BANK'S ORGANIZATIONAL FORM AND EFFECTIVENESS OF THE RECOVERY PROCESS

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Abstract***

Recent empirical findings by Sapienza (2004), Micco and Panizza (2006) and Berger et al. (2008) have pointed to the correlation between bank ownership and lending behavior. We formulate and test hypotheses on the role played by the type of bank ownership (Independent and Dependent) and by the functional distance of the bank in influencing the Loss Given Default Rate (LGDR). This paper refers to data on the Italian Banking System. The empirical results are consistent with our hypotheses on the LGDR and control variables relation. We provide evidence that the LGDR is positively related to the distance between the bank headquarters and the borrower's location. Besides, the resulting data support the idea that Independent Banks present a low LGDR. Finally, our findings indicate that market power and LGDR are negatively related.

Keywords: Ownership; Subsidiary; Control; Functional distance; Loss given default.

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Introduction

This paper purposes to analyze the effects of the organizational form of a bank on the effectiveness of the processes to recover defaulted loans. In particular, out of a sample of 2,697 Italian banks (2005-2008), it verifies empirically whether Independent Banks experience a lower Loss Given Default Rate (LGDR) than Dependent Banks do. Independent Banks are privately owned banks whose shares are in the hands of families, individual investors and institutional investors. A bank is acknowledged as being a Dependent (or Subsidiary) Bank when it has another bank as its controlling shareholder (in quite a few cases, it is a Bank Holding Company when banking groups are involved).

According to the principal-agent theory, Dependent Banks are subject to greater supervision by their principal than Independent Banks. Thanks to the appointment of most of the Board members of the Dependent Bank, the parent company is able to exercise a closer monitoring activity on the behavior of the management that, therefore, will find it hard to act against the interest of the principal. Empirical analyses show that Subsidiaries report a better performance than Independent Banks do, owing to a greater control by their majority shareholder (Crespì et al., 2004). Subsidiaries are characterized by a greater effectiveness of their internal-control mechanisms (CEO replacement, top management dismissal): assuming an inadequate performance, the CEO or top management turnover is higher in Dependent Bank than in Independent Banks (Barro and Barro, 1990; Blackwell et al., 1994).

As far as we know, there are no studies that investigate the relationship between the organizational form of a bank and the effectiveness of its credit recovery process. At any rate, this paper may be traced back to that field of literature that investigates the effects of the ownership structure on the types of relationship established with customers. In particular, foreign-owned banks tend to establish relationships that mostly privilege the transactional approach, in concomitance with an assessment of creditworthiness based on hard information (Sapienza, 2004; Micco and Panizza, 2006; Berger et al., 2008) .

This paper assumes that, being subject to the control of a parent company, Dependent Banks are farther removed from their customers from the socio-cultural perspective. In fact, from the organizational point of view, they feature two different hierarchical levels: the branch and the loan officer refer to the lending policies issued by the Dependent Bank, but the latter must conform to the provisions issued by the parent company. The need for the branch and the loan officer of the Dependent Bank to conform to policies issued by a decision-making center that is far removed from the organizational point of view determines an estrangement of the power center with respect to the socio-cultural context of the borrower. In the Italian credit market, this situation is particularly relevant since, over time, the process of consolidation of the banking system has resulted in a relocation of the decision-making centers, particularly to Northern Italy (Zazzaro, 2006).

Therefore, Dependent Banks are more likely to establish credit relationships based on transactional

banking, as their organizational complexity and socio-cultural distance make the establishment of a relationship based on private information quite difficult. Transactional lending is an intermediation model that fails to take soft information sufficiently into account, although the latter is likely to play a fundamental role for maximizing the recovery value, most of all when the borrower is facing a downturn. Therefore, Dependent Banks could experience higher LGDRs in consequence of relationships based on transactional lending, unlike Independent Banks that are closer to the territory and are characterized by a less complex organizational form.

This paper is organized as follows: section 2 describes the literature and research hypotheses; section 3 presents the sample and data used in the analysis; sections 4 and 5 illustrate the econometric model and the related variables; section 6 sets out the results of the empirical analysis; and section 7 presents the conclusions.

Literature review and research hypotheses

There is no specific reference in literature to such themes as the organizational form of banks and their credit recovery process. Nevertheless, this paper endeavors to refer back to three main research fields: the determinants of the recovery rate within the credit processes; the effect of the bank ownership structure on the type of relationship established with customers; and the functional distance and its effects on the loan portfolio quality.

