Intra-competitiveness and inter-competitiveness among mutual banks: the case of Trento

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May 2012

ABSTRACT

Cooperative banking entails a typical trade-off. The small size, specialization and high correlation of customers' credit risks are often considered typical weaknesses of local mutual banks. Nonetheless, these banks appear to be largely non substitutable providers of loans to local economies, given their comparative advantages in screening, monitoring and enforcement with respect to other banks. We explore the idea that the solution of this trade-off is affected by the interplay between banks' ownership structures and the competitive conditions of the markets in which they operate. Focusing on the banking market of the Italian province of Trento, characterized by a significant presence of cooperative banks and a variety of different competitive environments at the local level, we find that an heightened competition among mutual banks is not socially beneficial, as it entails a lower ability to transform local savings into local loans, as well as a worse risk allocation.

Keywords. Cooperative Banks, Competition, Local Credit Market

JEL classification. G21, L41, R30

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1. Introduction

In the last twenty years, following the liberalization of the Italian banking industry, banks underwent a reorganization process that greatly impacted both on the workings of individual banks and on the overall structure of the industry. In contrast with the previous period, when both internal and external growth of individual banks were hindered by a number of administrative constraints, liberalization allowed banks to expand in a number of directions, letting them benefit from scale and scope economies (Angelini and Cetorelli, 2003). The increase in competition enhanced by liberalization also blurred the traditional distinction among different types of banks. The ensuing substantial change of the industry structure reduced the total number of banking firms and increased the number of branches. Liberalization particularly affected local banking markets. Today, many Italian credit institutions traditionally serving local markets – such as popular banks and the former savings banks – belong to credit conglomerates operating nationwide. This has been seen as a source of concern, as the benefits of larger scale and scope economies have likely been obtained at the cost of weaker links with the territory and of reduced capability to serve local financial needs.

However, the picture is somewhat different when one looks at a third type of local banks, namely mutual cooperative banks.[1] On the one hand, these banks too have been affected by the aggregation process and the connected increase in the number of branches. On the other hand, aggregations have taken place only within the cooperative credit system, without determining relevant changes in bank size and ownership structure. This has allowed mutual cooperative banks to maintain their local roots basically unchanged, so that today mutual banks still remain largely focused on the collection of local savings and on the provision of financial services for locally established small and medium-sized firms.

Nonetheless, especially at the beginning of the last decade, the specificity of mutual cooperative banks was seen as an additional source of concern. In what appeared to be an irreversibly changing market environment, the persistence of the

[1] We refer to these institutions as mutual banks, cooperative banks and *Banche di Credito Cooperativo* (BCC), as they are named by the Italian legislator. The *Banche di Credito Cooperativo* are not the only banks established as cooperatives; in fact, this characteristic is also common to the so called *Banche Popolari*. Nonetheless, the latter can make credit to any firms or individuals and open branches in any location in the country. On the contrary, a *Banca di Credito Cooperativo* can only operate with its own members and in the municipalities where they live; moreover, in order to became a member, an individual (or a firm) must reside (or have its registered office) in the municipality where the bank is established.

traditional model of local banking was seen as a competitive weakness (Clemente, 2002). It was believed that, being unable to fully exploit the benefits of scale and scope economies with respect to their competitors, local mutual banks would eventually be put at serious cost disadvantage, as they had to face an environment characterized by rapid advances in information technology, an increasing demand for sophisticated financial instruments, together with customers' preference for one-stop shopping. In other words, it was feared that local mutual banks would find growing difficulties in the provision of the innovative and dynamic financial services that lie at the core of modern financial markets. Even in the typical credit activity, it was thought that mutual banks would experience a worsening in the quality of loans, as a combined result of the disappearing of other types of local banks and of the difficulties of diversifying their credit risk, due to the local concentration of borrowers. The fact that, in those same years, the ratio of bad loans to total loans for mutual banks overcame the same ratio for the entire banking system was taken as a serious negative signal, as traditionally this ratio was more favourable to mutual banks.

Along the decade, however, a number of facts have forced observers to attenuate those assessments. Several annual reports of the Bank of Italy[2] show that, in Italy, smaller banks, and particularly mutual banks, have been recording higher rates of growth in lending to firms and households than other financial intermediaries. At first, the good performance of Italian small banks was interpreted as a transitory phenomenon, mainly due to the difficulties of larger competitors in facing restructuring and reorganization after the waves of M&As that took place starting in the mid Nineties (Bonaccorsi di Patti *et Al.*, 2005 and Bonaccorsi di Patti and Gobbi, 2001). Subsequent studies, however, emphasized that these phenomena can be better interpreted in the light of the theoretical literature on small banks' characteristics (Bongini *et Al.*, 2007). The provision of credit to local borrowers proved to be a distinctive feature of mutual cooperative banks for which the rest of the banking system offered poor substitutability. Thus, at the end of the decade, the prospects of cooperative credit seemed to involve a typical trade-off: on the one hand, mutual banks still suffered from specific disadvantages, mainly attributable to small size, specialization, and the higher correlation of debt owners' default risks; on the other hand, they appeared to be a largely not substitutable provider of loans to local borrowers.

[2] See for example Banca d'Italia (2011), p. 204, Banca d'Italia (2009), p. 207, Banca d'Italia (2002), p. 250.

