

How Does Corporate Governance Affect Bank Performance? The Mediating Role of Risk Governance

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Abstract

This paper aims to investigate how bank governance (board size, board composition, ownership structure) affects performance (ROA), by considering the mediating role of risk governance (presence of a risk committee, the number of meetings of the risk committee in one year, the risk committee size, the percentage of independent directors in the risk committee, and the presence of a chief risk officer). A sample of 31 Italian listed banks is examined over a ten-year period (2008-2017), in order to delineate the changes in corporate governance structure and to catch the effects of the current national and European regulations followed to the financial crisis. Hypotheses are tested by applying a mediation analysis according to the causal steps procedure. The main findings suggest that risk governance fully mediates the corporate governance-bank performance relationship. Specifically, we find that the board size is positively related to the presence of a risk committee and to the number of meetings. The percentage of independent directors on board is positively related to the percentage of independent directors in the risky committee and, in turn, has a positive effect on performance. Finally, the presence of institutional owners is positively related to the presence of a chief risk officer and, thus, to bank performance. Summing up, banks with wider and more heterogeneous boards of directors have better risk management-related corporate governance mechanisms and reach higher performance levels.

Keywords: bank governance, risk governance, performance, regulation

1. Introduction

On the wave of the recent financial crisis, the corporate governance of financial institutions has heated the policy debate and has become the focus of a swarm of academic research (e.g., Pathan & Skully, 2010; Aebi et al., 2012; Liang et al., 2013; Pathan & Faff, 2013; Stulz, 2016; Abou-El-Sood, 2017; Farag & Mallin, 2017). The health of the financial sector is actually more important than other industries (Adams & Mehran, 2003; Macey & O'Hara, 2003) since its failure could interrupt the economic development of countries and would have costly consequences (Flannery, 1998). Because of this, banking Institutions are highly regulated compared to others. However, bank regulators and supervisors find a lot of difficulties in preventing bank failures just through the laws and the ultimate responsibility lies with board of directors since they establish the strategy, choose the managers and set operational policies for ensuring bank's survival (Greuning & Bratanovic, 2003). Therefore, in order to avoid possible failures, representing a great concern to policy makers, and in order to guarantee that banks can identify, evaluate and manage the risks to which they are exposed, it is necessary to discipline through appropriate regulations the bank governance. A bad bank governance could actually lead the market in losing confidence towards bank's ability in suitably managing its assets and liabilities and trigger, in turn, a liquidity crisis, which could translate in a systemic economic and social crisis (Cebenoyan & Strahan, 2001; Basel Committee on banking supervision, 2006; Alexander, 2006; Garcia-Marco & Robles-Fernandez, 2008). Recent academic studies have emphasized that, during the financial crisis of 2007/2008, a crucial role on the reduction of banks' performance was played by the weaknesses in bank governance (e.g., Diamond & Rajan, 2009). On the same line, a recent OECD report has included that the flaws in bank governance have contributed in a relevant manner to the financial crisis (Kirkpatrick, 2009). Due to that, bank governance deserves special attention and it makes interesting to examine its mechanisms, aiming to mitigate opportunistic behaviors and to reflect the needs of shareholders, creditors, and the taxpayer (Srivastav & Hagedorff, 2016), and its effects on bank performance.

Some previous studies have already investigated the issue (e.g., Beltratti & Stulz, 2012; Erkens et al., 2010; Fahlenbrach & Stulz, 2011; Minton et al., 2010), however the literature on corporate governance and specifically on the effects of corporate governance in financial institutions is still quite limited (among others, Pathan & Faff, 2013; Aebi et al., 2012; Liang et al., 2013; Aldalayeen, 2014; Jorfi et al., 2015; Qin & Dickson, 2017) and the existent results are ambiguous. Furthermore, several challenges remain for future research, also focusing on specific contexts in the light of the distinctive regulation and government intervention experienced by financial institutions (Levine, 2004). Among other challenges, recent studies on bank governance are addressing their attention on risk governance, i.e. on risk management-related corporate governance mechanisms (Miller, 1992; Miccolis & Shaw, 2000; Cumming & Mirtle, 2001; Nocco & Stulz, 2006; Sabato, 2010), because a conscious and appropriate risk management is needful to adequately manage risk in banks (Acharya et al., 2009). Despite both researchers and politicians are recognizing the importance of risk management, the actual role of risk management in a corporate governance context still lacks a common interpretation (Aebi et al., 2012). The studies mainly focus on the direct relationship between corporate governance and risk governance (e.g., Van Greuning & Brajovic-Bratanovic, 2009) or between risk governance and bank performance (e.g., Aebi et al., 2012; Liu & Chen, 2012). In order to reach a more complete understanding of the issue, we believe that it is important to consider both the relationships as subsequent steps. In doing so, risk governance would become a mediating variable capable of explaining the effect of corporate governance on bank performance. Put it differently, corporate governance, such as board size, board composition and ownership structure, affects the adoption of risk management-related corporate governance mechanisms and, in turn, bank performance.

