTA), Deposits over Total Assets (DPTA) and Lerner Index for Loans (LEL) and Deposits of Single-Market Banks (LEd)

VARIABLES	(1) ROA	(2) Adj Lerner Index	(3) LNTA	(4) DPTA	(5) LEL	(6) LEd
MC_LargeB	-0.0017 [0.001]	0.0669** [0.032]	0.0667 [0.037]	-0.0581 [0.031]	0.0086 [0.011]	0.1076*** [0.029]
HHI	-0.0165 [0.009]	0.5052** [0.215]	0.5890** [0.230]	-0.5495*** [0.195]	-0.0064 [0.053]	0.7094*** [0.166]
HHI×MC_LargeB ^{xi}	0.0191*** [0.007]	-0.4698 [0.297]	-0.6757** [0.341]	0.3597 [0.278]	0.0163 [0.082]	-0.5474** [0.223]
MC	-0.0142 [0.016]	-0.8262 [0.566]	0.5095 [0.425]	-0.1998 [0.391]	-0.3332 [0.181]	0.2246 [0.705]
NPLs	-0.0311*** [0.008]	0.0250 [0.094]	0.0347 [0.090]	-0.2500*** [0.084]	-0.0258 [0.032]	0.2529*** [0.072]
EQTA	-0.0152*** [0.006]	0.0317 [0.072]	0.0427 [0.069]		-0.2570*** [0.033]	-1.0592*** [0.098]
PSizeL	-0.0007 [0.003]	-0.0004 [0.036]	0.0356 [0.040]	-0.0536 [0.028]	0.0082 [0.011]	0.0132 [0.050]
Constant	0.0057*** [0.001]	0.1577*** [0.026]	0.6922*** [0.026]	0.6480*** [0.021]	0.7224*** [0.008]	0.3565*** [0.026]
Observations	6,338	6,338	6,338	6,338	6,338	6,338
R-squared (within)	0.300	0.315	0.520	0.119	0.798	0.678
Bank Dummy	YES	YES	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES	YES	YES

Note: The Table reports the coefficient estimates from equation 3. The dependent variables are ROA; adjusted Lerner Index (Koetter et al, 2012); LNTA, loans over total assets; DPTA, deposits over total assets; *LEL*, Lerner Index for loans and *LEd*, Lerner Index for deposits. All explanatory variables enter the regressions with a one year lag. MC_LargeB is the market coverage of medium and large banks; HHI is the concentration of branches in each province; MC is the market coverage; NPLs is non-performing loans; EQTA is equity over total assets; PSizeL is the amount of loans in a province divided the total amount of loans at the country level. Standard errors are clustered by bank ID. ** $p < .05$, *** $p < .01$.

Table 7. Distributional effects of the Impact of Geographic Diversification and Local Banking Structure on ROA and efficiency-adjusted Lerner index (Adj LE)

VARIABLES	(1) ROA	(2) ROA	(3) ROA	(1) Adj LE	(2) Adj LE	(3) Adj LE
GD:						
$\tau=0.50$	-0.0034***	0.0050***	-0.00077***	-0.115***	0.0765***	-0.0699***
DISTANCE						
$\tau=0.50$	-0.0001***	-0.0006***	-0.00024***	-0.022***	-0.018***	-0.0057***
MCw						
$\tau=0.50$	-0.0078***	0.158***	-0.0178***	-2.414***	-2.132***	-0.5005***
NPLs						
$\tau=0.50$	-0.0237***	-0.0163***	-0.0333***	-0.0570	-0.871***	-0.881***
EQTA						
$\tau=0.50$	0.0146***	0.0093	0.0217***	0.108***	0.161*	0.3017***
ENTRY						
$\tau=0.50$	0.0003***	0.00009***	-0.0002	0.0017***	-0.001	0.0039***
HHIw						
$\tau=0.50$	-0.0098***	0.0169***	0.0018	-0.414***	-0.520***	-0.323***
Observations	11251	8416	5598	11251	8415	5598
R-squared	0.117	0.210	0.235	0.450	0.535	0.516

Note: The Table reports the coefficient estimates from IV panel (unconditional) quantile regression at the 50th quantile or median. Bank Branches_1936 (the number of branches per 10,000 inhabitants in 1936) and Cooperative Banks_1936 (the number of cooperative banks in the province per 100,000 inhabitants) are the instruments. The estimation involved 10,000 Monte Carlo simulations. It specifically presents the results of the determinants of bank profitability measured by ROA and the efficiency-adjusted Lerner Index, Adj LE, (Koetter et al., 2012) at various points of the distribution (here three quantiles: 25th, 50th, and 90th). All explanatory variables enter the regressions with a one year lag. GD is geographic diversification calculated with the Berry Index; DISTANCE is the weighted distance between the headquarters and the branches; MCw is the market coverage weighted for loan volume; NPLs is the amount of non-performing loans; EQTA is equity over total assets; ENTRY is the net number of new branches over total branches in each province; HHIw is the concentration of branches in each province weighted for loan volume. Standard errors are clustered by bank ID. Specification I includes all banks; specification II includes only the cooperative and saving banks, while specification III only banks with large branches includes only banks with large branches. ** $p < .05$, *** $p < .01$.