This paper analyses the above trade-off following the approach suggested by Hansmann (1996), who focuses on the ownership structure of mutual banks. The basic idea is that the solution of the trade-off may be significantly affected by the interplay of the ownership structures and the competitive conditions in mutual banks markets. To start with, consider that, historically, mutual banks were created as cooperative organizations among self-producers. 'Marginal' firms in local markets were compelled to establish mutual credit organizations in order to escape the specific credit rationing that might cause them disadvantages as a consequence of typical market failures in 'normal' credit markets. Therefore, at the beginning, mutual banks were mostly 'natural monopolist' in their own territory. It is true that, as time passed, mutual banks also started operating in larger territories, where they competed with other types of banks. Under those circumstances, however, mutual banks kept being tied to their original 'raison d'être', as they adapted to a sort of natural market segmentation: even in larger markets, in fact, mutual credit cooperatives mainly generated loans to 'marginal' borrowers that would find excessively costly to obtain, or would be totally denied, credit from other types of banks operating in the same markets. Moreover, market segmentation and the specificity of mutual banks led, as a natural consequence, to the circumstance that in normal conditions only one mutual bank was operating in a given territory. As a matter of fact, before liberalization, this result was also enforced by the current law. However, after 1993, under the new Banking Law (*Testo Unico Bancario*), the territorial overlapping of mutual banks was no longer hampered. In recent years, both the Bank of Italy and the Italian Competition Authority have repeatedly argued that competition among mutual banks ('intra-competitiveness') is to be seen as a valuable component of the competitive process in banking markets, along with competition between mutual banks and other (non-mutual) types of banks ('inter-competitiveness').

In contrast with the views held by the Bank of Italy and the Italian Competition Authority, we ask whether the territorial overlapping of mutual banks should be considered as a matter of concern from the point of view of the economic theory of cooperative credit. In other words, we wonder whether the competitive behavior of mutual cooperative organizations should be evaluated using different lenses than those adopted to investigate other banks. In particular, our analysis concentrates on the working of mutual banks and their performance in the province of Trento in the decade 2000-2009. Although this might seem a quite narrow focus, this area is particularly interesting, because of the presence of a well-developed banking system –

an important share of which represented by mutual banks - serving a territory characterized by a wide array of small and medium size firms. Even more interestingly, the territory depicts a variety of competitive environments, ranging from situations in which mutual banks act as monopolists in local markets to situations in which they compete among themselves and with other credit institutions. In this perspective, the lessons to be learnt are not specific to the province of Trento only, but they are probably of more general interest.

In our analysis, we take explicitly into account the different competitive conditions in the local markets in which mutual banks operate. In particular, we focus on the effects of 'intra-competitiveness' (i.e., competition among mutual banks) and 'inter-competitiveness' (i.e., competition between the mutual banks and other non-mutual banks) of mutual banks, and we analyse how those conditions have affected the strategic choices and economic performances of mutual banks. We find that, at least for medium and large size mutual banks, the 'loan to deposit' ratio tends to be significantly higher for mutual banks that do not compete with each other, but compete only with non-mutual banks. Moreover these mutual banks also show a higher 'loan to total asset' ratio. We interpret these results as suggesting that both the ability of mutual banks to transform local savings into local loans (that we label as *local effectiveness*) and the ability of mutual banks to manage the credit risk (that we label as *mission efficiency*) are better achieved when the degree of inter-competition is high, but the degree of intra-competition is low. A further, consistent, result shows that the 'bad loans to total loans' ratio is significantly lower for mutual banks that compete with non-mutual banks only.

The rest of the paper is organized as follows. In Section 2 we describe the characteristics of the mutual bank industry, we discuss the indicators of competition and performance on which we base our empirical analysis, and we illustrate our dataset. Section 3 presents the results of our econometric specifications, while Section 4 discusses the policy implications of our analysis.

2. The mutual bank industry in the province of Trento: competition and performance

In order to investigate whether different competitive conditions impact on the ability of mutual banks to pursue their mission, we concentrate on banks operating in the province of Trento. Our database is a pooled cross-section including financial and income statements for all of the mutual banks operating in the years going from 2000 to 2009.

2.1 The characteristics of the mutual bank industry

Table 1 illustrates the composition of the banking industry in the province of Trento during the decade 2000-2009.

<INSERT TABLE 1 ABOUT HERE>

The data show that mutual banks account for a relevant share of the local banking industry. Their number decreased from 65 in year 2000 to 46 in year 2009, as the result of mergers and acquisitions within the sector; in the same period, the share of mutual bank branches out of all bank branches decreased from 66% to about 60%. Despite this numeric reduction, the weight of mutual banks over the entire banking system of the province increased substantially: in fact, their share of deposits and bank bonds increased from 68% in year 2000 to 76% in year 2009 and, most of all, their share of loans went from 52% to 65% during the same period.

2.2 Indicators of performance for the mutual banks

As argued in the Introduction and in Section 2, the specific mission of a mutual bank is to provide loans to local borrowers, which consist mainly of small and medium-size firms. Indeed, the literature widely recognizes that mutual banks have a relative advantage, over large banks operating at the national scale, in screening, monitoring and enforcement. Building on this literature, we appraise the performance of mutual banks as their ability to collect savings at the local level and to transform them into loans to local firms. Accordingly, in order to evaluate their performance we

rely on assets and liabilities rather than on income data; in particular, we interpret loans as the key variable to measure the compliance of mutual banks to their mission.