With the aim to test the existence and the direction of the above-mentioned relationships, we collect data about corporate governance, risk governance and performance for a sample of 31 Italian listed banks over a ten-year period (2008-2017). Italy represents an interesting context of analysis because of the recent regulations which also by receiving the European recommendations have introduced some news on bank governance. Specifically, as the last regulatory intervention is in 2016, after financial crisis, it is worthy to study the effect on the subsequent year. Therefore, although we collect data since 2008 to 2017, we illustrate through descriptive statistics the changes intervened on bank's boards of directors along the years, but we apply the mediation analysis according to the causal steps procedure (Baron & Kenny 1986; MacKinnon, Fairchild & Fritz, 2007; Stuetzer et al., 2014) just on the relative variation recorded by performance from 2016 to 2017. We collected governance and performance data for each bank on Bureau Van Dijk Orbis Bank database and by hand on corporate governance annual reports and corporate websites. More in details, we consider as corporate governance measures the board size, the board composition, in terms of gender diversity and board independence, the ownership structure (director ownership, institutional ownership, block ownership). As risk management-related corporate governance mechanisms, we consider the presence of a risk committee, the number of meetings of the risk committee in one year, the number of directors in the risk committee, the percentage of independent directors in the risk committee, and the presence of a chief risk officer (CRO) in the executive board. Finally, we measure bank performance as bank profitability by relative change of the return on total assets (ROA). The main findings suggest that risk governance fully mediates the corporate governance-bank performance relationship. Specifically, we find that the board size is positively related to the presence of a risk committee and to the number of meetings. The percentage of independent directors on board is positively related to the percentage of independent directors in the risky committee and, in turn, has a positive effect on performance. Finally, the presence of institutional owners is positively related to the presence of a CRO and, thus, to bank performance. Summing up, banks with wider and more heterogeneous boards of directors have better risk management-related corporate governance mechanisms and reach higher performance levels.

This study contributes to the existing literature on bank governance by focusing on a specific context, Italy, and thus investigating the effects of the national and European regulations on bank performance after financial crisis. Moreover, while previous studies (Aebi et al., 2012) deepen the influence of standard corporate governance on firm performance, we also analyze the mediating role of risk governance. Risk management actually has often a support/control function. However, this role is not sufficient because banks are clearly risky, as also the last financial crisis has demonstrated. Risk management is becoming a driver of profitability as well as an asset for growth and a tool for reductoperational costs, thus legitimating the investigation on antecedents and consequences of risk management-related corporate governance mechanisms.

The remain of the manuscript is structured as follow: in the next paragraph, we present an overview of the regulation about banks' governance and risk in Italy. In the section three, we provide a review of the literature and reach to formulate the research hypotheses; section four describes the sampling and data collection procedures, defines the variables and illustrates the models applied for the empirical analysis; section five

discusses the results; finally, section six sums up the concluding remarks.

2. Literature Review and Hypotheses' Development

2.1 Italian Regulation of Banks' Boards and Ownership Structure: An Overview

Banks' board of directors in Italy are disciplined by different regulations. First, it receives the European Capital Requirements Directive (CRD IV). It regulates the actions of management bodies and supervisory bodies in order to cope with the harmful effect that bad designed corporate governance structures can have on healthy risk management. In this sense, it drives the Member States to introduce principles and rules to ensure effective control by the governance body, to promote a sound risk culture at all levels of financial firms and to enable competent authorities to monitor the adequacy of internal governance arrangements. It also requires that Member States, in turn, be able to enact additional corporate governance regulations beyond those required by this Directive. Italy, in particular, implemented the CRD IV through the Bank of Italy Circular 285/2013 and subsequently introduced Decree Law 18/2016 to regulate the appointment of members of the administrative and control bodies. Also the article 26 of the TUB regulates on the topic, according to which persons who perform administrative, management and control functions at banks must be suitable for carrying out their duties. They must possess the requisites of professionalism, integrity and independence, satisfy the criteria of competence and fairness, devote the time necessary for the effective performance of the assignment, so as to guarantee the healthy and prudent management of the bank. The Minister of Economy and Finance identifies the limits on the accumulation of positions for bank representatives, graduated according to proportionality principles and taking into account the size of the intermediary; as well as the causes that involve the temporary suspension from the office and its duration.

Another important Italian law, to which reference is made when it comes to governance of banks, is the Law 120/2011 which regulates the balance between genders in the bodies of listed companies and therefore, also of listed banks, which are the object of our study. It provides that the division of directors to be elected is carried out on the basis of a criterion that ensures gender balance. The less represented gender must obtain at least one third of the elected directors. If the composition of the board resulting from the election does not comply with this division criterion, the Consob shall inform the company concerned in order to comply with this criterion within a maximum period of four months from the warning. In the event of non-compliance with the warning, the Consob applies a pecuniary administrative sanction from 100,000 euros to 1,000,000 euros, according to criteria and procedures established by its own regulations and sets a new three-month deadline for compliance.