According to the relevant literature, the Loss Given Default Rate is affected by three main factors: the type of relationship established with the customer; the credit contract specificities; the organizational complexity and effectiveness of the structure entrusted with the recovery (Mattarocci, Gibilaro, 2009). The lending technology affects the LGDR, since a strong and on-going relationship allows the bank to minimize the assessment mistakes, thanks to a reduction of the information asymmetries with the customer (Longhofer, Santos, 1999). The literature claims that leaner organizational forms, characterized by a limited socio-cultural distance between lender and borrower, facilitate the establishment of relationship lending (Nakamura 1993 and 1994; MacNulty 2001; Berger et al. 2002; Bonaccorsi di Patti et al. 2005). Thanks to customer proximity, a widespread presence in local markets often characterized by a lower competitive emphasis, frequent exchanges of information and a high social interaction between loan officer and customers served, small banks have a competitive advantage when managing firms with greater information opacity.

From the point of view of the borrower, part of the literature highlights a relationship between LGDR and relationship lending. In fact, given the strong relationship, it is unlikely for a borrower to fail to honor his debt, since it would be hard for him to find other banks willing to grant a loan on the same terms and conditions (Berger, Undell, 1995).

In the Italian context, Dependent Banks are characterized on average by a greater size (refer to table 3), a greater functional distance and a dual Parent Company-Dependent Bank-Branches hierarchical level. Therefore, a Dependent Bank would seem less likely to establish strong credit relationships than an Independent Bank, engendering the likely loss of effectiveness in the customer monitoring process. In fact, a close relationship allows handling the financial straits of a firm since the initial phases of its downturn, seeing to the restructuring of the debt before the assets value is fully destroyed (Cosci, Mattesini, 1997).

Besides, an improved knowledge of the customer allows structuring credit contracts getting to an adequate balance between borrower's requirements and bank's risk taking. From this point of view, thanks to a closer relationship, Independent Banks should succeed in improving their contract-related management, collecting greater guarantees, particularly in respect of the more risky type of customers. Finally, a leaner organizational form allows, perhaps, a more effective litigation management, resorting to out-of-Court procedures that are unquestionably faster and characterized by a higher recovery rate than judicial forms of bankruptcy management. These are the reasons why Independent Banks are believed to be characterized by an organizational form suitable for reducing the loan LGDR.

The relationship between bank ownership and bank lending technology has been analyzed into a number of studies (Sapienza, 2004; Micco and Panizza, 2006; Berger et al., 2008). In particular, considering a dataset of 97,760 credit relationships, Sapienza (2004) has shown that State-owned banks mostly favor large firms and firms located in depressed areas. Furthermore, she has shown the influence of electoral results and property affiliation on the interest rate applied by the bank. Berger et al. 2008 have analyzed the relationship between bank ownership (foreign, state-owned, private and domestic banks) and lending technology. The outcome of the analyses shows that foreign banks prefer to establish relationships with large-sized and relatively transparent companies. Besides, the enterprises that entertain relationships with foreign banks have a greater multiple banking propensity. On the other hand, the enterprises that entertain relationships with state-owned banks are generally smaller and more opaque from the point of view of information. Furthermore, this type of enterprises shows no preference for multiple banking relationships. The bank ownership structure affects also the bank risk taking level. Considering a sample of 38 bank holding companies over the 1978-1985 period, Sauders et al. 1990 have shown that stockholder-controlled banks exhibit a significantly higher risk taking behavior than managerially controlled banks.

The empirical studies at hand stress that an excessive cultural distance between ownership and borrower may induce a bank to establish transactional-type relationships, with a relative loss of soft information and effectiveness in the credit monitoring processes. The effect of the cultural and physical distance between parent company and subsidiary is dealt with in literature with specific reference to its impact on performance.

A few studies show that the internal control mechanisms are more effective in Dependent Banks than in Independent Banks given that, assuming a poor

performance, the likelihood of a dismissal of the CEO or the top management is higher among the former. Moreover, as the physical and socio-cultural distance of a Subsidiary from its parent company increases, there is an intensification of the activities monitoring the operations of a Dependent Bank (Stottinger & Schlegelmilch, 1998). The concentration of the control powers in the hands of the parent company entails the recourse to lending policies affected by the reference context of the latter. Such a situation increases the likelihood for Dependent Banks to establish primarily transactional relationships.

A proxy of the socio-cultural difference used in literature by Alessandrini et al. 2005 is functional distance (i.e., kilometric distance between headquarters and branches), which would seem to play a fundamental role on the type of relationships established between bank and customer. The presence of soft information and the closeness of the loan officer to the customer facilitate the bank in both the lending and the loan monitoring phases, as well in the credit recovery process. There are empirical evidences that show the impact of functional distance on the access to credit on the part of the enterprises (Alessandrini et al., 2009; Degryse et al., 2007) and on the probability of default of bank loans (Jiménez and Saurina, 2004; Cotugno et al., 2010), while the studies testing the relation with the Loss Given Default are still few (Mattarocci and Gibilaro, 2009).

