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An Empirical Analysis on Board Monitoring Role and Loan Portfolio Quality Measurement in Banks

by

Valeria Stefanelli* and Matteo Cotugno**

Abstract

This paper aims to analyze the effectiveness of the board monitoring role on specific loan portfolio quality measures in banks (default rate, recovery rate and provisioning rate). We use a sample comprises a totality of Italian-based banks, listed at Borsa Italiana SpA in 2006-2008 and a number of accounting proxies to express the loan portfolio quality of a bank.

The results of the analysis show an overall weakness of the board role (expressed by Independents and Audit Committee on board) in monitoring loan portfolio quality of the bank, with the subsequent damage of the interests of stakeholders.

A positive contribution of board monitoring, even if partial, is highlighted in two cases: Independents seems improve recovery rate, while the Audit committee enhances provisioning rate in banks. With reference to default rate, a total negative effect of board monitoring is reported. On the base of these results, some managerial implications are proposed.

JEL Classification: G21; G34.

Keywords: Banks, Corporate governance, Board of directors, Loan Portfolio Quality.

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An Empirical Analysis on Board Monitoring Role and Loan Portfolio Quality Measurement in Banks^{***}

1. Introduction

This paper aims to analyze the effectiveness of the board monitoring role on loan portfolio quality in banks. Inadequately monitored credit risk in a bank can yield into the unexpected customer downgrading, credit mispricing, higher capital requirements and, in the worst cases, economic and social losses extending to the bank's stakeholders (shareholders, regulators, customers, institutional investors, etc.).

The board of directors is ultimately responsible for the bank; especially in the banking business, the board has a fiduciary role, in which the responsibility of its supervisory and monitoring the managerial decision-making processes goes beyond the interests of the shareholders, to encompass those of all its stakeholders (Mottura, 1998; Adams and Mehran, 2003; Macey and O'Hara, 2003; Levine, 2004) and, ultimately, the economic system as a whole, if we take into account the role played by credit intermediaries in the economic development of countries (de Andres and Vallelado, 2008).

For a number of years now, the prudential supervision regulations on corporate governance (BIS, 1998 and 2006; Banca d'Italia, 1998 and 2008) have encouraged and promoted the formation of responsible, authoritative and independent boards, by the supervised entities, actively involved in the management of the banks and fully aware of the specific types of risks associated with the banks' decisions and operations; this condition, in fact, is now viewed as a prerequisite for the sound and prudent management of financial intermediaries (Carretta, Schwizer and Stefanelli, 2003). The importance of a responsible and participative board, in respect of the management of the banks, also emerges from the framework of the prudential supervision regulations (Basel 2, Pillar II), which qualifies the board as "the apex body of the internal governance system" (BIS, 2005; CEBS, 2006; Tarantola Ronchi, 2008); it ensures that the board may be given the task of supervising the all risks of banking business. Moreover, besides the governance aspects, bank board also has the role of Credit Risk Control Committees, with the task of expressing opinions on any significant credit risks in the bank portfolios.

The relationship between bank governance and risk taking has assumed a crucial importance, compared to the past, if we consider the recent trends in the behavior of operators and the current credit market environments.

With regard to the former, the evolution of the traditional model of credit intermediation towards an *originate to distribute* rationale has driven managements to adopt a more 'free riding' attitude, at detriment of core business riskiness and, ultimately, of the stakeholders (Mayers and Majluf, 1984). The focus of management, in fact, might shift towards risk fragmentation techniques, above all, rather than on internal risk screening and loan monitoring processes, could underestimate the 'new risk creation' aspect, while focusing on the residual reported risk (Keys *et al.*, 2009; Dell'Arriccia *et al.*, 2008).

Regarding the latter, the worsening financial situation of households and enterprises – as a result of the ongoing economic crisis – is exposing financial intermediaries to the further continuous deterioration of the level of riskiness of their core business (Banca d'Italia, 2009; Abi Monthly Outlook, 2009), requiring a greater need of monitoring portfolio risk by the management. Several empirical analyses have confirmed how good governance

^{***} This paper is the result of a co-operation between the authors. However, Valeria Stefanelli has contributed sections 1, 2, 4.1 and 6, while Matteo Cotugno has contributed sections 3, 4.2, 4.3 and 5.

can improve the performance of a company, especially in the face of a cyclical downswing of the markets (see for example, Colarossi and Giorgino, 2004).

Despite the importance of the topic, the empirical analyses examining how boards influence risk-taking in banks are really very few (Ahigbe and Martin 2008; Pathan, 2009; Cornett *et al.* 2009). In two cases, they compare the overall corporate risk measurements of the bank, as expressed by the market (total risk, idiosyncratic risk and systematic risk), with board independence (board size and proportion of independents on board, see Ahigbe and Martin 2008; Pathan, 2009) and some governance characteristics (the proportion of independents on the board and board committees, the proportion of the board with seats on other boards, the presence of an independent financial expert on the audit committee, see Ahigbe and Martin 2008); in another case, the risk is expressed through earnings management alone – as a qualitative measure of bank credit risk – and is compared only with board independence (board size and proportion of independents on board, Cornett *et al.* 2009).

This article will increase the existing literature, analyzing the relationship between board monitoring and the quality of the loan portfolios of listed Italian banks in the 2006-2008 period.

Compared with the existing literature, this article differs for several reasons, such as the nature of the relationship board monitoring-loan portfolio quality and the loan portfolio risk variables used for the econometric model.

The previous studies, in fact, express loan portfolio quality in terms of the ratio of Non Performing Loans to Total Loans (Cornett *et al.*, 2009; Boudriga *et al.*, 2009), or Non Performing Loans to Total Assets of the bank (Acharya, Hasan and Sauders, 2002). However, these are “aggregate” measurements representing the stock risk variables reported in the financial statements at the end of the year, and their limit is that they are not very clear. In particular, lower levels of Non Performing Loans cannot always be regarded as signs of the improvement of the loan portfolio quality and, therefore, of the bank’s reduced exposure to risk; the outsourcing of debt recovery or securitization activities, the final writing off of bad loans and the transfer to other problem loan categories are several examples of situations that impair the full reliability of the analyses based on indicators calculated according to the bank’s bad loans at the end of the year.

On the contrary, this study analyzes various different accounting proxies, with a view to understanding the quality of the bank’s loan portfolio from different perspectives, such as risk creation in annual corporate management, migration, mitigation and the risk hedging decisions taken by the management in the year.

The focus of the article is important for the banking system in general, and especially in the case of the Italian situation due to the gradual deterioration of the domestic credit market, recently highlighted by the regulators and institutions, and by the significant role played by the forms of internal governance in countries like Italy, which are characterized by an *insider* type of industrial capitalism, with weak external governance mechanisms (Aganin and Volpin, 2003).

The remaining paper is organized as follows. Section 2 reviews the literature leading to the research hypothesis. Section 3 describes sample, variables and econometric model. Section 4 and Section 5 present, respectively, the regression results and the robustness check results. Finally, Section 6 concludes the paper.

2. Literature Review and Hypothesis

The older literature describes the board monitoring as the result of two specific characteristics of the board (Pincus *et al.* 1989; Collier, 1993; Peasnell K. *et al.*, 2004; De Andres and Vallelado, 2008): the proportion of the independent directors and the presence of audit committee in board.

In the Italian case, the adoption of these governance mechanisms in the listed banks has been supported and promoted for a long time by the Consolidated Law on Finance, by the new rules on corporations, by the law of saving protection, by the Code on Corporate Governance (2006) and recently, by specific provisions on governance banking supervision.

The independence of directors in the boards is in fact a central theme in governance; within the banks, they take the role of counterbalance the executives and management, promote the proper functioning of the board and stimulate internal dialogue while reducing the areas of greater conflict of interest in the bank. Many empirical studies confirm that an independent board of directors has fewer conflicts of interest when monitoring managers. Klein (2002), Peasnell *et al.* (2004) support, in fact, that the presence of the independent directors in the board appears to be an effective corporate governance mechanism to reduce the agency problem and increase earnings quality. Some evidences indicate consistently that firms with more independent board members have higher quality earnings. Byrd, Fraser, Lee and Williams (2001) examine the effect of internal governance arrangements on the probability that a firm survives the economic crisis of the 1980s; they find that firms which survived the crisis had a greater proportion of independent directors in the board.

On the subject of the independents in the board, anyway, we underline a further strand of studies which shows that an excessive proportion of independent directors can limit the management advisory role of board (i.e., Cochran *et al.*, 1985; Yermack, 1996; Dalton and Daily 1998; Bhagat and Black, 1998; Muth and Donaldson, 1998; Adams and Mehran, 2003; Fernandes, 2007). These studies typically refer to the fact that while independent directors increase the quality of monitoring, they may lack of sufficient knowledge on firm-specific information, leading to sub-optimal decisions. Adams and Ferreira (2007), Coles *et al.* (2008), Harris and Raviv (2008), indicate a trade-off between the advantages and disadvantages in the proportion of non-executive directors: inside directors add to the board information that outside directors would find difficult to gather; besides, executive directors facilitate the transfer of information between board directors and management.