Returning to the CRD IV, in addition to the composition of governance, it also regulates the treatment of risks. In particular, it establishes the work of the management body and regulates the establishment of the risk committee. The management body approves and periodically reviews strategies and policies concerning the assumption, management, monitoring and mitigation of risks to which the institution is or may be exposed, including those deriving from the macroeconomic context in which it operates, in relation to the phase of the economic cycle. The management body must devote sufficient time to the analysis of risk-related matters and actively participate in the management of all substantial risks, as well as the evaluation of the activities. As for the risk committee, it must be established in all those institutions which are significant for their size, internal organization and the nature, breadth and complexity of their activities. The risk committee is composed of members of the management body who do not exercise executive functions within the concerned institution. Members of the risk committee have adequate knowledge, skills and experience to fully understand and monitor the institution's risk strategy and risk appetite. The committee advises the management body on the overall risk appetite and risk strategy of the institution, both present and future, and assists the management body in monitoring the implementation of this strategy by the high management. The management body retains overall responsibility for risks.

2.2 The Effects of Corporate Governance on Bank Performance

Several studies have investigated the effects of corporate governance on bank performance. The most recent ones (e.g., Beltratti & Stulz, 2012; Fahlenbrach & Stulz, 2011; Erkens et al., 2010; Cornett et al., 2010) have analyzed the relationship during the credit crisis. For example, Fahlenbrach and Stulz (2011) focus on the effects that CEO incentives have on performance and can not find results that indicate better performance for banks that offer higher salary incentives to CEOs. Beltratti and Stulz (2012), always by investigating the influence of corporate governance on bank performance, during the financial crisis on a sample of 98 banks across the world, find that banks with more shareholder-friendly boards perform worse. This evidence indicates that the widely shared idea that a "good governance" is that in the best interest of shareholders is not always true. Again, Erkens and colleagues (2010), on a sample of 296 banks from 30 countries, study the relationship between corporate

governance and performance of credit institutions during the recent financial crisis. In line with Beltratti and Stulz (2012), they find that the banks recording worse stock returns are those with more independent boards and higher institutional ownership. Finally, Cornett et al. (2010) deepen the effects of different corporate governance mechanisms on bank performance working on a sample of approximately 300 listed US banks. On the contrary to the previous ones (Erkens et al., 2010; Beltratti and Stulz, 2012; Fahlenbrach and Stulz, 2011), their results suggest that better corporate governance (e.g., a more independent board, a higher pay-for-performance sensitivity, and an increase in insider ownership) were positively related to the banks' performance during the recent financial crisis. Good governance mechanisms are actually able to exercise a control on the management and limit opportunistic behaviors. Indeed, they stimulate effective managerial processes that, in turn, improve bank value and generate benefits to all the stakeholders.

In the present work, we look at the years after the crisis and investigate banks' corporate governance (bank governance) in terms of board characteristics and ownership structure.

First, looking at board of directors, already investigated in a limited number of studies (e.g., Adams & Mehran, 2009; Caprio et al. 2007; Levine 2004; Macey & O'Hara 2003), we deepen the effects of board size and board composition, that are the core issue of bank corporate governance, on bank performance.

With respect to the board size, different previous studies (Yermack, 1996; Fama & Jensen, 1983; Jensen, 1983; Florackis & Ozkan, 2004) suggest that a small number of board directors are important for an effective board. Put it differently, they sustain that large boards of directors experience less effective coordination, communication, and decision making, and for this reason are often controlled by the CEO. In this direction, Yoshikawa and Phan (2003) suggest that larger boards of directors are less cohesive and a source of potential conflicts among the group members (Forbes & Milliken, 1999; Lipton & Lorsch, 1992) and thus tend to be more difficult to coordinate. Besides, Yoshikawa and Han (2003) affirm that very often are the CEOs interested in creating large boards of directors in order to disperse the power in the boardroom and maintain a predominant role (Leighton & Thain, 1997). Differently, smaller boards of directors are more prone to board member participation and this translates in a positive impact on the strategic decision-making capability, on the management autonomy and on the monitoring function (Huther, 1997).

Board composition is another relevant variable to guarantee an effective functioning to the board of directors and to reach better performance (Choe & Lee, 2003). Board composition can be studied in terms of diversity (heterogeneity), by looking in particular at the participation of women (gender diversity) and independent directors. Up to date, the diversity effects on performance in the financial sector have been studied focusing on racial diversity (Richard, 2000) suggesting that when racial diversity is associated with a growth strategy, productivity improves and the value creation is favored. This can be motivated by the fact that diversity exerts a positive effect on innovative and creative decision making (Bantel and Jackson, 1989). In fact, generally, the most innovative banks are led by directors with high education levels and different functional backgrounds. For example, Hagendorff and Keasey (2012) on a sample of American banks examine the effect of board diversity on the announcement returns for mergers and find a positive one. Moreover, among Academics is borning an increasing interest on gender diversity on boards of directors as a way for enhancing corporate governance. Indeed, a relevant number of studies (e.g., Watson et al., 1993; Fondas & Salsalos, 2000) suggest that gender diversity on board generates better corporate governance. For instance, Watson and colleagues (1993) and Fondas and Salsalos (2000) suggest that diversity on boards in terms of women representation would improve the board's monitoring function in protecting shareholder interests. Therefore, the presence of women on boards makes the monitoring role more effective (Fondas & Salsalos 2000) and improves boards' ability in solving problems (Watson et al. 1993), thank to women's higher expectations regarding their responsibilities as directors. Therefore, heterogeneity on board generates better decisions and help in finding alternative solution for emerging problems because of a wider range of perspectives, a more critical approach in analysing the issues and a more fluid communication (Jackson 1992; Milliken & Martins 1996). However, despite the importance of female on corporate boards has been long acknowledged (Terjesen and Singh, 2008), up to date women directors in financial institutions are very few (Arken et al. 2004; Daily et al. 1999). Actually, although the regulations in many European countries have established minimum quotas for women representation on boards, as we have stated in the paragraph 2, the presence of female on boards is still scarce.