The Italian context has progressively witnessed the increase in the functional distance and the relocation of the main decision-making centers to Northern Italy, with a subsequent divergence between territorial needs and lending policies made at a central level in geographical areas with a different socio-cultural level (Zazzaro, 2006). In fact, 27.5% of Italian banks are organized in the form of domestic subsidiaries of a banking group structured in pyramidal form with extremely complex control chains (Bank of Italy, 2010). The market share of the five leading Italian banking groups amounts to 52.5% (data reported in December 2009).

Furthermore, the functional distance is also a measure relative to the organizational complexity of a bank. The formulation of the bank lending policies is concentrated in the bank headquarters and the decision-sharing processes within the organizations are often complex and produce a number of diseconomies. While the local loan officer accumulates over time a specific knowledge of the local economy, he needs to invest time and resources to codify and transmit within the organization the information that is likely to affect the top management decisions. In Dependent Banks, the physical distance that separates the local loan officer from the parent company headquarters is particularly great and the lending policies are not always affected by the feedback from branch personnel. While the negative effects of an excessive increase in the functional distance can be toned down by delegation mechanisms, the relevant literature points to the potential diseconomies and inefficiencies of such processes (Alessandrini et al., 2009). The increase in the functional distance and the relative difficulty in codifying the soft information within the organization increase the likelihood for complex organizations to establish relationships based on hard information with persons characterized by a lower opacity of information.

As far as we know, the literature produced up to now has failed to consider the relation existing between the organizational form and the functional distance of a bank and its credit recovery capabilities. In particular, the organizational form considered in this paper is the distinction between Dependent Banks and Independent Banks.

Based on these statements of facts, two hypotheses can be made, namely:

Hp1: the Loss Given Default Rate is positively correlated with the functional distance between headquarters and branches;

Hp2: the Loss Given Default Rate depends on the organizational form of the bank (Dependent Bank versus Independent Bank) and the joint effect of functional distance and bank ownership.

Sample and data

The sample used for the analysis is made up of Italian banks surveyed by the ABI Banking Data, in the four years 2005-2008; altogether, it comprises 2,697 observations (broken down into 684 banks in 2008, 689 in 2007, 672 in 2006 and 652 in 2005).

The representativeness of the sample over the four-year period is on average equal to 84.9% of the Italian banking system (the annual percentage is 85.5% in 2008, 84.9% in 2007 and 86.25% in 2006, 83.2% in 2005). The accounting data relating to the financial statements posted by the individual banks was drawn from the ABI Banking Data.

The source of the data on the geographical location of the bank headquarters and branches is the Bank of Italy; this consists of a dataset of 150,407 branches (46,346 branches in 2008, 38,045 in 2007 and 33,486 in 2006, 32,530 in 2005), which also takes account of the effective opening period of a branch on the market during the observed years, and thus also valorizes the case of open/closed branches or those sold to other institutions[1]. The source of the data on the provincial distribution of the branches is also the Bank of Italy, while the macroeconomic data was drawn from the National Institute of Statistics (ISTAT). The outliers present in the database were treated with the Winsoring technique, considering 1 percentile on both tails of the distribution sample.

Variables

In order to assess the LGDR, a proxy was constructed on the basis on the supervisory statistical return flow (Sironi, Zazzara, 2008; Mattarocci, Gibilaro, 2009). The characteristics of the data collected and processed by ABI Banking Data have enabled an estimate of the LGD as the ratio of the amount of bad debts that become worthless

[1] In view of the cases of the sale of branches to other institutions during the course of the year, the number of branches of the sample does not coincide with the data reported in the Bank of Italy's Annual Report Glossary.

(the LGD entailed by the occurrence of a default) to the amount of loans that become distressed in the previous period. In formula:

LGDt = (DLWOt/ DLt-1)

where:

LGDt = Estimated value of the LGD;

DLWOt = Amount of distressed loans written off;

DLt = Amount of distressed loans.

The set of variables adopted in the model can be grouped and distinguished based on the homogeneity of the analysis profile investigated in the four following macro-classes: relationship lending; banking business structure, macroeconomics and local market competition. The analytical description of each variable is illustrated in Table 1.

Table 1: Definition of variables

Variables	Abbrev.	Measure
Dependent Variable		
Loss Given Default $_t$	LGD	Distressed loans written off $_t$ / Distressed loans$_{t-1}$
Ownership and functional structure		
F-Distance $_t$	DIST	Natural logarithm of sum of Distance between ZIP Code of Headquarter of bank and ZIP Code of branches
Ownership	OWN	Dummy equal 1 if the bank is controlled and 0 if the bank is independent
Average Distance	AVGDIST	Sum of Distance between ZIP Code of Headquarter of bank and ZIP Code of branches/Branches
Bank size $_t$	TA	Ln(Total Assets $_t$)
Banking business structure		
Collateral $_t$	COLL	Collateralized loans$_t$ /Gross Loans$_t$
ROA $_t$	ROA	Before Tax Profit $_t$ /Total Assets $_t$
Capital Ratio $_t$	CR	Equity $_t$ /Total Assets $_t$
Specialization $_t$	SPEC	Loans $_t$ /Total Assets $_t$
Macroeconomics and Local Market competition		
Herfindahl-Hirschman Index $_t$	HHI	Index of concentration of branches in the bank's provinces of relevance
Market Power $_t$	MP	
Δ GDP $_t$	Δ GDP $_t$	GDP variation