More precisely, we adopt two different criteria. The first builds on the 'loans to deposits' ratio, in computing which - with a slight language abuse - we include in deposits also *own* bank bonds. We interpret this ratio as a measure of the *local effectiveness* of mutual banks, in the sense that the higher is this ratio, the greater is the ability of mutual banks to transform *local* savings into loans to *local* borrowers. The second criterion builds on the 'loans to total assets' ratio, which we interpret as an indicator of mutual banks *mission efficiency*. In fact, it is widely recognized that the loans portfolios of mutual banks are on average riskier than those of other banks, due to a larger risk correlation (as mutual bank customers are geographically concentrated). Therefore, assuming that mutual banks manage risks efficiently, a larger 'loans-to-assets' ratio would indicate a higher efficiency in managing credit risk.

Obviously, one needs to control for the possibility that mutual banks, lending a larger fraction of their assets compared to other banks, do not end up having a larger incidence of bad loans out of total loans, which would hardly be an indicator of the ability to efficiently manage credit risks. For this reason, we include among our indicators of performance of the mutual banks also the 'bad loans to total loans' ratio.

2.3 Competition and performance

In order to analyse the impact of different competitive environments on the performance of mutual banks - as measured by the indicators introduced above - it is useful to classify the mutual banks operating in the province of Trento in the period 2000 to 2009 into three groups, according to the nature of their competitors. The first group is composed by the mutual banks that - in each year - are monopolists in their own territory. The second group encompasses the mutual banks competing both with each other and with non-mutual banks. Finally, the third group includes all the mutual banks that compete with non-mutual banks only.

<INSERT TABLE 2 ABOUT HERE>

Table 2 describes the characteristics of the three groups. First of all, one should note that group composition changes over time as a result of M&As processes, as well as of the opening (or shutting down) of branches in different areas. The first group is

by far the smallest one, including – on average, over the whole period of time – about 23% of the mutual banks operating in the province of Trento, but only 8% of their total assets, 7% of loans and 8% of deposits (and bank bonds). In year 2009, this group includes only nine small banks operating in small municipalities; their average assets are less than one third of the sector mean in the province, while average loans are about one fourth. The second group is the largest one and includes - on average over the whole period of time – about 40% of the mutual banks operating in the province (with about 55% of their assets, loans and deposits). In year 2009, the group includes eighteen mostly large banks, whose assets and loans are in excess of one and a half times the sector average. The third group includes almost the same number of banks as the second (37% on average), but only 36% of the sector assets, loans and deposits. In year 2009, the nineteen banks belonging to this group were intermediate in size with respect to those of the first and the second group.

Table 2 reveals several interesting facts. First of all, the amount of saving directly collected by the banks through deposits and bank bonds greatly increased over time, going from 5.4 trillion € in year 2000 to 12.6 trillion in year 2009. Second, over the same period, the (off-balance sheet) assets under management diminished significantly, going from 4.3 trillion € in year 2000 to 3.3 trillion € in year 2009. These changes represent a quite radical revision of the strategies followed by the mutual banks over the period. Third, it emerges clearly that the weight of the banks belonging to group 2 increased over time, regardless of the variable (assets, loans or deposits) taken into account, while those of the banks belonging to both groups 1 and 3 decreased considerably.

<INSERT TABLE 3 ABOUT HERE>

Table 3 shows the performance of the three groups of banks in the decade 2000-2009, according to our local effectiveness and mission efficiency indicators.

In terms of *local effectiveness*, we observe a clear ranking of the three groups. In 2009 the banks of group 3 show an average 'loans-to-deposits' ratio of 93.7%, followed by the banks of group 2 (92.1%), and finally by those of group 1 (87.6%). Moreover, we observe that during the decade the ratio increased at a faster rate for the banks belonging respectively to groups 1 and 3 (from 66.7% to 87.6%, with a 31% increase, and from 79.7% to 93.7%, with a 17% growth) than for banks of group 2 (from 81.6% to 92.1%, with a 13% increase).

More detailed information (not reported in table 3) displays significant differences within the banks belonging to group 2. In particular, the smallest banks of this group follow a pattern that closely resembles that of the banks of group 1. Moreover, the banks of the second group operating in the territory characterized by the highest degree of competition[3] among mutual banks showed a faster increase of the 'loans-to-deposits' ratio than the average bank of group 2. Summarizing, the descriptive evidence suggests that banks of group 1 are characterized by a lower degree of local effectiveness than those belonging to groups 2 and 3;[4] banks of group 2 are characterized by a lower degree of local effectiveness than those belonging to group 3.

Considering *mission efficiency*, the 'loans-to-total- assets' ratio increased from 63.4% to 77.9% during the decade 2000-2009. In this context, the banks belonging to group 1 show the lowest 'loans-to-total-assets' ratio, which is easily explained recalling that these mutual banks typically operate in small municipalities characterized by more correlated risks. As for the second and third group of mutual banks, although they show – at the end of the period - very similar ratios (78.3% and 78.1%, respectively), their dynamics has been different over the decade. In fact, for group 2, the 'loans-to-total-assets' ratio increased at a slower pace than for group 3 (19% and 24% respectively).

As already argued above, it is worth complementing the analysis of *mission efficiency* by looking at the ratio of 'bad loans-to-total loans' - interpreted as a proxy for the credit risk faced by a bank - in order to check that a larger volume of loans does not translate also in a large share of bad loans. Table 4 summarizes the descriptive evidence.

<INSERT TABLE 4 ABOUT HERE>

We observe that this ratio is lower for mutual banks than for the average of all banks, with the difference being particularly large in the years of the financial crisis (2006-2009). All mutual banks, regardless of their competitive environment, have seen a decrease in the ratio until 2006, and an increase thereafter. Within groups, the

[3] This sub-group is composed of six banks operating in the area of Garda Lake and Idro Lake.
[4] However, as the smallest banks belonging to group 2 do not behave differently from those of group 1, one need to check carefully whether different group performances are the result of size differences rather than of different competitive environments.

only systematic difference concerns the lower value of the ratio of bad loans to total loans for group 3.