In the same time, the existence of audit committee in board can have an important role in the monitoring action of the board. Supervision banking regulation and self-regulation promotes the adoption in the listed banks of such Committee with advisory and proposing functions on specific attributions of the board (i.e. supervision of adequacy of the bank's system of internal controls, audit of effectiveness of the process of accounting and financial reporting, preparation of accounting and corporate documents for the external auditors, Borsa Italiana, 2006; Banca d'Italia, 2008). Many studies focus on whether committee existence and independence are associated with enhanced board effectiveness. In general, Yermack (1996) confirms that the presence of the committees improves the action of management control and reduces the need to recognize economic incentives to management itself. Collier and Gregory (1999), Bronson *et al.* (2009) find greater audit committee independence to be associated with improved monitoring of the financial reporting process. On the contrary, only Anderson *et al.* (2003) find no evidences between audit committee independence and improved financial reporting.

There are no evidences in literature on the relation between board monitoring-loan portfolio quality in bank. Sumner and Webb (2005) examine the relationship between the structure of a bank's board (expressed by independents and also board size, board diversity, CEO duality) and the bank's loan portfolio choice on a sample of 300 bank holding companies in 1997; they find some consistence positive evidences. Cunat and Garicano (2009) study empirically how corporate governance of savings banks matters by studying the impact of the board composition and structure on loan losses, rating changes and the composition of the loan portfolio; their results confirm a clear impact of the human capital of the savings banks chairmen on the measures of loan book composition and performance. However, this study does not take in to account the traditional main risk of the banking business.

Other studies report the effects of corporate governance (i.e. strong board, board independence) on total bank risk, expressed by capital market ratio. Ahigbe and Martin (2008) identify links between capital market risk measures (total risk, idiosyncratic risk, systematic risk) and corporate disclosures and governance (this one expressed by the proportion of independents on the board and the board committees, the proportion of the board with seats on other boards, the presence of an independent financial expert on the audit committee in banks) on a sample of 768 financial services firms. They show that governance characteristics significantly explain the cross-

sectional variation in the shorter-term and longer-term risk shifts. Pathan (2009) reports the positive effects of strong board (small board size, more independent directors, non restrictive shareholders rights) on bank risk-taking of a sample of 212 large US bank holding companies over the period 1997-2004; he uses only capital market ratio (total risk, idiosyncratic risk, systematic risk and asset return risk) to express the banking business risks of the sample. Cornett *et al.* (2009), instead, examine how corporate governance mechanisms – such as board size, board meeting, independents, board of director stock ownership, CEO duality - affect earnings management in US bank holding companies in the US; they find corporate governance plays at least some role in earnings and earnings management at large US banks, in particular, board independence constrains earnings management.

Considering the existent literature, our idea is that independent directors and the audit committee on board affect the effectiveness of board monitoring and, consequently, improve the loan portfolio quality in bank.

So, the following hypothesis is formulated (**H1**): *The quality of the bank loans' portfolio is positively linked to the board monitoring (the existence of audit committee and the proportion of independent directors in board).*

The analysis on the nature of the relation between the board monitoring and the loan portfolio quality in bank is however incomplete if we do not take into account the structure and internal functioning of the board. In fact, as other studies note, there are several bank governance characteristics that can affect how boards monitor and operate in firms. Particularly important points are board size, meeting activity, board diversity; evidences on the positive effects of these characteristics on board monitoring are however mixed in empirical studies (for a review see Carretta, Farina, Schwizer, 2007; Schwizer, Farina and Stefanelli, 2009)³.

Another important variable in the analysis is the assumption of duties by directors in other companies. The literature on this issue comes under the stream of studies on interlocking (intended as the connection between two or more companies through the share of one or more board directors, see Mizruchi 1988), investigating the reasons for the existence of the phenomenon and its effects on the individual directors, the firm and the market/area of reference in the different theoretical perspectives (resource-based theory, class based theory, bank hegemony theory).

With specific reference to the credit market, some studies confirm the benefits for banks in cases of natural ties (Ruigrok *et al.* 2003), resulting from the reduction of information asymmetries on the credit quality of the debtor (Pfeffer and Salancik, 1978) and from the ability to influence the company management and exercise stricter monitoring and control particularly in a period of declining performance (Mariolis, 1975; Richardson, 1987). In the same direction, Dooley (1969) shows how companies with poor credit have a greater chance of creating connections with the banks in an attempt to reduce uncertainties about the availability of financial resources. In the same direction, Mizruchi and Stearns (1988) show that firms with high leverage and increasing capital requirements create more connections at the board level with its own lenders. Further studies confirm the benefits of interlocking also on overall bank performance, tied to the position in the network of relationships and strategic/organization choice of the firm (Farina, 2007 and 2009). At the aggregate level, some studies emphasize how the existence of horizontal ties in the banking industry creates power relationships and facilitate collusion agreements between operators by imposing restrictions on competition in the credit market (AGCM, 2008). Regardless the type of interlocking (natural/horizontal), further studies confirm the benefits of individual directors of the bank, resulting from the position of over-boarded in terms of remuneration, maximizing of job opportunities, reputation, reputation and social prestige in the market (Zajac, 1988). In this light, Ahigbe and Martin (2008) report that other directorships held by directors may improve their credibility and so the monitoring role in board; they put in evidence that credibility may be greater for directors that hold seats on other boards, since these members clearly are sought after and have more extensive directly related experience.

³ On bank board size, supervision discipline argued and recommended the establishment of boards with non-plethoric sizes in order to facilitate the right internal functioning and organization of the board (Banca d'Italia, 2008).

On the other hand, theoretical considerations indicate that busy directors are bad for a firm: directors that sit on many boards have less time to monitor managers and thus to detect early symptoms of management self-dealing. In spite of this, corporate governance theory does not provide a clear insight on whether busy board members enhance firm performance, and previous empirical results are conflicting (Arranz-Aperte and Berglund, 2008).

Considering the existent literature, we also think that board size, board diversity, meeting activity and other directorships, as corporate governance characteristics of bank, can also affect monitoring board role and consequently influence the bank loan portfolio quality. So, the following hypothesis is formulated (**H2**): *The quality of the bank loan portfolio depends on bank governance characteristics (board size, board diversity, meeting activity, other directorships).*

3. Sample, Variables and Econometric Model

3.1 Sample and Data

The sample employed in the analysis comprises a totality of Italian-based banks, listed at Borsa Italiana SpA in 2006-2008; based on the amount of loans granted to customers by the banks⁴, the measurement parameters of the sample amounts to 69.27% of the entire banking system in 2006, rising to 74.21% in 2007, and then dropping to 63.98% in 2008. It is an open sample, with regard to the delisting and M&As realized by the domestic banking system in the sample period.

The information about bank governance has been drawn from the Corporate Governance Reports and the public documents posted in the banks' websites; if the bank adopted the two-tier model, we have considered the only Supervisory Board because it expresses the monitoring function of the bank board⁵. While the loan portfolio data of the banks is drawn from ABI Banking Data. The database has no missing. The statistical and econometric calculations have been made using the STATA Software version 9.

3.2 Measures of Loan Portfolio Quality in Bank

Compared with the existing literature, this article uses a number of accounting proxies to express the loan portfolio quality of a bank, which can be reconstructed based on an analysis of the Notes to the bank's financial statements (Table A.1.7, featuring the layout set forth in the Bank of Italy's Circular Letter No. 262/2005) and focus on different aspects of the portfolio, such as the creation of risk as a result of the year's management, migration, mitigation and the risk hedging decisions defined annually by the management, which all together define the quality of the portfolio, in terms of its riskiness according to a dynamic approach.

The adoption of accounting measures is preferred, in fact, to the capital market ratios used in previous analysis. The volatility of a security, in fact, incorporates the overall bank's business risk (credit risk, market risk, operational risk), while in the study we want to consider only the bank's credit risk exposure.

The ratios used are not just limited to the conventional quality indicator based on the Non Performing Loans contained in the portfolio. Figure 1, in fact, highlights how the Final Non Performing Loans are only the last component – preceded by loan write-offs, debt recovery, securitization and transfers to other loan categories – capable of impacting the riskiness of the loan portfolio, in the year, and, therefore, can hardly be representative

⁴ In detail, the amount of loans granted to customers by Italian banks total € 2.054 billion in 2008, of which € 1.314 billion by stock exchange listed groups. The same variable features an increase, in 2007, of € 1.960 billion, of which € 1.454 billion by stock exchange listed banks. Lastly, the figure for 2006 totals € 1.890, of which € 1.309 by stock exchange listed banks; see Banca d'Italia (2006), pp. 210; Banca d'Italia (2007), pp. 247; Banca d'Italia (2008), pp. 214.