Notes: Net loans = customer loans; Gross loans = customer loans + individual loan loss allowance + portfolio loan loss allowance;

As concerns the dependent variable (loss given default rate) it must be highlight that the general banking data base (i.e. Bankscope) does not allow the determination of this variable. This is an important original aspect of this work. Previous studies, in fact, provide a more general analysis of the problem of loan portfolio quality, based on the variables relating to non-performing loans. There are very few empirical analyses based on LGD data (Mattarocci, Gibilaro, 2009; Dermine, Neto de Carvalho, 2006).

Regarding the regressors, the first variable considered is the ownership, which is a dummy that takes the value 1 when the bank is controlled and 0 otherwise. According to the Italian Banking Act a bank is defined subsidiary when an entity has a majority of the voting power of ordinary shareholders' meeting or has the power to appoint the majority of the members of Board of Directors.

In previous studies (Alessandrini et al. 2009; Degryse and Ongena, 2005) the functional distance was adopted as a measure of geographical and cultural distance between banking decision-making centre and local banking system. It was calculated by considering the distance between the postal code (ZIP CODE) of the bank's head office and the postal code of the municipalities in which the various branches are located (excluding the bank's liaison offices). Thereafter, each distance thus obtained, and pertaining to each Italian Banks Association code (ABI code), was weighted for the number of months each branch was open during the year. Analytically, the formula used in the calculation is the following:

$$\text{Distance}_i = \ln\left(1 + \sum_{j=1}^{k}\left(\left|\text{ZIP CODE HeadQuarters}_i - \text{ZIP CODE Branch}_{ij}\right| \times \frac{m_{ij}}{12}\right)\right)$$

where, for each year of observation, with reference to the i-th bank the sum of the distances between the head office's postal code and the j-th branch's postal code is obtained, weighted by the branch's months of opening (m = 1, 2, 3,...., 12).

As organizational variable is used in the regression the average distance defined by the following formula:

$$\text{Distance Average}_i = \sum_{j=1}^{k}\left(\left|\text{ZIP CODE HeadQuarters}_i - \text{ZIP CODE Branch}_{ij}\right| \times \frac{m_{ij}}{12}\right) \Big/ \text{Total Branches}_i$$

This variable is not used in previous analysis but in our opinion using only the functional distance may come to the wrong conclusions. For example, a bank that has many branches in a narrow geographical area could have a higher functional distance than another that has a few branches but very far from the headquarter. For this reason, the variable Average Distance is introduced that quantifies the average distance expressed in kilometers between the headquarter and the different branches.

The first control variable adopted in the model is the level of collateralized loans. Basel 2 identifies as the key risk mitigation the collaterals obtained by the bank. Empirical studies (Jiménez and Saurina, 2004) verify the correlation between the amount of collaterals and the bank's functional distance (distance between the bank's head office and the customer). The results show how banks featuring a shorter functional distance are more likely to acquire guarantees.

A further control variable considered is the Return On Assets (ROA) of the previous year. Recent empirical studies (Godlewski 2004; Boudriga et al. 2009) highlighted a negative relation between the bank's lagged ROA and the level of risk taking (non-performing loans relied). In particular, the authors maintain that a bank with satisfactory levels of profitability has a low propensity to assume risky choices that may penalize the profitability attained. We included in the regression the previous year's ROA to prevent model endogeneity problems. It is very likely, in fact, that the higher the LGDR the lower the ROA, as a result of the greater credit adjustments.

A number of studies confirm that the bank's level of risk-taking, namely the amount of NPLs that it generates, depends on its Capital Ratio. The option-pricing model enables the demonstration of how a bank, in the absence of a capital requirement, tends towards excessive leverage and portfolio risk in order to maximize its shareholder value at the expense of deposit insurance (Benston et al. 1986; Furlong and Keeley 1989; Keeley and Ferlong 1990). The bank's capital ratio/risk-taking relation should be reversed: a higher level of capitalization reduces the probability that the bank yields to opportunistic behavior in its risk-taking decisions and adopts robust and balanced risk management models to reconcile the profitability expectations of shareholders and the depositor interests. In fact, the empirical results produced by Salas and Saurina (2002) on a sample of Spanish banks demonstrate that with the increase of the capital ratio, the amount of outstanding problem loans decreases. The theoretical foundations of the appropriateness of imposing minimum capitalization constraints on banks meet these conditions: a higher capital entails higher losses for the banks' shareholders in case of default, and hence lower risk-taking incentives (Repullo 2002). We have included the previous year's Capital Ratio in the model to prevent any model endogeneity problems. Based on the supervisory regulations in fact (BIS, 2006), it is likely that the LGDR may affect the bank's Capital Ratio level.