3. Empirical analysis

The descriptive evidence illustrated in Section 3 highlights the existence of differences (on average) among mutual banks operating in the different competitive environments characterizing the three groups identified above. The econometric exercise in this section is aimed at assessing quantitatively the differences between the three groups. In particular, we address three issues: (i) the relationship between loans and deposits, as an indicator of *local effectiveness*; (ii) the relationship between loans and total assets, as an indicator of *mission efficiency*; (iii) the relationship between bad loans and total loans.

3.1 Local effectiveness

In order to estimate the degree of mutual banks *local effectiveness*, we use our database to regress loans on deposits, on a series of dummies indicating the group to which each bank belongs (using group 2 as the benchmark), and on the interaction between deposits and group dummies. Moreover, we control for fixed time effects by means of year dummies, using year 2009 as our benchmark[5]. Our results are summarized in Table 5, which reports four models. Our base specification is given by the pooled cross-section analysis in Column 1. We then check the robustness of our findings in Column 2, with a model accounting for the presence of repeated observations for each mutual bank, therefore controlling for cluster effects. Moreover, the existence of both cross-sectional and over time variability in groups composition allows us to rely both on random and on fixed-effect estimates, to evaluate the effects of covariates on the dependent variable; in Columns 3 and 4, we explicitly control for the panel structure of our data estimating a random-effect and a fixed-effect panel model, respectively.

<INSERT TABLE 5 ABOUT HERE>

[5] Variable definitions and summary statistics are reported in Appendix table 1.

Focusing on Model 1, it is immediate to observe that – for the mutual banks belonging to group 2 - deposits have a positive and statistically significant (at the 1% level) effect on loans: an increase of 1 million € in deposits determines a growth of slightly more than 910,000 € in loans. As the intercept of the model is positive, one could reasonably conclude that – for banks belonging to the benchmark group – the ratio of 'loans-to-deposits' decreases as the size of the mutual banks grows, and it is therefore lower for the largest banks in the group.[6]

Looking at the results for the third group of banks, Table 5 shows that the overall effect of deposits on loans is – in this case - even larger (and again statistically significant at the 1% level): an increase of 1 million € in deposits determines now a growth of about 971,000 € in loans. At the same time, the model intercept for the banks belonging to this group is negative and statistically significant at the 1% level. Therefore, as it can be appreciated in Figure 1, above a threshold of 206.15 million € in deposits, the 'loans-to-deposits' ratio for banks of group 3 – which increases in bank size – takes larger values than the one characterizing the banks belonging to the second group. The estimated amount of loans at this threshold ranges between 185,1 million € and 199.9 million €, entailing a 'loans-to-deposits' ratio ranging between 89.79% and 96.97%.[7] These are plausible values for the banks in our sample. In fact, looking at the 2009 data for the third group, one could see that 8 out of the 19 banks in the group have deposits and loans exceeding the estimated threshold. When considering the banks belonging to group 2, 11 out of 18 banks in the group exceed the threshold. These results suggest that the absence of competition among mutual banks improves local effectiveness only if the banks belonging to group 3 reach a size close to the average group size (that is equal to 239 million in deposits).

[6] Note that although the intercept of the model is not statistically significant, the 95% confidence interval for the intercept ranges from -255,041 to 12,220,000.

[7] Observe that the figure is drawn by taking into account the 95% confidence interval for the intercept of group 2, whose point estimate is not statistically significant at the conventional levels.

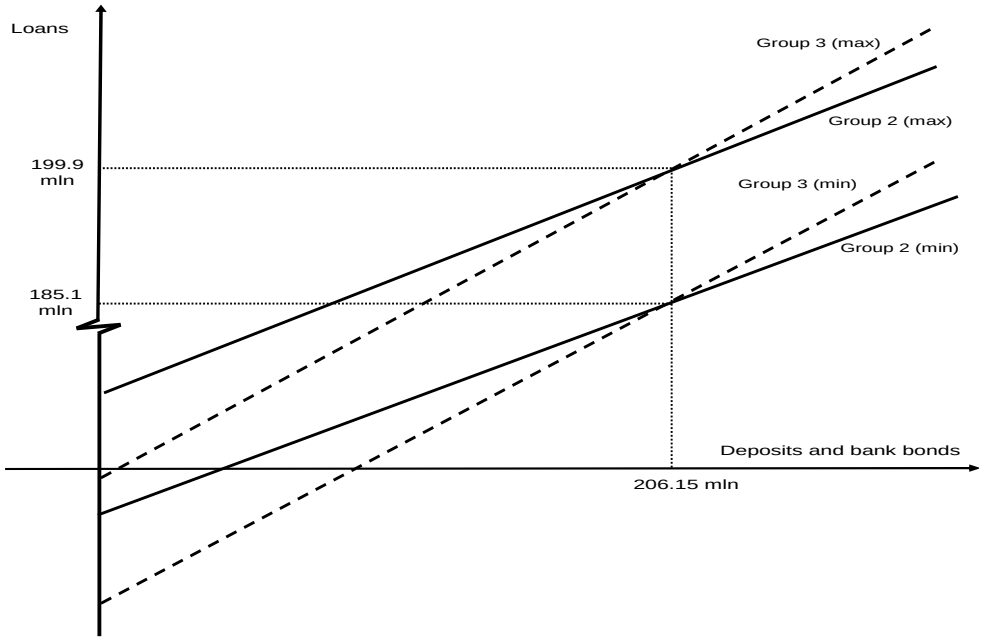

FIGURE 1: third group versus second group MBs

The key result that the ratio of loans to deposits is larger for group 3 than for group 2 banks (over a given size threshold) is largely confirmed by the different econometric specifications of the models in Columns (II)-(IV) of Table 5, accounting for the presence of bank clusters and the panel structure of the data.