⁵ Assonime (2008) has considered the same criteria in its report on corporate governance.

of the overall dynamic quality of the portfolio. The same applies to the Final Problem Loans contained in the bank's portfolio.

Figure 1 – Non Performing Loan Analysis per Year

<i>Non performing loan analysis</i>
Initial non-performing loans
+ New non-performing loans
- Write-off
- Recovery
- Sales/Securitized
- Transferred to performing loans
- Transferred to other problem loans
= Final non-performing loans

Source: authors' elaboration.

Based on these assumptions, the analysis has developed five variables capable of approximately explaining specific aspects of a loan portfolio quality of bank.

Dependent Variable 1 is the *Default Rate* (obtained as the *New Non Performing Loans_t / Non Performing Loans_{t-1}* ratio) and is a proxy of the new risk generated in the year by the bank's corporate management operations, since it is not affected by the downward variations resulting from the portfolio loan transfers to different categories, assignments, collections, write-offs.

As a rule, the bank's risk management efforts tend to privilege the fragmentation of risks, rather than risk screening and monitoring of the loan, especially in the case of "originate and distribute" credit intermediation models, which underestimate the creation of new risk and tend to focus their attention on the residual amount of risk reported in the financial statements. These considerations have been significantly confirmed by empirical studies, and by the recent market crisis, in Keys *et al.* (2009) and Dell'Arriccia *et al.* (2008), who confirm how asset securitization by banks has produced, over the years, less selecting loan screening processes, compared to the past. In these situations, active monitoring by the board can safeguard the stakeholders, driving towards the more efficient allocation of the financial resources, aimed at limiting the creation of new corporate risks and, consequently, preventing/opposing the appearance of new systemic crises.

Dependent Variable 2 is *Recovery Rate* (obtained as *Recovery of Non Performing Loans_t / Non Performing Loans_{t-1}* ratio) is a proxy of the bank's debt recovery capacity.

Monitoring by the board of the bank's debt recovery capacity can contribute to improving the loan portfolio recovery rate and minimize loan losses in the year. In particular, loan risk monitoring can be achieved – during the customer screening phase – also by selecting the most expedient hedging technique, based on the type of financial requirement expressed by each customer. With regard to this aspect, empirical assessments show how specific technical forms allow increased recovery rate control (De Laurentis and Riani, 2004); moreover, the subsequent monitoring of loan positions by the bank must necessarily be extended to the associated guarantees, in order to evaluate its congruence in time. *Dependent Variable 2*, therefore, outlines different aspects of the bank's monitoring activities, with respect to the congruence of the guarantees and the timeliness of the actions that can limit loan losses and prevent moral hazard problems. Unlike *Dependent Variable 1*, it outlines the bank's capability of minimizing the loan portfolio risk, however without hampering the positive income flow (interest/commissions) to the bank from the loan.

Dependent Variable 3 is called *Provisioning Rate* (obtained as *Loan Loss Provisioning_t/Customers Loans_t* ratio), it expresses the amount of (specific and portfolio related) loan adjustments made by the bank in the year, net of any losses finally written off.

Loan adjustments are mandatory for banks as well (IAS 39, 2004) and constitute the main accounting instrument for hedging Expected Losses provided by the Basel Committee (BIS, 2004), and incorporated into the Italian banking regulations (Circular Letter No. 263 of 27 December 2006 by the Bank of Italy). The literature on the subject of loan loss provisioning takes into account, in the majority of cases, the earning smoothing hypothesis. The annual profit produced by the bank constitutes the parameter for assessing the effectiveness of the management's operations, therefore, disappointing results at the end of the year can justify the management's dismissal. The volatility of corporate profits, moreover, is viewed as the principal source of risk by shareholders, which therefore requires congruent remuneration, thus inevitably increasing the cost of the bank's equity. The management, therefore, might be convinced to introduce earnings management policies aimed at stabilizing, in time, the profits reported in the financial statements (increasing allocations to provisions when profits are good and then "unfreezing" them when the profits shrink). Earnings management policies – which has always been opposed by the International Accounting Standard Board (IASB) – impair transparency in financial reporting, effectively preventing stakeholders from suitably assessing the bank's capability of producing income over the years⁶.

Information asymmetries on the actual riskiness of the loan portfolio weighing on the stakeholders can further penalize them in the case of earnings management, facilitating an opportunistic behavior by the latter in respect of the hedging decisions related to any portfolio losses (Kanagaretnam, 2003). On the other hand, the incentive mechanisms introduced by enterprises are often linked to the profits produced by the bank, to the point of placing the management in a condition of conflict of interest. The analysis of this variable, therefore, aims at determining the benefits of board monitoring in contrasting similar harmful situations for the bank's stakeholders.

Table 1 provides an analytical description of the dependent variables adopted in the paper.

3.3 Measures of bank board monitoring and governance characteristics

Based on the assumptions made and the existing literature, we have adopted the board monitoring, bank governance characteristics and banking business structure proxies. Board monitoring is defined by the percentage of independent directors serving on the board, and the appointment of an audit committee in the years in question. Bank governance characteristics are defined by Board Size, Meeting Activity, Board Diversity and Others Directorships.

Table 1 provides an analytical description of the independent variables adopted and their measurement.

3.4 Control variables on banking business structure

Studies which identify the determinants of the loan portfolio quality in bank and the impact on company performance are investigating on specific dependency relationships with firm-specific and macro-economic variables linked to the frame of reference in which the bank operates. So our econometric analysis take into account some control variables, related to specific characteristics of banking business, that may affect the bank's portfolio quality.

⁶ It is for this reason, therefore, that the IASB has failed to support dynamic provisioning techniques based on the Expected Losses, imposing the implementation of provisions only with respect to the existing portfolio losses that have not yet been paid (Incurred Losses). This decision by the IASB has sparked a heated debate, given the existence of empirical assessments supporting the pro-cyclical nature of the provisions based on Incurred Losses, for further information see: European Central Bank (2001), Cavallo and Majnoni (2002).

Compared to the former, several studies confirm that the level of risk taking of the bank, that is to say the amount of Non Performing Loans (NPLs) that it generates, depends on its Capital Ratio². By using the option-pricing model it is shown as a bank, in the absence of a capital requirement, tends to have excessive leverage and portfolio risk in order to maximize its shareholder value at the expense of the deposit insurance (Benston *et al.*, 1986; Furlong and Keeley 1989; Keeley and Ferlong, 1990). The bank risk-taking Capital Ratio relation should be reversed: a higher level of capitalization reduces the likelihood that the bank bears an opportunistic behavior in the choice of risk-taking and adopt robust and balanced risk management models to reconcile the expectations of profitability of the shareholders and the interests of depositors. The empirical results produced by Saurina and Salas (2002) on a sample of Spanish banks have shown, in fact, as with the increase of the capital ratio, the amount of outstanding Problem loans decrease³. The theoretical foundations for the appropriateness of imposing minimum capitalization constraints on banks meet to those conditions: higher capital implies higher losses for the banks' shareholders in case of default, and hence lower incentives for risk-taking (Repullo, 2002).

Nevertheless, some studies confirm results contrary to earlier and show that there is a direct relationship between capital ratio and risk taking. In particular, Koehn and Santomero (1980), Kim and Santomero (1988), Rochet (1992) show that, against a particularly high cost of equity capital, to impose regulations to reduce the degree of leverage, leads to a decline in the bank's expected returns. The preferences of the bank's owners are located on the highest point of the efficient frontier of risk/return, pushing the bank to the recruitment of higher levels of risk. The importance of rules of risk-sensitive capital adequacy, therefore, is essential to avoid arbitrage on capital by banks (Jones, 2000).

A second variable which affects the loan portfolio quality of a bank is the performance, according to Boudriga *et al.* (2009), Godlewski (2004). Banks with high profitability are less pressured to revenue creation and thus less constrained to engage in risky credit offerings. Usually the measure of bank performance utilized in literature is Return of Assets (ROA), and some empirical studies finds a negative relationship between performance and level of problem loans.