The final firm-specific variable considered in literature is the degree of specialization of the bank's lending activity. The literature on this subject is vast and spreads across specific comparable conditions, such as, for example, the limits of the universal banking model, the bank diversification decisions by business, the bank income structure and portfolio diversification. The choice of a specialized banking business competitive model allows the broker, on the one hand, to effectively accumulate economies of experience and, on the other, to losing the economies of scope related to the appropriateness of implementing alternative strategies of the related diversification (Johnson 1996; Rajan 1996; Santos 1998). In theoretical terms, diversification reduces the bank's level of risk-taking through a compensation of gains/losses mechanism, in relation to the overall product portfolio (Winton 1999). Excessive competitive pressure on the realization of profits may in fact lead the bank to take more risks with the less accurate and efficient selection of investment projects worth funding. Therefore, a bank with a large share of non-interest revenue would be more selective and thus record fewer Non-Performing Loans. However, this issue is controversial. Hu et al. (2004), in fact, using a sample of 40 Taiwanese banks, demonstrate a direct correlation between revenue diversification and NPLs during the 1996-1999 period. Micco et al. (2004), using a sample of banks in developing countries, noted a significant and positive relationship between the presence of Non-Operating Revenues and Problem Loans in the 1995-2002 period.

The Herfindahl-Hirschman Index (HHI) represents the variable linked to the level of competition on local markets. The HHI is calculated as an average of the bank's concentration indexes in the provinces where it is

present; in particular, in the absence of data on the intermediary's market share, an approximation based on the number of branches in the market (Coccorese 2008) was carried out. The formula used is the following:

$$HHI_i = \sum_{j=1}^{k} \frac{\left(\frac{\text{Bank branches}_{ij}}{\text{Total system branches}_j} \times 100 \right)^2}{k}$$

where the ratio between the i-th bank's branches in the j-th province and the total branches present in the same province represents the market share on the bank's provincial level.

The inclusion of this variable is suggested by the wide literature that studies the impact of the competitive dynamics of markets on the quality of the loan portfolio of banks (for recent studies see Udell 2008; Jimez et al. 2010). Traditional theses associate greater risk-taking by the bank to a market with high competition (competition-fragility): the bank acting in a monopolistic or oligopolistic position, as competition grows, is driven to compensate the drop of margins by progressively increasing the level of risk taken, to avoid a progressive loss of market share; this idea appears to be supported by both theoretical (Marcus 1984; Keeley 1990; Broecker 1990; Marquez 2002) and empirical studies (Demsetz, Saidenberg and Strahan 1996). The underlying logic links the reduction of market power to the decline of profitability and the consequent progressive shift towards the assumption of riskier positions. On this subject, however, recent empirical studies (Boyd, De Nicoló and Al Jalal 2006; De Nicoló, Loukoianova 2007) support the opposite view (competition-stability).

The model also includes a variable representing the bank's Market Power. This variabile is calculated as the presence of branches of the bank not in the provincial capitals (i.e. municipalities) like Bongini et al. 2007. The calculation formula used is as follows:

$$\text{Market Power}_i = \sum_{j=1}^{k} \frac{\left(\frac{\text{Branches in municipalities}_{ij}}{\text{Total branches in provinces}_{ij}} \right)}{k}$$

where j varies with the provinces in which the i-th bank has a local presence and can reach the number of provinces equal to k, the maximum of 103 (or local presence of the bank in all Italian provinces). Il Market Power, unlike the HHI, better defines the effect of the local distribution of the branches. A bank can feature a low HHI (calculated at the provincial level), but find itself in a substantially oligopolistic situation, because its branches are located in municipalities where competition is lowest. The banks with a considerable market power (i.e. most branches are located in municipalities) operate in oligopolistic conditions and find it more convenient to invest in soft information (Petersen, Rajan, 1994).

However, among macroeconomic variables, the most frequently used in literature is the economic growth rate (GDP). Altman et al. 2005 demonstrate the existence of a positive relationship between recovery rate and GDP, with reference to the corporate bond market. Similar results are shown in Caselli et al. 2008, based on a portfolio of 11,649 contracts concluded on the Italian loan market.

Econometric model

The research hypotheses formulated were tested by adopting a multivariate regression model (OLS) in the cross-section and time-series dimensions. It approximates the impact of the lending relationship approach on the recovery rate, also taking into account the possible effects related to the specificity of the bank's business, the competitive dynamics of the local markets and the national macroeconomic trend (control variables).