Another source of diversity on board is the presence of independent directors. If, on the one hand, manager directors have expertise, dedicated skills, and esteemed knowledge regarding banks' operating policies and day-to-day activities; on the other hand, the presence of independent directors could contribute to the good working of the board by bringing new ideas, objectivity and ability experienced in other field (Weir, 1997; Firth et al., 2002; Cho, 2003). Hence, a greater presence of independent directors may become an important element

for an effective board (e.g., Yermack, 1996; Fama & Jensen, 1983), also because it improves the monitoring function and reduces self-interested actions by managers, by minimizing agency costs (Kiel & Nicholson, 2003; Le et al. 2006; Florackis & Ozkan, 2004; Williams et al. 2006). This, in turn, improves bank performance.

Looking at corporate governance in terms of ownership structure, we consider three different perspectives; (a) director ownership, (b) institutional ownership, and block ownership (c). With regard to the director ownership, when directors own shares they are more interested and directly involved in monitoring management operations (Jensen & Meckling, 1976) and consequently there are less agency problems as compared to the situation where the directors, who are not the shareholders, supervise the management (Seifert et al., 2005). Regarding institutional investors, different authors (e.g., Hussain and Mallin, 2002); Kim and Nofsinger, 2004; Leng, 2004; Soloman and Solomon, 2004; Seifert et al., 2005; Le et al., 2006; Langnan, Steven and Weibin, 2007; Ramzi, 2008) agree on the essential role of institutional shareholders in monitoring because they generally own a relevant number of shares, benefit from their activism and this explains their direct interest in and their effort, may have objective difficulties in liquidating their shares without affecting the share price, have a remarkable influence on the management, and have a professional experience that allows them to adequately monitor executives. Lastly, looking at block ownership, previous studies have suggested that when someone has a relevant amount of interest in a specific economic initiative (usually measured at 5%), he or she will have a greater incentive in supervising management (Kang & Sorensen, 1999; Maher & Andersson, 1999; Kim & Lee, 2003).

2.3 The Mediating Role of Risk Governance

With the present work, we do not limit our analysis to the direct effect of corporate governance on bank performance, but aim to explain how this influence happens, thus considering the mediating role of risk related governance mechanisms (risk governance), such as the presence of a risk committee or a chief risk officer in executive board. Over the years, risk management has generally covered the support/control function. However, because the last financial crisis has highlighted that banks are risky businesses and may extend the effects of their failure on the entire market, it is clear that risk governance should hold a more important and powerful role within banks. This circumstance makes the investigation of the issue worthy of attention.

Aebi and colleagues (2012), in accordance with Beltratti and Stulz (2012) and Fahlenbrach and Stulz (2011), for example, find that the relation between “standard” corporate governance measures and performance was insignificant during the crisis, instead the effects of some governance mechanisms, such as board size or board independence, on performance were negative. Besides, they suggest, by providing robust evidence, that the banks, in which the CRO reports directly to the board of directors record better performance than banks in which the CRO reports to the CEO. This evidence suggests that the classical corporate governance structure, where all members of the board directly report to the CEO, is not the most suitable for financial institutions.

This evidence leads us to deepen the role of risk related governance mechanisms. Specifically, we focus on the presence of a risk committee and on its activities and composition and on the presence of a CRO on executive board. First, by looking at the presence of a risk committee, according to previous studies, we link it to better corporate governance. However, just focusing on the presence of a risk committee is not enough, because its characteristics, such as its structure, the degree of independence of the directors in the committee, may have a significant effect. Hence, we consider some additional information over the presence of a risk committee, such as the number of times the risk committee of the respective banks met in 2017 (Nr. of meetings of risk committee), the number of directors in the risk committee (Nr. of directors in risk committee), and the percentage of independent directors in the risk committee (% of indep. directors in risk committee). Second, we also evaluate if the CRO is or not a member of the executive board (CRO in executive board). We also consider this aspect because it is known that when the CRO is a member of the management board, he has larger influence and power with respect to CRO who works on the third management level. However, greater CRO's influence and power not always are positive for bank value. Generally, in the short-term the appointment of a CRO is seen as positive, instead in the long-term he could enter in conflict with shareholders. The role of a CRO, indeed, is to reduce the risk exposure, but it is note that high risky activities generate higher profits and returns and, in turn, increase bank value. Hence, when a CRO operates for containing risks, could conflict with shareholders' interesting due to the decreasing of stock prices.