Another variable which affects the loan portfolio quality of a bank is the growth rate of the loan portfolio, according to Saurina and Salas (2002). The bank which implements aggressive expansion choices of its market share is exposed to dual nature phenomena that can worsen the quality of its portfolio: 1) less rigid criteria for lending to facilitate the entry of new customers with low creditworthiness, 2) adverse selection of customers as a result of the souring competitive tone on the credit market. The first phenomenon is easily understandable, while the latter deserves further investigation. An intermediary to capture new customers can enter new segments/markets by founding himself at a information disadvantage compared to banks already present; they do not obstruct the escape of the bad customers, while with a good chance they will reformulate the better pricing for the best customers without losing a considerable information asset and a long-term business relationship (Shaffer, 1998). This situation would allow the new entrant bank to capture the worst customers and expand its

² Under Circ. n.272 of 30th July 2008 the Bank of Italy, the NPLS are cash exposures and off Financial Statements in respect of a person subject to insolvency (including non-judicial determination) or basically similar situations, regardless of loss forecasts made by the bank. It is left out of consideration, therefore, the existence of any guarantees (real or personal) placed in defense of exposures.

³ The Problem Loans category includes, in addition to the NPLS, also the doubt Loans (DL) and Past Due Loans (PDL). Under Circ. n.272 of 30th July 2008 of the Bank of Italy, the DL are cash exposures and off-Financial Statements against persons in temporary situations of objective difficulties which may be expected to be removed in a reasonable period of time, while the PDL are exposures cash and off- Financial Statements other than those classified as bad, stranded or refurbished debts between exposures, which at the date of the alert, they are due for more than 90/180 days (with a continuing nature). In both evaluations (DL and PDL) it is left out of consideration the existence of any guarantees (personal or real) on the position.

loan portfolio with the detriment of its quality. Even Keeton (1999) emphasizes the relationships of direct dependence between quality and growth of the loan portfolio: a rapid expansion of loans leads to a lower screening activity and a weaker monitoring activity which determines the riskiness of the loan portfolio.

An additional variable taken into account by literature regard the average rate of interest charged on loans. Using a sample of 2,470 U.S. commercial banks, Keeton and Morris (1988) confirm a positive relationship between the rate of interest charged by the bank on loans and the trend of Non-Performing Loans in the years 1979-1985. The application of a higher interest rate may be the direct consequence of the lending policies of intermediaries who intends to change their own level of risk; in this sense, the evolution of the average rate applicable to customers is a leading indicator of the level of risk taken and thus the possible deterioration of the overall quality of the portfolio. Similar results are proposed by Sikey and Greenwald (1991).

The bank size is considered by literature to be negatively linked to credit risk exposure. As noted by Hu *et al.* (2004), this could indicate that larger banks have more resources, and are more experimented to better deal with bad borrowers. Small banks, on the contrary, may be exposed to the adverse selection problem due to the lack of sufficient competencies and experience to effectively assess the credit quality of borrowers. Income creation pressure is also higher for small banks leading them to lend to 'bad' customers. Also Boudriga *et al.* (2009) and Salas and Saurina (2002) show a inverse relationship between problem loans and the bank size. However, should be considered as there are some contrary evidence on the relationship between bank size and NPLs (McNulty *et al.*, 2001).

The final firm-specific variable considered in literature is the degree of specialization in the bank's lending activity. The literature on this subject is very wide and spreads over comparable specific conditions, for example, the limits of the universal banking model, the choices of bank diversification by business, the bank income structure and the diversification of the portfolio. The choice of a competitive model specialized in banking business, allows the broker, from one side, an effective accumulation of economies of experience and, on the other side, losing economies of scope related to the appropriateness of implementing alternative strategies of related diversification (Johnson, 1996; Rajan, 1996; Santos 1998; Schwizer, 1996). In terms of theory, diversification reduces the level of risk taking of the bank through a mechanism of compensation of gains/losses related to the overall product portfolio (Winton, 1999). An excessive competitive pressure towards the realization of profits, in fact, may lead the bank to take more risks and less accurate efficient selection of investment projects worth funding. Therefore, a bank who has a major share of non-interest revenues would be more selective and bring back to the budget a lesser amount of Non Performing Loans. The question, however is controversial, Hu *et al.* (2004), in fact, using a sample of 40 Taiwanese banks, it was showed that there was a direct correlation between revenue diversification and NPL 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.

Among the macroeconomic variables, however, the one most used in literature is the economic growth rate (GDP) (Keeton and Morris, 1987; Sinkey and Greenwald, 1991; Salas and Saurina, 2002) and the actual interest rate (Jimenez and Saurina, 2005). The relationship between the two variables and the riskiness of the loan portfolio is clearly a direct one. In many cases the econometric estimates were conducted by introducing lagged variables to consider the effect over time of the formation of the NPLs compared to the change of the economic cycle. For the purposes of this analysis, however, these variables are not considered as the three-year evaluation horizon makes them comparable to the constant, therefore, inadequate to explain the variability in the loan portfolio quality of the sample of banks.

Considering the existent literature, our idea is that Capital Ratio affect positively loan portfolio quality. While there is a inverse relationship between Loans Growth, Loan Interest Rate, Non Performing Loans and the loan portfolio quality of bank. Finally, there is no clear direction of the relationship between Banking Business and loan portfolio quality of the bank.

So we consider Capital Ratio, Loan Interest Rate, Credit Growth, Banking Business, Non performing Loans as control variables in our econometric model.

3.5 Econometric Model

We have used a Multivariate Regression Model (OLS) to test our assumptions, which expresses a loan portfolio quality of bank by means of the dependent variables identified in terms of generation of new risks, mitigation and risk hedging, and relates them to the independent variables linked to board monitoring, the bank governance structure and the business specificities of the bank as control variables. In particular, the adopted OLS model is as follows:

$$Y_{ik} = \beta_0 + \beta_1 BS_i + \beta_2 AC_i + \beta_3 IND_i + \beta_4 MA_i + \beta_5 BD_i + \beta_6 OD_i + \beta_7 DLS_i + \beta_8 CR_i + \beta_9 ROA_i + \beta_{10} \Delta GL_i + \beta_{11} BB_i + \beta_{12} LIR_i + \beta_{13} BaS_i + \beta_{14} D07_i + \beta_{15} D08_i + \varepsilon_i$$

where i identifies each bank in the sample ($i = 1, 2 \dots 76$); Y_{ik} is the portfolio quality of the i -nth bank expressed through the k -nth dependent variable ($k=1,2,3$); $\beta_1, \beta_2, \dots, \beta_{15}$ are the parameters that need to be estimated; $D07_i$ and $D08_i$ are the dummies relating to the year of observation for each variable relating to the i -nth bank, and are made equal to 1 in the case of either 2007 or 2008, while they are made equal to 0 in the case of 2006. The model also indicates the constant (β_0) and the error (ε_i). An analytical description of the single independent variables entered in the model is given in Table 1.

The econometric model in which the portfolio quality is expressed in terms of recovery rate (Dependent Variable 2), is as follows:

$$Y_{ik} = \beta_0 + \beta_1 BS_i + \beta_2 AC_i + \beta_3 IND_i + \beta_4 MA_i + \beta_5 BD_i + \beta_6 OD_i + \beta_7 CR_i + \beta_8 \Delta GL_i + \beta_9 BB_i + \beta_{10} ROA_i + \beta_{11} BaS_i + \beta_{12} D07_i + \beta_{13} D08_i + \varepsilon_i$$

We would like to specify that, in the econometric analysis in which the portfolio quality is expressed in terms of Provisioning Rate (Dependent Variable 3), the model further acquires the percentage amount of the Non Performing Loans (NPLLs), as another Independent Variable. Therefore, the econometric equation becomes the following:

$$Y_{ik} = \beta_0 + \beta_1 BS_i + \beta_2 AC_i + \beta_3 IND_i + \beta_4 MA_i + \beta_5 BD_i + \beta_6 OD_i + \beta_7 CR_i + \beta_8 \Delta GL_i + \beta_9 BB_i + \beta_{10} LIR_i + \beta_{11} ROACorrect_i + \beta_{12} BaS_i + \beta_{13} D07_i + \beta_{14} D08_i + \beta_{15} NPLL_i + \varepsilon_i$$

where $NPLL_i$ is the ratio between the non performing loans and the size of the customer loans in the i -nth bank's portfolio, in the year in question. We use in the last model a different version of ROA due to endogeneity problem. In this regression ROACorrect is a ratio on Net Profit gross of loan loss provisioning to total assets. To avoid multicollinearity problems, the construction of the econometric models has followed a stepwise approach in accordance with the levels of correlation of the variables shown in Table 3.

4. Results and limits

4.1 Main results

Table 2 illustrates the descriptive statistics of the sample; in particular, we consider 76 observations for the period 2006-2008. Table 3 shows the correlation between the variables. For brevity, the commentary on both tables is omitted. The assumptions made in Section 2 are tested empirically on a sample of Italian banks listed in the period 2006 to 2008. Tables 4, 5 and 6 show the results of the regressions carried out.

Table 4 reports the regression with Default Rates Dependent Variable 1. Adopting a stepwise approach, the three

significant models are defined with an R-square between 54.8 and 58.8 percent.