The formulation of the OLS model is the following:

$LGDRit = \beta 0 + \beta 1 \Delta GDPit + \beta 2\ \Delta GDPit\text{-}1 + \beta 3\ DISTit + \beta 4\ OWNit + \beta 5\ AVGDISTit + \beta 6\ DISTit^* OWNit + \beta 7\ TAit + \beta 8\ ROAit\text{-}1 + \beta 9\ CRit\text{-}1 + \beta 10 SPECit + \beta 11\ HHIit + \beta 12\ MPit + \varepsilon it + ui$

where i identifies the individual bank belonging to the sample (i = 1, 2, 3,..., 2,697); LGDRit is the i-nth bank's Loss Given Default Rate; t expresses the time variable (t = 2005, 2007 and 2008); β1, β2,… β12 are the parameters to be estimated. Also indicated in the model are the constant (β0) and the error terms (εit; ut). The panel regression approach adopted is of the random effect type; this hypothesis is subject to verification with the Hausman test shown in Table 4.

Results

The descriptive statistics of the sample are shown in Tables 2, 3 and 4 respectively. The correlations between the variables that have been adopted are shown in Table 4.

From an analysis of the descriptive statistics, it turns out that the LGDR of Dependent Banks is, on average, higher than that of Independent Banks (0.177 and 0.095, respectively). Such difference proves significant with a 1% confidence level. The average distance of Dependent

Banks proves greater than that of Independent Banks, just as their functional distance. An analysis of the means test proves that Independent Banks are more prone to secure guarantees than Dependent Banks; in fact, the former have nearly 69% of their lending covered by (real or personal) guarantees while the Dependent Banks' share of guaranteed loans ranges around 58%.

A joint evaluation of these features suggests that Dependent Banks are more inclined to establish transactional relationships, as they are characterized by a greater organizational complexity. The lower recourse to guarantees presupposes a difficulty in the monitoring activity and a lower amount of private information in the creditworthiness assessment processes. Independent Banks, with a 1% significance level, are on average more capitalized than Dependent Banks; according to the theory, this outcome should suggest a lower risk taking by Independent Banks (Benston et al., 1986; Keeley and Ferlong, 1990). As regards the competitive arrangements, unlike Independent Banks, Dependent Banks are located in provinces characterized by a higher level of concentration. In any event, in their choice of location between municipalities and provincial capitals, Dependent Banks are located for the most part in provincial capitals, unlike Independent Banks that are mostly located in municipalities, working in contexts that are on the average less competitive.

Table 2: Univariate descriptive statistics, Italian Banks – Whole Sample (2005-2008).

Variables	N. Obs	Mean	SD	Min	Median	Max
Dependent Variable						
Loss Given Default Rate	1 808	0.109	0.158	0.000	0.047	0.837
Organizational Variable						
F-Distance	2 697	4.833	2.806	0.000	4.735	13.576
Average Distance	2 697	38.528	67.100	0.000	13.610	261.380
Control	2 697	0.183	0.387	0.000	0.000	1.000
Banking business structure variables						
Specialization	2 697	0.639	0.197	0.003	0.689	0.947
Collaterals	2 697	0.674	0.216	0.000	0.729	0.926
Capital Ratio	2 697	0.122	0.070	0.026	0.107	0.554
ROA	2 697	0.009	0.010	-0.042	0.010	0.039
Local competition and macroeconomics						
HHI	2 697	908.957	281.609	355.107	879.487	1992.649
Market Power	2 697	0.742	0.335	0.000	0.875	1.000
Δ GDP	2 697	0.008	0.012	-0.010	0.016	0.020

All variables are winsorized at the bottom and top 1% levels.

Table 3: T-test Indipendent Banks versus Controlled Banks

	Independent Banks			Dependent Banks			Mean t-test	
Variables	N. Obs	Mean (μ_1)	SD	N. Obs	Mean (μ_2)	SD	t-value	$H_0 = \mu_1-\mu_2 = 0$
Dependent Variable								$H_1 = \mu_1-\mu_2 <> 0$
Loss Given Default	1,552	0.095	0.142	330	0.177	0.207	-8.761	Reject H_0
Organizational Variable								
F-Distance	1,671	4.385	2.469	374	6.995	3.181	-17.45	Reject H_0
Average Distance	1,671	37.803	77.405	374	118.410	132.747	-11.294	Reject H_0
Banking business structure variables								
Specialization	1,671	0.645	0.178	374	0.653	0.267	0.7628	Non Reject H_0
Collaterals	1,671	0.694	0.204	374	0.584	0.246	9.0028	Reject H_0
Capital Ratio	1,671	0.128	0.065	374	0.099	0.078	7.3268	Reject H_0
ROA	1,671	0.009	0.010	374	0.009	0.012	0.4365	Non Reject H_0
Local competition and macroeconomics								
HHI	1,671	892.642	274.545	374	982.265	301.030	-6.0602	Reject H_0
Market Power	1,671	0.798	0.307	374	0.4919	0.0175	17.0073	Reject H_0

All variables are winsorized at the bottom and top 1% levels.