Looking finally at group 1, it emerges that the effect of an increase in deposits on loans is smaller than the one observed for groups 2 and 3; this result holds for all our econometric exercises. In particular, considering the model in Column (I) of Table 5, an increase of 1 million € in deposits determines an increase in loans of about 760,000 € only. Moreover, our panel specifications (Columns (III) and (IV)) establish that the local effectiveness of group 1 banks is smaller than the one of the other two groups. Hence, the lower value of the 'loans-to-deposits' ratio is due not only to the smaller size of these banks, but also to their specific characteristics, that we relate to the competitive environment in which they operate. Note that this conclusion does not carry over unambiguously to our cross-sectional models (columns (I) and (II)), for which the intercept of both group 1 and the benchmark group 2 are not statistically significant at the conventional levels, so that it is not possible to conclude that the 'loans-to-deposits' ratio of group 1 banks is necessarily lower than the one of other banks.

3.2 Mission efficiency

As stated in Section 3, we estimate *mission efficiency* investigating the relationship between loans and total assets. In doing so, we rely on the same econometric specifications used to evaluate *local effectiveness*, but for the adoption of total assets as the fundamental covariate in all models. Our results are reported in Table 6.

<INSERT TABLE 6 ABOUT HERE>

In all our econometric specifications, we find a strong positive effect of total assets on loans for the banks belonging to the benchmark group 2. In our baseline model (Column (I)), an increase of 1 million € in total assets is associated to an increase in loans of 775,000 €. From the panel specifications in Columns (III) and (IV), it appears that the model intercept for the benchmark group is negative (and statistically significant), showing that the ratio of 'loans-to-total assets' increases with bank size, which suggests that the largest banks in this group are better able to control for credit risk in their markets.

Our results are not as strong as far as group 3 banks are concerned. Although not always statistically significant at the conventional levels, the model intercept is lower and the effect of total assets on loans is larger for the banks belonging to this group than for those in the benchmark group. This suggests that group 3 banks – or at least the largest among them – have a better ability to control local credit risks than banks belonging to group 2. These results are in line with our theoretical argument, even if they are not as satisfactory as those we obtain looking at *local effectiveness*.

Finally, focusing on group 1 banks, our econometric specifications concerning *mission efficiency* lead to much stronger results than those obtained for *local effectiveness*. In particular, the 'loans-to-total assets' ratio for group 1 banks is systematically lower than for the mutual banks belonging to the other groups.

3.3 Bad loans

The results of the econometric analysis concerning the relationship between bad loans and total loans, which shares the same features of the models in the previous

two sub-sections, are summarized in Table 7. This relationship appears to be positive and increasing for the benchmark group 2 in all our specifications. At the same time, the large and positive value of the model intercept and the low value of the slope parameter (both statistically significant at the 1% level) suggest that the fraction of bad loans out of total loans is much larger for the smaller banks within the group.

<INSERT TABLE 7 ABOUT HERE>

As for the banks belonging to group 3, all our models show a lower marginal effect of total loans on bad loans, when compared to the benchmark group 2. Furthermore, the model intercept for group 3 banks, when statistically significant (see the panel specification in Column (IV)), appears to be lower than the one for the benchmark group, suggesting a lower incidence of bad loans - and therefore a better ability to control credit risk - for banks belonging to the third group with respect to those in the benchmark group, regardless of bank size. These findings are consistent also with the descriptive statistics provided in Table 4.

Although not reported in Table 7, it may be worth noting that, using year 2009 as a reference, all other year dummies are negative and statistically significant at the 1% level. This suggests that the economic crisis burst in 2008 following the Lehmann Brothers bankruptcy had a significant impact on Trento's mutual banks starting from 2009. Accounting for this observation, in Table 8, we redo the same econometric exercises of Table 7, excluding however year 2009 from the analysis. Our results are confirmed also in this setup, suggesting that they stem from structural differences in the mutual bank industry.

<INSERT TABLE 8 ABOUT HERE>

4. Discussion and policy implications

Over the past decade, both the Bank of Italy and the Italian Competition Authority have frequently highlighted the opportunity of an heightened competition into the cooperative banking sector, favouring both an increase in the size of mutual banks and their territorial overlapping. This view is rooted in the idea that local mutual banks, given their small size, do not succeed in exploiting scale and scope economies.

Furthermore, given the localism of their activities, cooperative banks are characterized by a large correlation of the credit risks they face.