The results show an absence of full right relationship between board monitoring and the production of new risk by the bank in all the three models and refute the H1, if we take into account also the sign of the regressors. Only the independents, in fact, affect the dependent variable but with a sign contrary to our expectations. The result can be justified by a lack of interest or organizational shortcomings in the processes of governance and risk control. First of all, we refer to the logics originate and distribute at the base of the models as credit intermediaries of Italian banks (especially if listed), who neglect this aspect against almost deliberate of the overall delegated monitoring action on the entrusted. Then, the reference is to possible failures and deficiencies in reporting processes to the board (and to the independents) on exposure to the corporate credit risk in the processes of communication and information exchange among the independents, the audit committee and the internal control bodies⁷, which could bring the independents, under conditions of greater information asymmetry in relation to the management against the executives, to make late decisions that could be of damage to the chances of credit recovery by the bank. We show how in this context time factor is crucial for an optimal management of credit recovery (Cornelli and Felli, 1994; Generale and Gobbi, 1996).

A further justification of the response may result from the absence of an adequate financial expertise and a "specialist" understanding the risk issues and management required by the independents and the audit committee, which prevent the correct use of information received from management in the taking of decisions within the board, especially in sectors such as banking characterized by high complexity of the business. The studies emphasize that with a greater emphasis on the role of monitoring of the board, the independents meet a lack of sufficient knowledge on firm-specific information, leading to sub-optimal decisions.

In this regard, recent studies on the boards of European banks emphasize that despite the growing pressure on board members to understand and monitor the risk management systems adopted by their companies, all executives directors stress that most non-executive directors needed to have a "clear overview" rather than a "detailed understanding" of these systems. Even New Basel Capital Accord requires bank board using more advanced capital measurement approached to possess a general understanding of their banks' risk system and detailed comprehension of associated management reports (Ladipo, Nestor and Risser, 2008).

Even the characteristic structure of governance (Board Size, Other Directorships, Board Meeting) does not have any influence on the generation of new risk, confirming the above considerations at the level of full board; an exception is the Diversity of the board (positive sign), that contribute to improve the new risk generated during the year; this result confirm only partially H2.

Table 5 presents the regression on the Recovery Rate ad Dependent Variable 2. The three models have an R-squared running from 32.1 to 38.8 percent.

The H1 seems to have occurred in Model 1, 2 and 3; with reference to the Audit Committee, the sign of the coefficient is contrary to the expectations in all models. About Independents, our hypothesis is only confirmed in Model 3 and the coefficient has the sign expected; just with reference to the recovery rate, the result seems not aligned to the studies supporting the disadvantages arising from the presence in large numbers of independents in the board (Cochran *et al.*, 1985; Dalton and Daily, 1998; Yermack, 1996; Bhagat and Black, 1998; Muth and Donaldson, 1998; Adams and Mehran, 2003; Fernandes, 2007).

The analysis confirms only partially the H2 in Model 3, demonstrating that Board Size, Board Meeting and Other Directorships and jointly contribute to improve the loan portfolio quality through an increased recovery rate; the signs are positive for both variables. About the first variable, this result confirms the works of Ruigrok *et al.* (2003) and Pfeffer and Salancik (1978); their analysis highlights the positive contribution of Board Size on the recovery rate and confirms the advantages of the larger boards in the advising activity of management of NPLs. On the same aspect, other studies confirm that larger boards improve the human capital available to

⁷ A recent study confirms the boards of European banks as the "private session" between the audit committee and the head of internal audit, as recommended by the various Codes of Conduct, is a practice that still unstructured in 69% of the banks investigated are held when necessary and without a default frequency (Ladipo, Nestor and Risser, 2008).

businesses and the well functioning and quality of decision-making of the board with the benefit of the overall company performance (Zahra and Pearce, 1989; Hill, 1982; Coles *et al.*, 2008). The result agrees with De Andres and Vallelado (2008) who point out, ultimately, how the effects of board size on bank value express a trade-off between benefits (monitoring and advising) and disadvantages (coordination, control and decision-making problem) and a relationship between the two non-linear variables.

About the board meeting activity, results contrast with the thesis of Lorsch and MacIver (1989) and Mace (1986) that the board meeting does not improve the business performances if the decisions taken by the board are solving problems within business, in the specific case of recovery rate.

About Other Directorships, the result puts in evidence the benefits for banks in cases of ties and confirms previous studies (Pfeffer and Salancik, 1978; Mariolis, 1975; Richardson, 1987; Ruigrok *et al.* 2003).

Table 6 reports the regression with Provisioning Rate as Dependent Variable 3; the models proposed are of great strength that starts from 46.2 up to 50.4 percent.

The H1 is partially verified. How easy it was expected, the Audit Committee exerts a monitoring activity on the amount of provisions made by the management and is statistically significant in model 2 and 3. Instead, the H2 is not verified, except for the case of Board Meeting, that is statistical significant with a negative sign.

4.2 Control variables

About regression results with Default Rate as dependent variable (Table 4), in the three models Doubtful Loans, ROA and Total Assets are statistically significant. With regard to the Doubtful Loans, it shows like the sign obtained is consistent with expectations. A greater amount of Doubtful Loans in the previous year influences positively the default rate of the following year. ROA is also a variable statistically significant and the sign is consistent with previous studies (Boudriga *et al.*, 2009; Godlewski, 2004). Finally, the bank size seems to positively influence the default rate. In this regard, the result obtained is in contrast with previous studies (Boudriga *et al.*, 2009; Saurina and Salas, 2002). Following the theories of the relationship lending, it argued that large banks have more difficulties to capture soft information. Therefore, this evidence is consistent with McNulty *et al.* (2001) and confirms that larger banks are less inclined to relationship lending (Nakamura, 1993 and 1994; MacNulty, 2001; Berger *et al.*, 2002; Bonaccorsi di Patti *et al.*, 2005). With reference to other control variables, in the three models Loans Growth and Capital Ratio are statistically significant. The sign of the coefficient coincides with the expected sign. Therefore, consistently with Furlong and Keeley (1989), Keeley and Ferlong (1990), Repulla (2002), Saurina and Salas (2002), the level of bank risk-taking is inversely related to the degree of capitalization. Furthermore, Loans Growth positively influences significantly the amount of NNPLs of the year. This result is consistent with Keeton (1999), Saurina and Salas (2002). Unlike other studies, however, it is underlined how Loan Interest Rate and Banking Business do not statistically influence significantly the default rate.

About regression results with Recovery Rate as dependent variable (Table 5), the effect of control variables are partially confirmed. It is shown how Banking Business is statistically significant in all three Models. Capital Ratio, however, is significant only in Model 1 and has opposite sign than expected. In particular, the assumption made in line with Salas and Saurina (2002) requires the existence of an inverse relationship between Capital Ratio and bank risk-taking, so the expected sign of the recovery rate is positive because a higher capital ratio improves the recovery rate of the bank, in conjunction with the assumption of less risky positions. In regression, however, the increases of the level of capitalization represents a decrease of recovery rate; this evidence agrees with some studies (Koehn and Santomero, 1980; Kim and Santomero, 1988; Rochet, 1992) and stresses as in the presence of a capital adequacy regulation with little risk sensitivity, the bank tends to focus on segments characterized by a higher risk / return profile. The sample analyzed seems to have taken a containment behavior of risk taking than the single probability of default, in the presence of high Capital Ratio. In contrast, in correspondence of a less risk-sensitive legislation, the recovery rate seems lower in banks that have a high Capital Ratio. It is noted, however, that the report in question is not stable and therefore these observations

should be treated with caution⁸. The Banking Business variable improves the recovery rate and confirms the benefits of economies of specialization in the bank (Johnson 1996; Rajan, 1996; Santos, 1998).

Finally, about the regression results with Provisioning Rate as dependent variable (Table 6), the effect of control variables has occurred in good part. NPLs are significant and with positive sign, as expected: the amount of analytical adjustments depends positively on the NPLs. Other variables are also significant, like Capital Ratio and Loan Growth. ROACorrect is only significant in two models. In the case of Loan Growth, the sign of the coefficient is in contrast with expectations. The expansion of the loan portfolio would increase the risk for the bank, then the level of adjustments on loans. In case of earning smoothing, the growth of the portfolio (and thus margins of profitability of the bank) should cause a rise of Loan Loss Provisioning. The analysis shows, however, the lack of earning smoothing and Loan Loss Provisioning focused only on certain loss, as proposed by IAS 39. Analyzing this result together with the evidence that emerged in the Dependent Variable 1, we confirm the tendency of the Italian banking market to the "originate and distribute" logic. The reduction in Provisioning Rate conducted in the presence of a growing loan portfolio may be justified by the intention of the management, to surrender to a third party claims arising from which derives the futility of corrections as a precaution⁹. After all, the banks that achieve higher ROACorrect are those that generally have a lower degree of risk taking and then make less provisioning. This result is also consistent with H1 and other studies (Boudriga *et al.* 2009; Godlewski, 2004).