2.4 Hypotheses

Eighth hypotheses are developed in this study. They are as follows. First, looking at board characteristics and specifically at board size, on the basis of the above-cited arguments, we expect theoretically that smaller board size should reduce the risk due to its monitoring role in the risk diversifying process of the management.

Therefore, as smaller boards allow to reduce the agency costs, thank to the independence from the management and to the effective control over the management (Jensen & Ruback, 1983), we hypothesize that the board size is negatively related to bank performance.

Regarding board composition, and in particular gender diversity, we theorize that banks are prone in making the boards more heterogeneous through the appointment of women directors, because the female presence ensures the possibility of having different perspectives in the decision-making process, resulting in turn in board's better decisions and results (Bear et al. 2010). Also the results found by Francoeur and colleagues (2008), finding a positive and significant effect on returns when there is a high proportion of women board members, support our theorization. Similarly, Hambrick and D'Aveni (1992) suggest that board heterogeneity may generate more diverse networking opportunities. This evidence leads us to hypothesize that a higher percentage of women on banks' board of directors is related to better performance.

Regarding the percentage of independent directors, previous research has argued that having a higher proportion of independent directors reduces the agency costs. The idea behind the involvement of a larger number of independent directors on the board is that independent directors could make the board independent from the management and consequently able to monitor the executives effectively (Choe & Lee, 2003). The research findings of Bhojraj and Sengupta (2003) highlight that boards with stronger representation of outside directors enjoy lower bond yields and higher bond ratings thank to monitoring role of outside directors. Also Brick and Chidambaran (2008) find that a higher percentage of independent directors on board is positively related to bank performance. In the light of these arguments, we posit the following hypotheses:

H1: Board characteristics affect bank performance

Specifically:

H1.a: Board size is negatively related to bank performance

H1.b: A high percentage of women on board is positively related to bank performance

H1.c: A high percentage of independent directors on board is positively related to bank performance

Over the board characteristics, we measure corporate governance also looking at ownership structure. Regarding to the directors in ownership, their presence would allow to align managers' interests to shareholders' interest, as managers are themselves shareholders. Hence, director ownership could reduce the risk faced by the banks since the directors have the ownership interest to monitor the risk management process of the management (Beatty et al., 1994; Pitts et al., 2003). Looking at the proportion of institutional ownership or block ownership, we hypothesize that if it is higher it could determine a lower risk for the banks because according to Sanders (1999) stock options are the best incentive mechanism to limit a company risk.

Therefore, we formulate the following hypotheses:

H2: The ownership structure affects bank performance

Specifically:

H2.a: The presence of director owners is positively related to bank performance

H2.b: The presence of institutional owners is positively related to bank performance

H2.c: The presence of block owners is positively related to bank performance

Finally, we do not limit our study to the direct relationship between corporate governance and bank performance, but aim to investigate the mediating role of risk governance, hypothesizing that a different board size, diverse board composition and ownership structure may affect the adoption of risk-related governance mechanisms and, in turn, bank performance, thus formulating:

H3.a: Risk governance positively mediates the direct relationship between board characteristics and bank performance.

H3.b: Risk governance positively mediates the direct relationship between ownership structure and bank performance

3. Method

This section describes the sampling and data collection procedures, defines the variables and the related measures and presents the models for the empirical analysis.

3.1 Sample and Data Collection

Sample includes the 31 Italian listed banks. The data collection process started with the scanning of Bureau van Dijk Orbis Bank, a database containing comprehensive information on banks from all over the world, with the following search criteria: for a bank to be eligible for our study it had to be based in Italy and it had to be listed on the stock market. This process yielded a sample of 31 banks. For each of them, performance and some corporate governance data were collected on the Bureau van Dijk Orbis Bank database. Because of the limited availability of corporate governance and risk governance data on banks in commercial governance databases, we collected banks' annual report and handily set the information about governance variables. In addition, we also made control on banks' websites. This data collection procedure explains, at least in part, why we have a restricted sample. Indeed, this collection process is clearly time-consuming. Moreover, we decided to focus just on listed banks because more information is available for large and more structured banks (Aebi et al., 2012).

The data collection period covered the years since 2008 until 2017, for a total of 5473 observations.

3.2 Variables and Measures

Table 1 provides a list of the variables, and related measures, considered in the models of analysis.

Table 1. Variables and measures

<i>Variables</i>	<i>Measures</i>
Dependent Variables	
<i>ROE</i>	difference between ROE (net income/total equity,) recorded in 2017 and ROE recorded in 2016, divided by the ROE recorded in 2016
<i>ROA</i>	difference between ROA (operative income/total assets) recorded in 2017 and ROA recorded in 2016, divided by the ROA recorded in 2016
Control Variables	
<i>Total asset</i>	log of total assets
<i>Tier1 capital ratio</i>	tier 1 capital/total risk-weighted assets
<i>Deposits/assets</i>	Deposits/total assets
<i>Loans/assets</i>	Loans/total assets
<i>Board size</i>	natural logarithm of the number of directors on bank's board
<i>Gender diversity</i>	proportion of women on board of directors
<i>Board independence</i>	percentage of independent directors on board of directors
<i>Director ownership</i>	dummy variable with value 1 if at least an owner is also director
<i>Institutional ownership</i>	dummy variable with value 1 if at least an institutional owner is also director
<i>Block ownership</i>	dummy variable with value 1 if at least a block owner is also director
Mediating Variables	
<i>Risk committee</i>	dummy variable with value 1 if the bank has a committee entirely dedicated to monitor and manage the risk
<i>Nr. of meetings of risk committee</i>	number of times the risk committee met
<i>Nr. of directors in risk committee</i>	number of directors in the risk committee
<i>% of indep. directors in risk committee</i>	percentage of independent directors in the risk committee
<i>CRO in executive board</i>	dummy variable with value 1 if the CRO is a member of the executive board