An opposite view, however, stresses the advantages of local banking, underlying that 'distance' is an important barrier to lending and a main cause of segmentation of local credit markets (see, e.g., Guiso *et Al.*, 2004; Petersen and Rajan, 2002; and, for a specific application to Italy, Bofondi and Gobbi, 2003). In this respect, the spatial proximity of mutual banks with their borrowers proves to be the source of important comparative advantages for small local banks compared to other banks. The crucial activities of screening, monitoring and enforcement can be based not only on *hard* information (usually difficult to obtain when involving small borrowers) but also on the collection of *soft* information that allows the local mutual bank to be better informed on the quality of local borrowers than larger non-mutual banks, able to better monitor the use of loaned funds and better equipped in recovering them (Banerjee *et al.*, 1994; Berger and Udell, 2002). The benefits of the so-called 'relationship lending' are usually greater for a mutual cooperative bank, since to operate in the same community to which its customers also belong (establishing with them long-term relations) makes the bank better equipped to contrast the moral hazard typically arising in credit markets. Moreover, since borrowers are usually members of the mutual bank, peer monitoring helps making the control of moral hazard still tighter (Stiglitz, 1990): this is because team incentives apply in such cases, since the losses for unrecovered loans are borne by all members (Holmström, 1982) and the threat of social sanctions, as well as the pressure of voice and loyalty, are stronger.

Our empirical analysis suggests that the trade-off between the costs and benefits of cooperative local banking, encompassed by the views outlined above, should be resolved in favour of the latter. In fact, we find that group 3 mutual banks – those that compete only with non-mutual banks – are better able to transform savings into loans at the local level (i.e., depicting an higher local effectiveness) and, at the same time, are better able to control local credit risk (i.e., showing an higher mission efficiency) and to reduce the share of bad loans out of total loans. This suggests that competition among mutual banks needs not be socially beneficial in a welfare perspective.

This result can be interpreted by noting that, under general conditions, 'mutual cooperation' is intrinsically exposed to the risk of free-riding. As is well known, to avoid free-riding, the logic of mutual cooperation demands that long-term

relationships can be established among the participating agents. In other words, a tension can arise between 'market' cooperation and 'mutual' cooperation. Whereas the market is the place for 'impersonal' exchanges, mutual cooperation involves that 'personal' exchanges, relying upon inter-temporal relationships, can be established. The point is that competition *between* cooperative organizations could jeopardize cooperation *within* cooperative organizations. This may happen whenever the possibility of joining an alternative team opens an exit option for an agent in a team, inducing him to deviate from cooperating with its current partners in order to exploit (higher) short-term benefits.[8]

Overall, our results call for a careful reconsideration of regulatory authorities' positions requiring more competition in local banking markets, especially between mutual banks. Conversely, the intrinsic reasons of cooperative credit seem to support the exclusivity of a mutual bank in its own local market, boosting credit supply to local borrowers, hence contrasting financial exclusion phenomena.

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[8] Those considerations obviously hold also for cooperation among 'self-producers' in the credit market. It is therefore important for credit co-operators to be all connected in a unique and common network of long term credit relationships, as a necessary condition for the sharing of losses and gains to act as an appropriate incentive for peer monitoring and the control of moral hazard.

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Appendix Table 1

Variables definition and descriptive statistics

Vbs.	*Mean*	*Std. Dev.*	*Min*	*Max*
Loans	153,000,000	162,000,000	4,056,128	1,030,000,000
Loans*Group1	10,300,000	24,700,000	4,056,128	141,000,000
Loans*Group2	87,800,000	173,000,000	8,896,378	1,030,000,000
Loans*Group3	54,700,000	90,600,000	16,000,000	424,000,000
Deposits and bank bonds	172,000,000	172,000,000	10,900,000	1,310,000,000
Deposits and bank bonds*Group1	13,500,000	30,400,000	10,900,000	153,000,000
Deposits and bank bonds*Group2	97,200,000	188,000,000	17,500,000	1,310,000,000
Deposits and bank bonds*Group3	61,600,000	97,000,000	29,400,000	435,000,000
Total assets	207,000,000	202,000,000	14,500,000	1,490,000,000
Total assets*Group1	16,300,000	36,400,000	14,500,000	185,000,000
Total assets*Group2	116,000,000	222,000,000	20,300,000	1,490,000,000
Total assets*Group3	74,900,000	118,000,000	36,000,000	540,000,000
Bad loans	2,075,386	2,799,224	0	23,300,000
Bad loans*Group1	620,764	751,331	0	5,300,268
Bad loans*Group2	3,152,013	3,760,506	0	23,300,000
Bad loans*Group3	1,829,595	1,750,007	0	8,529,997
Group 1	0.230916	-	-	-
Group 2	0.3969466	-	-	-
Group 3	0.3721374	-	-	-

Source: Trentino Federation of Cooperative banks. Yearly data (2000 - 2009)

Table 1: banks in the province of Trento

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of branches										
All banks (n°)	**482**	**489**	**497**	**504**	**513**	**524**	**530**	**537**	**548**	**555**
- MBs	66.18%	66.05%	65.59%	64.88%	64.13%	63.55%	62.64%	62.01%	61.31%	60.54%
Loans										
All banks (mln €)	**8,211**	**8,938**	**9,857**	**10,956**	**12,369**	**13,723**	**14,589**	**15,936**	**17,120**	**17,829**
- MBs	52.53%	53.49%	57.46%	60.28%	60.58%	60.26%	64.08%	65.78%	66.16%	65.78%
Deposits and bank bonds										
All banks (mln €)		**9,281**	**10,271**	**11,150**	**11,781**	**12,562**	**13,378**	**14,267**	**15,724**	**16,672**
- MBs		67.59%	68.62%	70.79%	73.36%	75.27%	74.83%	75.63%	76.59%	76.16%