4.3 Limits

Possible limitations in the analysis come from the failure to consider the professional skills in the board among the regressors which can affect the loan portfolio quality. Some studies show how the skills, experience, provenance and even popularity of the advisers could improve decision-making processes of the board and then business performance (Miller, 1981; Leontiades, 1982; Andrews, 1983; Huse and Rindova, 2001); others emphasize how the lack of skills in the board can generate more transaction costs as a result of a limited monitoring action on the management (Sapienza and Gupta, 1994). The consideration of this variable in the study excluded for too onerous data could confirm whether the weaknesses of the monitoring board also depend on the boards with deficient or inadequate skills and experience.

Further possible limitations of our results are related to the control variables used in the regressions. The first one is related to using a short-term horizon of the analysis (3 years), given the nature of the phenomenon under investigation, which has also led to the exclusion of lagged variables in the econometric model. Some studies adopt lagged variables to explain the formation of the NPLs in the bank. Boudriga *et al.* (2009) use lagged variables as the GDP_{t-1} and the amount of the Loan Loss Provisioning $_{t-1}$. The second variable results always statistically significant, while the delay of GDP is irrelevant in determining the amount of NPLs. In a more complex way, Salas and Saurina (2002) use larger time lags: the variable of Capital Ratio provides 2 and 3 years of delays, while the Loan Growth with a single lag time, with results contrary to the study of Boudriga *et al.* (2009). The present paper has chosen not to use lagged variables among the regressors because of a limited time horizon taken as a reference, which prevents substantially to express any possible volatility of the variables with the passing of time and then to grasp the effects on the dependent variables. In other works (Boudriga *et al.*,

⁸ An alternative explanation may be proposed with reference to the theories of relationship banking (Petersen, Rajan, 1994; Cole, 1998; Berger, Rosen, Udell, 2001). The analysis showed a statistically significant inverse relationship between capital ratio and size of the bank. Smaller banks are better capitalized and often, according to the theory, more oriented to relationship lending (Scott, 2004; Berger *et al.*, 2005; Udell, 2008). They therefore may be more inclined to make loans with a lower level of guarantees, given the presence of soft information.

⁹ It is emphasized that in the presence of continuing involvement (IAS 39) the bank, even if transferred to a special purpose vehicle, is required to enroll loans in the budget. So, a contraction in the size of the loan portfolio does not necessarily correspond to an assignment of credits.

2009; Salas and Saurina, 2002) variables of bank's profitability (ROA, Net Interest Margin) were adopted, reaching often discordant and not significant results.

Such limitations could be overcome in subsequent developments in the work.

5. Robustness check

In the paper we conducted several tests of robustness. In order to avoid multicollinearity problem we entered in regression the variables in respect of the correlations. The calculation of variance inflation factor (VIF) for the three models built indicates the absence of multicollinearity problems.

To control heteroskedasticity we conducted various tests. In particular, we performed Breusch-Pagan/Cook-Weisberg test for heteroskedasticity on dependent variable and all regressors. It was subsequently performed White general tests for heteroskedasticity (Table, 7, 8 and 9). The results of the tests are not unique. According to the test of Breusch-Pagan/Cook-Weisberg seems that the first model (new non-performing loans) and the third model (provisioning rate) have some problems of heteroskedasticity, while the second model (recovery rate) does not show any problem. As for the two models mentioned above was conducted a second regression with White's correction. The results, reported in Table 10 and 11, confirm the robustness of the regressions.

About the results of the regressions, we substantially confirm previous considerations.

6. Conclusions and Implications

This paper investigates the relationship between the board monitoring and the loan portfolio quality in Italian banks listed in the 2006-2008 period.

The results of the analysis show an overall weakness of the board role in monitoring loan portfolio quality of the bank, with the subsequent damage of the interests of stakeholders. In limited cases of existence of a relationship between board monitoring and portfolio quality (recovery rate), a total contribution (Independents and Audit Committee) but negative for the bank is reported.

Possible explanations for these results can be identified at the system level, in the models of credit intermediation also popular among Italian banks that prefer the "originate and distribute" logic in the process of expectations, in which the business of origination seems to prevail at the expense of risk screening and monitoring of credit and the use of policy-loans oriented to fragmentation and subsequent allocation of risk in financial markets.

Further possible explanations for these results can be identified, for each bank, in the inefficiencies of the organizational and information processes underlying the system of internal governance of the bank. In this context, reference is made to possible delays or shortcomings in the contents of the report submitted to the board and audit committee by management or by the supervisory bodies of internal control (internal audit) which slow down or undermine the proper exercise of monitoring board damaging the interests of shareholders and stakeholders; a similar effect could be caused by deficiency of technical skills in risk management or of understanding of the logic underlying the management of risks in the bank, partly justified by an asymmetric information at the expense of independents against the executive directors.

The results are more encouraging when taking into account further structural features of bank governance. The attention to loan portfolio quality improves, in fact, if you look at the board at its structure level and overall organization (Board Size, Diversity, Board Meeting, Other Directorships) including the executives as well. The attention remains only on some measures of risk (recovery rate). In fact, the positive contribution to improve the quality of the portfolio (recovery rate), although partial, may result from the Board Size and Other Directorships, pushing to make some reflections on empirical studies and on the same supervisory framework that promotes the downsizing of the bank board but also helps to confirm the significance of both variables in supervising and advising of management. Finally, the Board Meeting has a positive effect on management of recovery rate and provisioning rate and it has no effects on default rate.

The analysis also shows the contribution to the loan portfolio quality by a greater Capital Ratio and a high Banking Business. The Loan Growth variable denotes particular problems: against its increase, banks experience increased non performing loans and take more risks not adequately countered by a rise in Loan Loss Provisioning. This result may confirm the gradual shift towards the originate and distribute model of Italian banks; an expansion of the portfolio in the absence of an adequate Loan Loss Provisioning can be read as the intention of management to originate loans that will soon be transferred to third parties and for which you do not retract the need to implement provisions.

These results reveal a worry lack of protection of the interests of the stakeholders especially in the context of banking crisis and gradual deterioration of the Italian credit market

Among the possible resolutions at the system level, it is recommended a greater attention to the legislation in provisions to ensure adequate hedge limited not to certain losses only. A system of dynamic provisioning as the Spanish one could ensure adequate coverage for expected losses and reduced pro-cyclicality in the economy. A problem of transparency of bank balance sheets was also pointed out by regulators (Consob, 2008), therefore it is desirable that the standard setter define in a less ambiguous the criteria for derecognition of loans related to securitization, in order to enable all stakeholders in a position to appreciate the real situations of risk of intermediaries.

Considering the individual bank, an improvement in the action of board monitoring and overall governance on quality of the portfolio of the intermediary (and hence on the performance of the bank and the banking system) may result from the dissemination of the practices of boards induction and board member site visits already adopted by some European banks. These are solutions that, applied to the case of independents, can improve the knowledge of the banking business and related risks, stimulate and promote an active and conscious participation of the directors in management. For some European banks, the induction programs targeted to boards and visits at the banks' business divisions and functional units are the essential part of the process by which independents learn about risk and opportunities facing the business (Ladipo, Nestor and Risser, 2008). However, these solutions must be accompanied by action and verification of adequacy of communication and reporting processes to the board currently implemented in the systems of internal governance, to ensure completeness, timeliness and accuracy of corporate information forwarded to top management. The rules of banking supervision and self-regulation on listed companies have shown considerable attention in promoting good governance in banks even through a greater accountability in the activities of the supervisory board of management and management of the bank. The regulators require individual members to be objective, capable and inquisitive, to learn about the activities of the bank and the risks it has assumed. An active and influential board is in fact one of the conditions to ensure a good and prudent management. To support the proper functioning of the board, discipline promotes, among other things, the adoption by intermediaries of efficient communication channels upwards and competent financial functions, legal and internal audit, and omits an explicit reference to promotion of measures for internal training and updating for the board, which may facilitate the understanding of dynamic and advance risk measures and enhance the contribution of governance in the presidium of a good and prudent business management to ensure the stakeholders and the banking system in the Country.