3.2.1 Dependent Variables

We measure bank performance as bank profitability after financial crisis. The first profitability measure we use is the relative change of return on assets (*ROA*), that is operative income divided by total assets, calculated as the difference between ROA recorded in 2017 and ROA recorded in 2016, divided by the ROA recorded in 2016. We also use (robustness check) the relative change of return on equity (*ROE*), that is the ratio between net income and total equity, defined as the difference between ROE recorded in 2017 and ROE recorded in 2016, divided by the ROE recorded in 2016. As the results obtained considering both ROA and ROE are very similar, we just report results on ROA.

3.2.2 Independent Variables

Our main independent variables are corporate governance measures. Specifically, we consider the board size, as the natural logarithm of the number of directors on a bank's board ($Ln(\text{Board size})$) (Yermack, 1996; Adams & Mehran, 2003).

Second, we look at the the board composition, in terms of gender diversity and board independence. More in detail, in order to catch the gender diversity, we consider the proportion of women on board of directors (*Gender diversity*) (De Cabo et al., 2012). Instead, we measure board independence by the percentage of independent directors on the board of directors (*Board independence*). As independent directors we consider the directors without any other relation with the bank over their presence on board. While for non financial institutions, some researchers (e.g., Hermalin & Weisbach, 1991; Bhagat & Black, 2002; Hermalin & Weisbach, 2003) find no significant relation between the percentage of outside directors and firm value, other scholars (Adams, 2009; Beltratti and Stulz, 2012) focusing on financial institutions find that banks with a higher share of independent board members perform worse.

Third, we measure corporate governance looking at the ownership structure. Specifically, we consider a dummy variable with value 1 if at least an owner is also director and with value 0 otherwise (*director ownership*). To measure the *institutional ownership*, we build another dummy variable with value 1 if there is at least an institutional owner, 0 otherwise. Finally, we specularly build also a dummy variable for *block ownership*.

3.2.3 Mediating Variables

As risk management-related corporate governance mechanisms, we consider the presence of a risk committee, the number of meetings of the risk committee in one year, the number of directors in the risk committee, the percentage of independent directors in the risk committee, and the presence of a chief risk officer sitting in the executive board.

The presence of a risk committee (*Risk committee*) is a dummy variable, which is equal to one when the bank has a committee entirely dedicated to monitor and manage the risk. In this case, we expect a better risk governance. As anticipated in the literature part, we also consider some other features characterizing the committee, obviously for the banks with a risk committee. Specifically, we additionally collect data on the number of times the risk committee of the respective banks met in 2017 (*Nr. of meetings of risk committee*), the number of directors in the risk committee (*Nr. of directors in risk committee*), and the percentage of independent directors in the risk committee (*% of indep. directors in risk committee*).

The last variable we collect data on, in order to measure the risk governance mechanisms, looks at the CRO (*CRO in executive board*). It is a dummy variable with value 1 if the CRO is a member of the executive board, 0 otherwise.

3.2.4 Control Variables

As control variables, we consider the bank size ($Ln(\text{assets})$), measured as the log of total assets recorded in 2015 (Delery & Doty 1996; Hopkins & Hopkins 1997); the ratio of tier 1 capital to total risk-weighted assets recorded in 2015 (*Tier1 capital ratio*) which is an important measure to catch a bank's financial strength; the ratio of deposits to total assets recorded in 2015 (*Deposits/assets*), which is not subject to runs with deposit insurance (e.g., Gorton, 2010); the ratio of loans to total assets recorded in 2015 (*Loans/assets*) to catch the asset side of a bank.

3.3 Analysis

Hypotheses are tested using a mediation analysis according to the causal steps procedure (Baron & Kenny 1986; MacKinnon, Fairchild & Fritz, 2007; Stuetzer et al., 2014). Several steps are followed. In Model 1, we just insert the control variables. Then, we test the direct effect of corporate governance on performance in Models 2 (board characteristics) and in Models 3 (ownership structure). Specifically, Model 2a shows the direct effect of $Ln(\text{Board size})$ on *ROA*, in Model 2b *ROA* is regressed on *gender diversity*, in Model 2c the direct effect of *board independence* on *ROA* is examined, finally, in Model 2d we regress *ROA* on all board characteristics. Model 3a show the direct effect of *director ownership* on bank profitability, Model 3b presents the direct effect of *institutional ownership* on *ROA*, in Model 3c *ROA* is regressed on *block ownership*, finally, in Model 3d we regress *ROA* on all ownership structure measures. We then regress risk governance (Models 4) on corporate governance, specifically by considering alternatively as dependent variable *Risk Committee* in Model 4a, *Nr. of meetings of risk committee* in Model 4b, *Nr. of directors in risk committee* in Model 4c, *the percentage of independent directors in risk committee* in Model 4d, and *CRO in executive board* as in Model 4e. In Model 5, we estimate the direct effect of risk governance on bank performance. Finally, in Models 6, we test the mediating

role of risk governance on the corporate governance-ROA relationship. In order to assure the robustness of our results, we also replicate the same analysis considering ROE as main dependent variable.