An analysis of the correlations proposed in Table 4 points to a significant and positive relationship between

LGDR, functional distance and average distance. On the other hand, it points to a negative relationship between LGDR, market power and level of collaterals. To verify in more forceful manner the effects of the organizational form on the LGDR, Table 5 shows the results of the proposed econometric model. To avoid problems of multicollinearity, four econometric models have been built by selecting in respect of each one of them the regressors characterized by a lesser correlation.

Table 4: Bivariate Descriptive Statistic (2005-2008). Correlation between some variables, case wise.

		1	2	3	4	5	6	7	8	9	10	11
1	LGDR	1.000										
2	F-Distance	0.156*	1.000									
		(0.000)										
3	Average Distance	0.127*	**0.642***	1.000								
		(0.000)	(0.000)									
4	Specialization	0.038*	0.221*	-0.032	1.000							
		(0.098)	(0.000)	(0.169)								
5	Collaterals	-0.141*	-0.132*	-0.303*	0.097*	1.000						
		(0.000)	(0.000)	(0.000)	(0.000)							
6	Capital Ratio	-0.075*	-0.393*	-0.231*	-0.157*	0.117*	1.000					
		(0.001)	(0.000)	(0.000)	(0.000)	(0.000)						
7	ROA	-0.003	0.064*	-0.094*	0.011	0.150*	0.255*	1.000				
		(0.884)	(0.005)	(0.000)	(0.624)	(0.000)	(0.000)					
8	Total Assets	0.217*	**0.773***	**0.596***	0.102*	-0.337*	-0.375*	-0.003	1.000			
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.886)				
9	HHI	-0.000	0.226*	0.129*	-0.121*	-0.064*	-0.103*	0.019	0.100*	1.000		
		(0.994)	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)	(0.409)	(0.000)			
10	Market Power	-0.160*	-0.216*	**-0.470***	0.123*	0.376*	0.189*	0.243*	**-0.465***	-0.081*	1.000	
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
11	GDP	0.035	0.006	0.012	-0.028	-0.021	0.027	0.212*	-0.020	-0.062*	0.032	1.000
		(0.126)	(0.809)	(0.611)	(0.228)	(0.372)	(0.235)	(0.000)	(0.396)	(0.007)	(0.167)	

* Significance level at least 10%
In bold character: variables that have high correlation and have been put in different regression model.

The results of the regressions are shown in Table 5 and follow a random effect approach, in line with the Hausman test results. The resulting models are statistically significant with an R-square varying from 6.7% to 5.6%.

Table 5: Dependent variable Loss Given Default Rate; Cross section and time series regression with Random Effect

	Model 1	**Model 2**	**Model 3**	**Model 4**
Δ GDP$_t$	-0.491**	-0.480**	0.450*	0.474**
	(2.09)	(2.04)	(1.92)	(2.02)
Δ GDP$_{t-1}$	-1.276**	-1.303**	1.299**	1.303**
	(2.29)	(2.34)	(2.33)	(2.34)
Ownership	0.0474***	0.0515***	0.0636***	
	(3.72)	(4.04)	(5.28)	
Specialization	0.0162	0.0194	0.0251	0.0279
	(0.63)	(0.72)	(0.96)	(1.06)
Collaterals	-0.0477**	-0.0538**	-0.0626***	-0.0582***
	(-2.15)	(-2.42)	(-2.85)	(-2.61)
Capital Ratio$_{t-1}$	-0.0431	-0.0883	-0.136	-0.133

	(-0.50)	(-1.01)	(-1.63)	(-1.59)
HHI	-0.0000178	-0.0000252	-0.0000182	-0.0000199
	(-1.12)	(-1.55)	(-1.14)	(-1.23)
ROA_{t-1}	0.399	0.702	0.748	0.774
	(0.72)	(1.24)	(1.36)	(1.39)
Total Assets	0.0131***			
	(4.16)			
Distance		0.00441**		
		(2.24)		
Market Power		-0.0394**		-0.0521***
		(-2.40)		(-3.27)
Average Distance			0.0000986*	
			(1.94)	
Ownership*Distance				0.00723***
				(4.69)
Constant	-0.0551	0.135***	0.122***	0.164***
	(-1.00)	(4.13)	(3.81)	(5.13)
N. Obs	1808	1808	1808	1808
Groups	666	666	666	666
R-square Overall	0.0670	0.0627	0.0563	0.0562
Chi 2	89.27***	84.72***	74.79***	78.59***
Hausman test	8.28	8.82	10.07	7.22