Table 8. The Impact of Geographic Diversification and Local Banking Structure on Loan Growth ($\Delta \ln \text{Loans}$) and Lerner Index for Loans (LEL)

VARIABLES	(1) $\Delta \ln \text{Loans}$	(2) $\Delta \ln \text{Loans}$	(1) LEL	(2) LEL
GD				
$\tau = 0.50$	-0.0268***	-0.013***	0.060***	-0.041**
DISTANCE				
$\tau = 0.50$	0.0016	-0.004***	-0.0055***	-0.006***
MCw				
$\tau = 0.50$	-0.598***	-0.332***	-0.426***	0.042
NPLs				
$\tau = 0.50$	-0.219***	-0.261***	-0.179***	0.116
EQTA				
$\tau = 0.50$	0.303***	0.269***	0.309***	-0.192***
ENTRY				
$\tau = 0.50$	0.069***	0.002***	0.0038***	-0.0008*
HHIw				
$\tau = 0.50$	0.019***	-0.145*	0.051***	0.163***
Observations	11255	5598	11255	5598
R-squared	0.221	0.239	0.598	0.640

Note: The Table reports the coefficient estimates from IV panel (unconditional) quantile regression at the 50th quantile or median. Bank Branches_1936 (the number of branches per 10,000 inhabitants in 1936) and Cooperative Banks_1936 (the number of cooperative banks in the province per 100,000 inhabitants) are the instruments. The estimation involved 10,000 Monte Carlo simulations. $\Delta \ln \text{Loans}$ is the change of loans (expressed in logarithm) from t and $t-1$. LEL , Lerner Index for loans. All explanatory variables enter the regressions with a one year lag. GD is geographic diversification calculated with the Berry Index; DISTANCE is the weighted distance between the headquarter and the branches; MCw is the weighted market coverage; NPLs is the amount of non-performing loans; EQTA is equity over total assets; ENTRY is the net number of new branches over total branches in each province; HHIw is the weighed concentration of branches in each province; MC is the unweighted market coverage; HHI is the unweighted concentration of branches in each province; PSizeL is the amount of loans in a province divided the total amount of loans at the country level. Standard errors are clustered by bank ID: ** $p < .05$, *** $p < .01$. Specifications I includes all banks, while specification II includes only banks with large branches.

Table 9. The Impact of Geographic Diversification and Local Banking Structure on Loan Growth ($\Delta \ln \text{Dep}$) and Lerner Index for Deposits (LED)

VARIABLES	(1) $\Delta \ln \text{Dep}$	(2) $\Delta \ln \text{Dep}$	(1) LED	(2) LED
GD				
$\tau = 0.50$	0.051***	-0.013***	-0.029***	-0.041**
DISTANCE				
$\tau = 0.50$	-0.003***	-0.004***	-0.018***	-0.006***
MC _w				
$\tau = 0.50$	-1.680***	-0.332***	1.325***	0.042
NPLs				
$\tau = 0.50$	0.023***	-0.261***	0.226***	0.116
EQTA				
$\tau = 0.50$			-1.047***	-0.192***
ENTRY				
$\tau = 0.50$	0.002***	0.002***	-0.001	-0.0008*
HHI _w				
$\tau = 0.50$	0.059***	-0.145*	0.227***	0.163***
Observations	11255	5598	11255	5598
R-squared	0.121	0.195	0.566	0.600

Note: The Table reports the coefficient estimates from IV panel (unconditional) quantile regression at the 50th quantile or median. Bank Branches_1936 (the number of branches per 10,000 inhabitants in 1936) and Cooperative Banks_1936 (the number of cooperative banks in the province per 100,000 inhabitants) are the instruments. The estimation involved 10,000 Monte Carlo simulations. $\Delta \ln \text{Dep}$ is the change of deposits (expressed in logarithm) from t and $t-1$. LED , Lerner Index for deposits. All explanatory variables enter the regressions with a one year lag. GD is geographic diversification calculated with the Berry Index; DISTANCE is the weighted distance between the headquarter and the branches; MC_w is the weighted market coverage; NPLs is the amount of non-performing loans; EQTA is equity over total assets; ENTRY is the net number of new branches over total branches in each province; HHI_w is the weighed concentration of branches in each province; MC is the unweighted market coverage; HHI is the unweighted concentration of branches in each province; PSizeL is the amount of loans in a province divided the total amount of loans at the country level. Standard errors are clustered by bank ID. * $p < .10$, ** $p < .05$, *** $p < .01$. Specifications I includes all banks, while specification II includes only banks with large branches.

Notes

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- ⁱ The number of local branches in the EU fell 17% (from 232,525 to 198,744) between 2009 and 2013 (ECB, 2013).
- ⁱⁱ Like Germany, Italian banks conduct relationship banking where soft information is collected from customers at a branch level. This is not the case in the UK where transactional banking is the dominant model.
- ⁱⁱⁱ $\Delta Loan_{it}$: mean is 0.105 and standard deviation is 0.113; $\Delta Deposit_{it}$: mean is 0.084 and standard deviation is 0.106.
- ^{iv} HHI is calculated as the sum of the squared market coverage for all the banks in each single province.
- ^v The SCP states that abnormal profits are the result of high market concentration that increases collusion among firms (Berger and Hannan, 1989; Goldberg and Rai, 1996).
- ^{vi} HHI and other measures of competition just take the number of branches at the end of the period.
- ^{vii} The mean of $\Delta loan_{it}$ after winsorization is 0.102. The mean of $\Delta Deposit_{it}$ after winsorization is 0.867.
- ^{viii} The data on the number of employees for each bank is provided by ABI, while the data on branches per bank is provided by the Bank of Italy.
- ^{ix} In accordance with the classification of the Bank of Italy, we consider as medium and large banks those banks that have more than €9 billion in total assets.
- ^x Pooled OLS assumes that banks are fully cost efficient (Koetter et al., 2012).

^{xi} The mean is 0.046 and standard deviation is 0.039.