Before to estimate the models, we ensured the accuracy and consistency of the results. Specifically, we control for heteroskedasticity by applying the Huber White Sandwich estimator and determining the robust standard errors (Rogers, 1993; Wooldridge, 2002). With respect to multicollinearity, we estimate variance inflation factors (VIF test) and the condition index for each regression model. VIF values range from 1 to 2, and the highest value of the condition index equaled 15.63. Hence, we conclude that there is no major problem with multicollinearity (Hair et al., 2010). We winsorize the variables ROE, ROA, Tier 1 capital ratio, Deposits/assets, and Loans/assets at the 1st and 99th percentile. We also carried out a robustness check without winsorizing and we find the same effects. Finally, as another concern in corporate governance studies is endogeneity, we tried to mitigate it, in particular that concerned to reverse causality, by introducing in the models lagged bank characteristics. Instead, unfortunately, we cannot control for endogeneity problems linked to possible correlation between our variables and other variables that we cannot account for. All analyses are performed with STATA statistical software version IC/13.

4. Results

Table 2 reports descriptive statistics for our measures of bank performance, corporate and risk governance, and control variables.

Table 2. Descriptive statistics for dependent, independent and mediating variables

	<i>Mean</i>	<i>Minimum</i>	Lower quartile	Median	Upper quartile	Maximum	Standard deviation	N
Dependent Variables								
<i>ROE</i>	0.0843	- 0.7658	0.0225	0.133	0.2138	0.4236	0.2041	31
<i>ROA</i>	0.0074	-0.0771	0.0025	0.0121	0.0192	0.0348	0.0191	31
Control Variables								
<i>Total asset</i>	17,805	168	696	1272	3441	1459,737	113,412	31
<i>Tier1 capital ratio</i>	0.1134	0.0624	0.0934	0.1074	0.1258	0.2304	0.0303	31
<i>Deposits/assets</i>	0.7391	0.4048	0.6879	0.7517	0.8068	0.8937	0.0939	31
<i>Loans/assets</i>	0.6969	0.2477	0.6399	0.7129	0.7788	0.9192	0.1239	31
Independent variables								
<i>Board size</i>	12.8909	7.0000	10.0000	13.000	15.0000	20.0000	3.0903	31
<i>Gender diversity</i>								31
<i>Board independence</i>	0.7785	0.3750	0.7059	0.7857	0.8571	0.9333	0.1027	31
<i>Director ownership</i>	0.4732	0.0512	0.3991	0.4823	0.6710	0.9117	0.2103	31
<i>Institutional ownership</i>	0.5287	0.0416	0.4009	0.5483	0.6592	0.9397	0.2012	31
<i>Block ownership</i>	0.5982	0.0523	0.4872	0.6008	0.6973	0.9892	0.1546	31
Mediating Variables								
<i>Risk committee</i>	0.1980	0.0010	0.0009	0.0000	0.0001	1.0053	0.4127	31
<i>Nr. of meetings of risk committee</i>	3.1123	0.0001	0.0048	3.4271	6.584	8.472	2.6791	31
<i>Nr. of directors in risk committee</i>	3.8182	2.897	2.6751	2.4871	4.7862	5.9874	2.6748	31
<i>% of indep. directors in risk committee</i>	0.5321	0.0022	0.0012	0.7917	1.0043	1.0267	0.4542	31
<i>CRO in executive board</i>	0.2678	0.00010	0.0003	0.0007	1.5632	106072	0.4842	31

In Table 3, we report the mean value recorded by the same variables since 2008 to 2017. In the last column, we report the results of the t-statistic test, analyzing the mean differences between the value recorded by each variable before the 2016 and after the same year, in order to catch the effect of the regulation introduced in 2016.