Appendix

Table 1 – Variables' Definition

Dependent/Independent/Control Variables	Abrev.	Measures
<i>Dependent Variables: Bank Portfolio Loans' Quality</i>		
- Default Rate	NNPLs	Ratio of New NPLs of the year to Gross Loans of previous year net of NPLs of previous year
- Recovery Rate	RNPLs	Ratio of Recovery from NPLs to NPLs of previous year
- Provisioning Rate	PR	Ratio of loan loss provisioning to customer loans
<i>Independent Variables: Bank Board Monitoring</i>		
- Independents	IND	Percentage of independent directors in the boards per year
- Audit Committee	AC	Constitution of the audit committee in board (dummy variable)
<i>Independent Variables: Bank Governance Characteristics</i>		
- Board Size	BS	No. of executive and non-executive directors in the board
- Meeting Activity	MA	No. of board meetings per year
- Board Diversity	BD	No. of female directors in the board
- Other Directorships	OD	Average of other directorships held by directors per year
<i>Control Variables: Banking Business Structure</i>		
- Capital Ratio	CR	Ratio of equity to total assets
- Loan Interest Rate	LIR	Ratio of customer interest rate to customer loans
- Banking Business	BB	Ratio of customer loans to total assets
- Δ Gross Loans	Δ GL	Rate of change of gross customer loans
- Bank Size	BaS	Logarithm of annual total assets
- Non Performing Loans/Customer Loans	NPLLs	Ratio of NPLs to customer loans
- Doubtful loans	DLs	Ratio of Doubtful loans of previous year to Gross Loans of previous year
- ROA Correct	ROAC	Ratio of Net Profit gross of loan loss provision to Total Assets
- ROA	ROA	Ratio of Net Profit to Total Assets

Table 2 – Univariate Descriptive Statistics: Italian Listed Banks 2006 – 2008

Variables	N	Mean	SD	Median	Min	Max
<i>Bank Portfolio Loans Quality</i>						
Default Rate	76	0.01	0.01	0.01	0.00	0.04
Recovery Rate	76	0.24	0.19	0.20	0.00	0.66
Provisioning Rate	76	0.01	0.01	0.01	0.00	0.05
<i>Board Monitoring</i>						
Independents	76	0.49	0.28	0.44	0.00	1.00
Audit Committee	76	0.82	0.39	1.00	0.00	1.00
<i>Bank Governance Characteristics</i>						
Board Size	76	14.96	4.52	15.00	7.00	25.00
Meeting Activity	76	15.30	6.01	14.00	6.00	41.00
Board Diversity	76	0.03	0.04	0.05	0.00	0.12
Other Directorships	76	3.32	1.97	3.55	0.00	6.70
<i>Banking Business Structure</i>						
Capital Ratio	76	0.09	0.07	0.08	0.01	0.47
Loan Interest Rate	76	0.05	0.01	0.05	0.00	0.07
Banking Business	76	0.60	0.22	0.66	0.04	0.91
Loan Growth	76	0.16	0.16	0.13	-0.10	0.55
Bank Size	76	16.57	1.87	16.44	12.83	20.77
Non Performing Loans/Gross Loans	76	0.03	0.03	0.03	0.00	0.23
ROA	76	0.01	0.01	0.01	-0.02	0.02
ROA Correct	76	0.02	0.03	0.02	-0.01	0.11
Doubtful Loans	76	0.01	0.01	0.01	0.00	0.04

Table 3 – Correlation between some variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Board Size	1.000													
2 Board Meeting	0.191* (0.099)	1.000												
3 Diversity (Gender)	0.011 (0.923)	0.130 (0.262)	1.000											
4 Other Directorships	0.082 (0.480)	0.018 (0.874)	0.197* (0.087)	1.000										
5 Independents	0.347* (0.002)	0.477* (0.000)	-0.034 (0.774)	0.044 (0.709)	1.000									
6 Audit Committee	0.162 (0.162)	0.200* (0.083)	0.004 (0.976)	0.122 (0.295)	0.189 (0.102)	1.000								
7 Capital Ratio	-0.083 (0.475)	-0.230* (0.045)	-0.029 (0.805)	0.241* (0.036)	-0.234* (0.042)	0.130 (0.263)	1.000							
8 Δ Gross Loans	-0.137 (0.239)	-0.194* (0.094)	0.007 (0.950)	-0.085 (0.464)	-0.166 (0.152)	0.098 (0.400)	0.221* (0.055)	1.000						
9 Banking Business	0.268* (0.019)	0.214* (0.064)	0.047 (0.686)	0.010 (0.931)	0.277* (0.015)	0.054 (0.643)	-0.204* (0.076)	-0.140 (0.226)	1.000					
10 Loan Interest Rate	0.195* (0.091)	0.030 (0.797)	0.139 (0.229)	-0.137 (0.238)	0.079 (0.496)	-0.085 (0.463)	0.044 (0.708)	0.026 (0.826)	0.187 (0.106)	1.000				
11 ROA	0.010 (0.933)	-0.286* (0.012)	0.312* (0.006)	0.163 (0.160)	-0.104 (0.371)	-0.054 (0.643)	0.125 (0.281)	0.169 (0.146)	-0.112 (0.337)	0.199 (0.085)	1.000			
12 Doubful Loans	0.276* (0.016)	0.281* (0.014)	-0.154 (0.183)	0.013 (0.910)	0.175 (0.130)	0.025 (0.827)	-0.171 (0.140)	-0.340* (0.000)	0.377* (0.001)	-0.008 (0.948)	-0.254* (0.027)	1.000		
13 NPLs	0.122 (0.295)	0.320* (0.005)	0.084 (0.469)	-0.098 (0.401)	0.043 (0.715)	0.182 (0.116)	-0.182 (0.115)	-0.257* (0.025)	0.282* (0.014)	0.158 (0.173)	-0.112 (0.337)	0.514* (0.000)	1.000	
14 Bank Size	0.554* (0.000)	0.113 (0.332)	0.103 (0.374)	-0.027 (0.818)	0.428* (0.000)	-0.051 (0.663)	-0.388* (0.001)	-0.030 (0.799)	0.311* (0.006)	0.194* (0.094)	0.090 (0.441)	0.126 (0.276)	0.031 (0.789)	1.000

*= The symbol represents the significance level at least at 10 percent

Table 4 – Regressions Results with Default Rate as dependent variable

Variables	Pre sign	Model 1	Model 2	Model 3
Doubtful loans	+	0.348*** (4.08)	0.350*** (4.06)	0.378*** (4.66)
ROA	-	-0.476*** (-4.69)	-0.488*** (-4.69)	-0.495*** (-5.26)
Banking Business	+/-	-0.00141 (-0.34)	-0.00132 (-0.31)	-0.00226 (-0.56)
Δ Gross Loans	+	0.0276*** (4.71)	0.0244*** (4.13)	0.0285*** (4.96)
Loan Interest Rate	+	-0.0454 (-0.62)	-0.0805 (-1.10)	-0.0415 (-0.59)
Capital Ratio	-	-0.0348*** (-2.76)		-0.0324** (-2.62)
Dummy 07		0.00274 (1.38)	0.00272 (1.34)	0.00210 (1.07)
Dummy 08		0.00250 (1.25)	0.00265 (1.30)	0.00236 (1.22)
Diversity (Gender)	+/-	0.0442* (1.87)	0.0456* (1.89)	0.0527** (2.36)
Other Directorships	+/-	0.000732 (1.64)	0.000439 (1.01)	0.000703 (1.61)
Audit Committee	-	-0.000593 (-0.27)	-0.000897 (-0.41)	-0.000680 (-0.33)
Board size	+/-	0.000142 (0.74)		
Board Meeting	+/-	0.000188 (1.21)	0.000251 (1.61)	
Bank Size	+/-		0.000984** (2.11)	
Independents	-			0.00641** (2.08)
Intercept		0.00346 (0.70)	-0.0115 (-1.41)	0.00522 (1.17)
<i>N. Obs</i>		76	76	76
<i>adj. R²</i>		0.485	0.462	0.509
<i>R.square</i>		0.574	0.548	0.588
<i>F-stat</i>		6.429***	6.369***	7.478***

t statistics in parentheses, * $p < .10$, ** $p < .05$, *** $p < .01$

A weak collinearity between Doubtful loans, Banking Business and Δ Gross Loans is detected. The maximum level of VIF is equal 1.60, therefore it can be easily accepted as the typical critical value for multicollinearity is a $VIF \geq 10$, (Fox (1997)).