Table 2: mutual banks

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of banks										
All MBs (n°)	**65**	**62**	**57**	**53**	**50**	**49**	**48**	**47**	**47**	**46**
- Group 1	26.15%	25.81%	26.32%	24.53%	22.00%	22.45%	22.92%	19.15%	19.15%	19.57%
- Group 2	36.92%	38.71%	38.60%	41.51%	42.00%	40.82%	39.58%	40.43%	40.43%	39.13%
- Group 3	36.92%	35.48%	35.09%	33.96%	36.00%	36.73%	37.50%	40.43%	40.43%	41.30%
Total assets										
All MBs (mln €)	**6,807.2**	**7,715.2**	**8,561.3**	**9,444.3**	**10,270.8**	**11,073.9**	**12,001.2**	**13,134.8**	**14,390.6**	**15,049.9**
- Group 1	9.34%	9.54%	9.93%	9.23%	8.41%	8.42%	8.27%	6.46%	6.26%	6.17%
- Group 2	51.19%	52.02%	53.54%	55.82%	56.04%	56.29%	57.12%	57.21%	57.59%	57.58%
- Group 3	39.47%	38.44%	36.54%	34.95%	35.55%	35.28%	34.61%	36.34%	36.15%	36.25%
Loans										
All MBs (mln €)	**4,313.4**	**4,781.3**	**5,664.1**	**6,604.2**	**7,492.7**	**8,289.2**	**9,346.7**	**10,483.0**	**11,326.0**	**11,727.8**
- Group 1	7.70%	7.60%	7.98%	7.34%	7.08%	7.29%	7.29%	5.77%	5.76%	5.80%
- Group 2	53.04%	53.87%	55.15%	58.66%	58.26%	58.13%	58.21%	58.50%	58.25%	57.87%
- Group 3	39.27%	38.53%	36.87%	34.00%	34.66%	34.58%	34.50%	35.72%	35.99%	36.33%
Deposits and bank bonds										
All MBs (mln €)	**5,426.3**	**6,273.5**	**7,047.9**	**7,893.0**	**8,642.7**	**9,434.5**	**10,010.6**	**10,790.4**	**12,042.8**	**12,697.2**
- Group 1	9.17%	9.36%	9.79%	9.03%	8.33%	8.31%	8.32%	6.46%	6.24%	6.11%
- Group 2	51.66%	52.30%	54.05%	56.48%	56.81%	57.02%	57.09%	57.54%	58.05%	58.06%
- Group 3	39.18%	38.34%	36.16%	34.49%	34.86%	34.68%	34.59%	36.00%	35.71%	35.82%

Table 3: performance indicators

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Local effectiveness: (Loans) / (Deposits and										
All MBs	**79.49%**	**76.21%**	**80.37%**	**83.67%**	**86.69%**	**87.86%**	**93.37%**	**97.15%**	**94.05%**	**92.37%**
- Group 1	66.73%	61.92%	65.53%	67.95%	73.66%	77.15%	81.80%	86.84%	86.88%	87.64%
- Group 2	81.61%	78.50%	82.01%	86.91%	88.90%	89.58%	95.20%	98.78%	94.37%	92.06%
- Group 3	79.68%	76.59%	81.93%	82.49%	86.21%	87.60%	93.13%	96.40%	94.78%	93.66%
Mission efficiency: (Loans) / (Total assets)										
All MBs	**63.37%**	**61.97%**	**66.16%**	**69.93%**	**72.95%**	**74.85%**	**77.88%**	**79.81%**	**78.70%**	**77.93%**
- Group 1	52.23%	49.41%	53.20%	55.58%	61.38%	64.81%	68.68%	71.39%	72.46%	73.24%
- Group 2	65.65%	64.17%	68.16%	73.49%	75.84%	77.30%	79.36%	81.62%	79.60%	78.32%
- Group 3	63.04%	62.11%	66.75%	68.02%	71.13%	73.35%	77.63%	78.46%	78.35%	78.09%

Table 4: bad loans

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
(Bad loans) / (Total loans):										
All MBs	**1.72%**	**1.66%**	**1.44%**	**1.23%**	**1.17%**	**1.12%**	**0.99%**	**1.09%**	**1.35%**	**1.98%**
- Group 1	0.93%	1.16%	1.38%	1.24%	1.28%	1.18%	0.96%	1.49%	1.48%	2.41%
- Group 2	1.96%	1.83%	1.39%	1.21%	1.24%	1.17%	1.01%	1.06%	1.47%	2.15%
- Group 3	1.55%	1.52%	1.53%	1.27%	1.02%	1.01%	0.96%	1.07%	1.13%	1.63%

Table 5: localistic effectiveness estimates

	I(a)	II(b)	III(c)	IV(d)
cons	4821534	4821534	-2079750	-10700000*
	(3752133)	(6311740)	(4120725)	(6354895)
group 1	2809614	2809614	10200000*	37700000***
	(3803945)	(6031921)	(5260158)	(13400000)
group 3	-12600000***	-12600000**	-8921212**	-5492065
	(3933561)	(6212628)	(4467455)	(7896039)
deposits and bank bonds	0.9102709***	0.9102709***	0.9307566***	0.9445054***
	(0.0192357)	(0.0347928)	(0.0082846)	(0.0113746)
deposits and bank bonds - group 1	-0.1480836***	-0.1480836**	-0.1528031***	-0.2408109***
	(0.0356634)	(0.0728022)	(0.0580656)	(0.0832878)
deposits and bank bonds - group 3	0.0611192***	0.0611192*	0.0422321**	0.0332983
	(0.0214602)	(0.0368611)	(0.0194558)	(0.0232981)
Year dummies	Yes	Yes	Yes	Yes
Obs. nr.	524	524	524	524
F	1913.65	880.41	no	1630.41
Prob>F	0.0000	0.0000	no	0.0000
R-square	0.9884	0.9884	0.9881	0.9838
Wald Chi-Sq.	no	no	24702.68	no
Prob>Chi-Sq	no	no	0.0000	no

Notes . Significance levels: *>90%; **>95%; ***>99%. Robust standard errors in parenthesis. Year benchmark: 2009.