*Heteroskedasticity-robust t-stat is in brackets. The symbol *** indicates a significance level of 1% or less; ** between 1 and 5%; * between 5 and 10%.*

With reference to Hp1, the regression shows that banks with a greater functional distance report a higher LGDR level. This result is consistent with the expectations and with the findings in literature (Alessandrini et al., 2009; Mattarocci and Gibilaro, 2009). In particular, the substantial difficulty in transmitting soft-type information within the organization conditions the type of relationship established with customers (Degryse and Ongena, 2005; Alessandrini et al., 2009). Besides, the monitoring activity fails to report with due timeliness an initial phase of crisis of an enterprise. The literature stresses the significance of timeliness in the recovery process and in the ability of a bank to maintain a positive assets value (Cosci and Mattesini, 1997). The headquarter-branches distance has been calculated taking also the Average Distance into account, with a view to considering a different geographical distribution of the branches. Although a 10% significance is reported, even the Average Distance proves to affect the LGDR with a sign consistent with expectations. Therefore, the physical distance plays a relevant role in the recovery processes, irrespective of the calculation techniques.

With reference to Hp2, the regressions show that the organizational form is an important element in determining the bank LGDR. In all the models, the dummy is statistically significant with particularly high t-stat values. Consistently with expectations, Dependent Banks report a higher LGDR than Independent Banks. Hence, the organizational form affects the bank recovery process and, in particular, Dependent Banks seem to establish relationships mostly based on a transactional approach, as they meet with problems in the collection of private information. The monitoring process only allows a delayed detection of a customer's straits, and the lending policies formulated by the parent company are far-removed from the socio-economic fabric of the borrower. This is the reason why Dependent Banks report a higher LGDR than Independent Banks.

The joint Ownership x Functional Distance effect is empirically tested in Model 4. This variable proves statistically significant with a sign of the coefficient that is consistent with expectations. Ownership and functional distance jointly affect the bank's LGDR.

Insofar as the control variables are concerned, there is a positive relation between LGDR and GDP, consistently with the preceding literature (Caselli et al., 2008). The size of the bank, measured by the logarithm of the total balance sheet assets, proves statistically significant and with sign consistent with the theory (Mattarocci and Gibilaro, 2009). As shown even in Table 4, the bank size is highly correlated with the functional distance (0.77); therefore, this result seems to confirm the datum that the organizational complexity conditions both the type of relationship and the processing of information.

The Market Power in Model 2 is significant at a 1%

level with a negative coefficient. The banks that work for the most part in municipalities report a lower LGDR than banks that work in the provinces. This result witnesses the significance of soft information in a credit relationship since in small local communities, characterized by a higher level of concentration of the banking market, there is a lower level of information asymmetry. The other control variables used in the model (Capital Ratiot-1, ROAt-1, HHI, Specialization) do not prove statistically significant and, therefore, it is reasonable to affirm that there is no significant relation between them and the LGDR.

Conclusions

This paper purposes to analyze the effects of the organizational form of banks on their recovery rate. In particular, with reference to the possibility of establishing relationship-driven lines of credit, the relevant literature stresses the relevance of bank ownership, particularly with reference to foreign-owned banks. This paper analyzes the difference between Dependent Banks and Independents Banks in terms of effectiveness of the recovery process. The outcome of the analysis shows that Dependent Banks report a higher LGDR level. This finding could also be explained by the estrangement of the parent company with respect to the socio-cultural context of the borrower.

It seems that the organization as a group fails to enhance in an adequate manner the soft information in credit relationships, slowing down the recovery process. Furthermore, it turns out that Dependent Banks collect on average lower collaterals that Independent Banks. The functional distance plays a decisive role with respect to the LGDR, and this is also confirmed when calculating the average distance. So far, the delegation-centralization mechanisms do not seem efficient enough in complex bank structures and the Dependent Bank model points to a structural weakness in the recovery process. A joint ownership-functional distance analysis confirms the hypothesis that the physical distance makes a greater impact when the organizational form provides for a dual Branches-Dependent Banks-Parent Company hierarchical level.

The strong territorial entrenchment of Independent Banks is witnessed by their greater market power, with positive repercussions on the LGDR. In the competitive choices relative to the geographical location of branches, it should be borne in mind that their entrenchment in province capital entails a lower recovery rate with respect to their presence in municipalities.

Due emphasis is laid on the fact that the organizational form and ownership of a bank is not only relevant with reference to comparisons among different nations (as reported in the literature on foreign ownership). In the event that there are considerable socio-cultural disparities within the same country, the bank organizational form is likely to play a decisive role on the bank lending behavior and, therefore, on the effectiveness of the credit recovery process.

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