Table 5 – Regressions Results with Recovery Rate as dependent variable

Variables	Pre sign	Model 1	Model 2	Model 3
ROA	-	2.704 (1.14)	3.092 (1.24)	2.254 (0.99)
Banking Business	+/-	0.201** (2.20)	0.258*** (2.66)	0.223** (2.43)
Δ Gross Loans	-	0.118 (0.91)	0.0529 (0.40)	0.0984 (0.75)
Capital Ratio	+	-0.525* (-1.77)		-0.502 (-1.66)
Dummy 07		0.0541 (1.15)	0.0456 (0.93)	0.0399 (0.83)
Dummy 08		0.000984 (0.02)	-0.00126 (-0.03)	0.000205 (0.00)
Diversity (Gender)	+/-	0.742 (1.35)	0.710 (1.24)	0.909* (1.68)
Other Directorships	+/-	0.0248** (2.39)	0.0211** (2.02)	0.0249** (2.37)
Audit Committee	+	-0.131** (-2.55)	-0.128** (-2.44)	-0.120** (-2.33)
Board size	+/-	0.00861* (1.93)		
Board Meeting	+/-	0.00493 (1.35)	0.00687* (1.83)	
Bank Size	+/-		0.00391 (0.35)	
Independents	+			0.142* (1.88)
Intercept		-0.0837 (-0.83)	-0.109 (-0.57)	0.0316 (0.38)
<i>N. Obs</i>		76	76	76
adj. R^2		0.282	0.217	0.264
R.square		0.388	0.321	0.362
F-stat		3.682***	3.079***	3.693***

t statistics in parentheses, * $p < .10$, ** $p < .05$, *** $p < .01$

A weak collinearity between Doubtful loans, Banking Business and Δ Gross Loans is detected. The maximum level of VIF is equal 1.44, therefore it can be easily accepted as the typical critical value for multicollinearity is a $VIF \geq 10$, (Fox (1997)).

Table 6 – Regressions Results with Provisioning Rate as dependent variable

Variables	Pre sign	Model 1	Model 2	Model 3
NPLs	+	0.109*** (4.62)	0.112*** (4.58)	0.0939*** (3.91)
ROACorrect	-	-0.196** (-2.16)	-0.198** (-2.08)	-0.148 (-1.65)
Banking Business	+/-	-0.00230 (-0.63)	-0.00169 (-0.44)	-0.00299 (-0.79)
Δ Gross Loans	+	-0.0123*** (-3.07)	-0.0127*** (-3.06)	-0.0129*** (-3.10)
Loan Interest Rate	+	0.0698 (1.03)	0.0327 (0.48)	0.0523 (0.75)
Capital Ratio	-	-0.0230** (-2.05)	-0.0227 (-1.98)	-0.0207* (-1.75)
Dummy 07		-0.000434 (-0.24)	-0.000500 (-0.27)	-0.000326 (-0.17)
Dummy 08		0.00298 (1.62)	0.00305 (1.60)	0.00267 (1.41)
Diversity (Gender)	+/-	0.00861 (0.41)	0.0138 (0.64)	0.000265 (0.01)
Other Directorships	+/-	-0.000160 (-0.40)	-0.000436 (-1.10)	-0.000251 (-0.61)
Audit Committee	+	0.00450** (2.24)	0.00333 (1.64)	0.00391* (1.87)
Board size	+/-	-0.000276 (-1.62)		
Board Meeting	+/-	-0.000304** (-2.17)	-0.000271* (-1.90)	
Bank Size	+/-		-0.000230 (-0.54)	
Independents	+			-0.00393 (-1.34)
Intercept		0.0126*** (2.79)	0.0128* (1.70)	0.00823* (1.88)
<i>N. Obs</i>		76	76	76
<i>adj. R²</i>		0.409	0.362	0.359
<i>R.square</i>		0.504	0.464	0.462
<i>F-stat</i>		5.006***	4.550***	4.502***

t statistics in parentheses, * p<.10, ** p<.05, *** p<.01

A weak collinearity between Doubtful loans, Banking Business and Δ Gross Loans is detected. The maximum level of VIF is equal 1.49, therefore it can be easily accepted as the typical critical value for multicollinearity is a $VIF \geq 10$, (Fox (1997)).

Table 7 – Heteroskedasticity Test on Default Rate as dependent variable

	Model 1	Model 2	Model 3
Breusch-Pagan / Cook-Weisberg test chi2 (1)	4.94	6.49	7.58
Prob > chi2	0.0263	0.0109	0.0059
Breusch-Pagan / Cook-Weisberg test chi2 (13)	32.73	37.11	29.36
Prob > chi2	0.0019	0.0007	0.0020
White test chi2 (75)	76	76	76
P-value	0.446	0.446	0.446

Table 8 – Heteroskedasticity Test on Recovery Rate as dependent variable

	Model 1	Model 2	Model 3
Breusch-Pagan / Cook-Weisberg test chi2 (1)	1.93	0.35	0.14
Prob > chi2	0.1647	0.5533	0.7100
Breusch-Pagan / Cook-Weisberg test chi2	7.68	12.25	5.32
Prob > chi2	0.7420	0.3454	0.8052
White test chi2	73.776	58.713	47.472
P-value	0.4525	0.5592	0.5754

Table 9 – Heteroskedasticity Test on Provisioning Rate as dependent variable

	Model 1	Model 2	Model 3
Breusch-Pagan / Cook-Weisberg test chi2 (1)	22.19	21.98	44.18
Prob > chi2	0.0000	0.0000	0.0000
Breusch-Pagan / Cook-Weisberg test chi2	44.95	45.23	67.59
Prob > chi2	0.0000	0.0000	0.0000
White test chi2	76	76	76
P-value	0.446	0.446	0.446

Table 10 – Regressions Results with Default Rate as dependent variable, Robust estimation

Variables	Pre Sign	Model 1	Model 2	Model 3
Doubtful loans	+	0.348*** (4.44)	0.350*** (4.51)	0.378*** (4.88)
ROA	-	-0.476*** (-3.64)	-0.488*** (-3.26)	-0.495*** (-3.75)
Banking Business	+/-	-0.00141 (-0.32)	-0.00132 (-0.29)	-0.00226 (-0.54)
Δ Gross Loans	+	0.0276*** (4.18)	0.0244*** (3.77)	0.0285*** (4.37)
Loan Interest Rate	+	-0.0454 (-0.41)	-0.0805 (-0.68)	-0.0415 (-0.39)
Capital Ratio	-	-0.0348*** (-2.68)		-0.0324*** (-2.68)
Dummy 07		0.00274 (1.35)	0.00272 (1.34)	0.00210 (1.09)
Dummy 08		0.00250 (1.24)	0.00265 (1.23)	0.00236 (1.28)
Diversity (Gender)	+/-	0.0442** (2.12)	0.0456** (2.09)	0.0527** (2.50)
Other Directorships	+/-	0.000732* (1.70)	0.000439 (1.12)	0.000703 (1.65)
Audit Committee	-	-0.000593 (-0.28)	-0.000897 (-0.42)	-0.000680 (-0.32)
Board size	+/-	0.000142 (0.68)		
Board Meeting	+/-	0.000188 (1.01)	0.000251 (1.37)	
Bank Size	+/-		0.000984 (1.66)	
Independents	-			0.00641** (2.17)
Intercept		0.00346 (0.64)	-0.0115 (-0.99)	0.00522 (1.08)
<i>N. Obs</i>		76	76	76
adj. R^2		0.485	0.462	0.509
R.square		0.574	0.548	0.588
F-stat		9.593***	12.00***	8.868***

t statistics in parentheses, * p<.10, ** p<.05, *** p<.01

Table 11 – Regression Results with Provisioning Rate as dependent variable, Robust estimation

Variables	Pre Sign	Model 1	Model 2	Model 3
NPLs	+	0.109*** (4.62)	0.112*** (3.04)	0.0939** (2.16)
ROACorrect	-	-0.196** (-2.16)	-0.198 (-1.30)	-0.148 (-1.03)
Banking Business	+/-	-0.00230 (-0.63)	-0.00169 (-0.34)	-0.00299 (-0.52)
Δ Gross Loans	+	-0.0123*** (-3.07)	-0.0127** (-2.20)	-0.0129** (-2.11)
Loan Interest Rate	+	0.0698 (1.03)	0.0327 (0.47)	0.0523 (0.80)
Capital Ratio	-	-0.0230** (-2.05)		-0.0207** (-2.29)
Dummy 07		-0.000434 (-0.24)	-0.000500 (-0.25)	-0.000326 (-0.16)
Dummy 08		0.00298 (1.62)	0.00305 (1.20)	0.00267 (1.13)
Diversity (Gender)	+/-	0.00861 (0.41)	0.0138 (0.61)	0.000265 (0.01)
Other Directorships	+/-	-0.000160 (-0.40)	-0.000436 (-1.01)	-0.000251 (-0.57)
Audit Committee	+	0.00450** (2.24)	0.00333* (1.72)	0.00391* (1.93)
Board size	+/-	-0.000276 (-1.62)		
Board Meeting	+/-	-0.000304** (-2.17)	-0.000271 (-1.25)	
Bank Size	+/-		-0.000230 (-0.71)	
Independents	+			-0.00393 (-1.19)
Intercept		0.0126*** (2.79)	0.0128 (1.56)	0.00823 (1.41)
<i>N. Obs</i>		76	76	76
adj. <i>R</i> ²		0.410	0.362	0.359
R.square		0.512	0.464	0.462
F-stat		5.006***	2.223**	4.095***

t statistics in parentheses, * p<.10, ** p<.05, *** p<.01

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