(a) pooled cross section; (b) pooled cross section and cluster; (c) panel model with random-effects; (d) panel model with fixed-effects

For Panel models, overall R squared reported

Table 6: mission efficiency estimates

	I(a)	II(b)	III(c)	IV(d)
cons	3956818	3956818	-6761794*	-21600000***
	(3353110)	(5144960)	(3705683)	(5599843)
group 1	5243795*	5243795	14800000***	34600000***
	(3056405)	(4764388)	(4817007)	(12100000)
group 3	-9355124***	-9355124	-5856626	-1469899
	(3447410)	(5847796)	(4041222)	(6894409)
total assets	0.7753434***	0.7753434***	0.8045337***	0.8327347***
	(0.0125223)	(0.0238374)	(0.0063827)	(0.0086778)
total assets - group 1	-0.1342505***	-0.1342505***	-0.1520353***	-0.1806069***
	(0.0239697)	(0.0460118)	(0.0440487)	(0.0632569)
total assets - group 3	.0242277	.0242277	0.0138811	0.01698
	(0.0167481)	(0.0315816)	(0.0146476)	(0.0173168)
Year dummies	Yes	Yes	Yes	Yes
Obs. nr.	524	524	524	524
F	1855.25	701.92	no	1630.41
Prob>F	0.0000	0.0000	no	0.0000
R-square	0.9906	0.9906	0.9902	0.9874
Wald Chi-Sq.	no	no	31084.03	no
Prob>Chi-Sq	no	no	0.0000	no

Notes . Significance levels: *>90%; **>95%; ***>99%. Robust standard errors in parenthesis. Year benchmark: 2009.

(a) pooled cross section; (b) pooled cross section and cluster; (c) panel model with random-effects; (d) panel model with fixed-effects

For Panel models, overall R squared reported

Table 7: bad loans estimates

	I(a)	II(b)	III(c)	IV(d)
cons	1936839***	1936839***	2267834***	3400268***
	(448807.8)	(583308)	(385403.5)	(570877.3)
group 1	-246625.3	-246625.3	-508748.8	-1498189
	(210846.1)	(331188.4)	(456178.4)	(1119808)
group 3	304073.7	304073.7	-449910.9	-2016746***
	(245574.5)	(481116.4)	(390452.6)	(706973.8)
loans	0.0133696***	0.0133696***	0.0126553***	0.0116069***
	(0.0013126)	(0.0023623)	(0.0008191)	(0.0010761)
loans - group 1	0.0018329	0.0018329	0.0033045	0.0011358
	(0.0027028)	(0.0039247)	(0.0056986)	(0.0074484)
loans - group 3	-0.0044683***	-0.0044683***	-0.0029741*	-0.0032390*
	(0.0016494)	(0.0029616)	(0.0016979)	(0.001964)
Year dummies	Yes	Yes	Yes	Yes
Obs. nr.	524	524	524	524
F	38.18	20.65	no	37.36
Prob>F	0.0000	0.0000	no	0.0000
R-square	0.6509	0.6509	0.6432	0.5631
Wald Chi-Sq.	no	no	660.02	no
Prob>Chi-Sq	no	no	0.0000	no

Notes . Significance levels: *>90%; **>95%; ***>99%. Robust standard errors in parenthesis. Year benchmark: 2009.

(a) pooled cross section; (b) pooled cross section and cluster; (c) panel model with random-effects; (d) panel model with fixed-effects

For Panel models, overall R squared reported

Table 8: bad loans estimates (years 2000 to 2008)

	I(a)	II(b)	III(c)	IV(d)
cons	772984.6**	772984.6*	1838415***	3349389***
	(323404.7)	(392088.5)	(338282.8)	(449475.8)
group 1	-416882.1**	-416882.1	-1163943***	-2284568***
	(185391.7)	(347200.8)	(417839.6)	(914883.6)
group 3	145725.5	145725.5	-981463.4***	-2543662***
	(228079.7)	(482933.2)	(346551.9)	(553909.8)
loans	0.0113308***	0.0113308***	0.0079663***	0.0055506***
	(0.0012258)	(0.0023324)	(0.0007595)	(0.0009275)
loans - group 1	0.0026601	0.0026601	0.0049236	0.0016154
	(0.0021436)	(0.0036021)	(0.0051074)	(0.0063436)
loans - group 3	-0.003112**	-0.003112	-0.0006192	-0.0010478
	(0.0015208)	(0.0029368)	(0.0015396)	(0.0017012)
Year dummies	Yes	Yes	Yes	Yes
Obs. nr.	478	478	478	478
F	40.68	17.42	no	18.09
Prob>F	0.0000	0.0000	no	0.0000
R-square	0.5850	0.5850	0.5465	0.3629
Wald Chi-Sq.	no	no	313.95	no
Prob>Chi-Sq	no	no	0.0000	no

Notes . Significance levels: *>90%; **>95%; ***>99%. Robust standard errors in parenthesis. Year benchmark: 2008.

(a) pooled cross section; (b) pooled cross section and cluster; (c) panel model with random-effects; (d) panel model with fixed-effects

For Panel models, overall R squared reported