Table 3. Mean value since 2008 to 2017 - mean differences between the value recorded before and after 2016

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	t-Statistic
Dependent Variables											
ROE	0.0782	0.0543	0.0504	0.0422	0.0489	0.0577	0.0478	0.0657	0.0682	0.0843	0.0164**
ROA	0.0126	0.0098	0.0073	0.0065	0.0068	0.0071	0.0085	0.0084	0.0069	0.0074	0.0012*
Control Variables											
Total asset	15,652	14,438	14,488	15,932	15,487	14,367	14,987	15,662	16,854	17,805	78396.12***
Tier1 capital ratio	0.1256	0.1096	0.0984	0.0987	0.1014	0.1256	0.1243	0.1299	0.1098	0.1134	- 0.0095**
Deposits/assets	0.7245	0.6691	0.6879	0.6354	0.6921	0.7265	0.6984	0.7153	0.7401	0.7391	- 0.0399***
Loans/assets	0.6871	0.6865	0.6743	0.6721	0.6156	0.6723	0.6871	0.6756	0.6945	0.6969	- 0.0332*
Independent variables										Independent variables	
Board size	11,8986	13,6483	12.9253	12.8904	12.8876	12.8263	13.0089	12.9843	12.8698	12.8909	1.6559***
Gender diversity											
Board independence	0.6285	0.6642	0.7172	0.7522	0.7684	0.7853	0.7922	0.7674	0.7832	0.7785	0.0187
Director ownership	0.5678	0.6824	0.6791	0.6543	0.4569	0.6287	0.6453	0.7453	0.4326	0.4732	0.0187
Institutional ownership	0.5672	0.5435	0.5874	0.6453	0.5748	0.4985	0.5893	0.5427	0.5649	0.5287	0.1967***
Block ownership	0.5678	0.5224	0.5453	0.5897	0.5457	0.5378	0.5692	0.5689	0.5486	0.5982	0.0187
Mediating Variables											
Risk committee	0.0546	0.082	0.0356	0.0278	0.0567	0.0986	0.0367	0.1769	0.2167	0.1980	0.3461***
Nr. of meetings of risk committee	2,6478	2,987	3,8672	3,876	3,625	3,756	4.1256	4.1211	4.1532	3.1123	1.5914***
Nr. of directors in risk committee	3.5637	3.7463	3.6271	3.2234	3.8674	3.8142	3.8116	3.8118	3.8689	3.8182	0.3461***
% of indep. directors in risk committee	0.5983	0.5522	0.5748	0.5734	0.5678	0.59362	0.5663	0.5627	0.5659	0.5321	0.3461***
CRO in executive board	0.3647	0.3647	0.3647	0.3647	0.3647	0.3647	0.3647	0.3647	0.3647	0.2678	0.3461***

Table 4 reports the correlation matrix.

Table 4. Correlation matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1.ROE	1															
2.ROA	-0.115	1														
3.Ln(assets)	0.131	0.183	1													
4.Tier1 capital ratio	0.016	0.133	0.328	1												
5.Deposits/assets	-0.119	0.167	-0.181	-0.050	1											
6.Loans/assets	0.253	0.214	0.300	0.119	0.160	1										
7.Ln(Board size)	-0.280	-0.115	0.121	0.049	0.143	0.507	1									
8.Gender diversity	0.282	0.116	0.167	0.065	-0.108	0.606	0.567	1								
9.Board independence	0.270	0.151	0.173	0.083	0.150	0.527	0.600	0.590	1							
10.Director ownership	0.312	0.079	0.158	0.059	0.067	0.326	0.373	0.369	0.443	1						
11.Institutional ownership	0.286	0.047	0.105	0.016	0.046	0.221	0.271	0.266	-0.233	0.544	1					
12.Block ownership	0.225	0.088	0.032	0.063	0.017	0.367	-0.345	0.378	0.478	0.567	0.352	1				
13.Nr. of meetings of risk committee	0.287	0.052	0.067	0.082	0.036	0.322	0.723	0.354	0.647	0.326	0.326	0.369	1			
14.Nr. of directors in risk committee	0.436	-0.049	0.089	0.064	-0.048	0.456	0.267	0.321	0.378	-0.782	0.367	0.373	0.343	1		
15.% of indep. directors in risk committee	0.552	-0.073	0.147	0.015	0.167	0.897	0.289	0.387	0.583	0.524	0.489	0.389	0.385	0.498	1	
16.CRO in executive board	0.692	-0.065	0.167	0.089	0.178	0.452	0.452	0.672	0.241	0.478	0.256	0.342	0.371	0.367	0.256	1

The results of the regressions are shown in Tables 5,6,7 and 8.

Table 5. The effect of board characteristics on bank performance

	ROA	ROA	ROA	ROA	ROA
Control Variables	Model 1	Model 2a	Model 2b	Model 2c	Model 2d
Ln(assets)	0.018**	0.103**	0.098*	0.048*	0.267*
Tier1 capital ratio	0.835**	1.773**	0.027**	0.692**	0.254*
Deposits/assets	0.118	0.678	0.494	0.055	0.067
Loans/assets	0.909	0.730	0.858	1.383	0.895
Independent variables					
Ln(Board size)		-0.293***			-0.236***
Gender diversity			0.452*		0.193*
Board independence				0.321*	0.536*
N	124	154	155	153	217
R ²	0.11	0.15	0.19	0.14	0.29
R ² - Adjusted	0.06	0.08	0.11	0.09	0.15

* Significance at the 10% level; ** Significance at the 5% level; *** Significance at the 1% level.

Table 5 reports the effects of board characteristics on ROA. Model 1 just shows the effect of control variables, highlighting that the bank size (Ln(assets)) and the Tier 1 capital ratio are significantly and positively related to the return on assets. Model 2a shows the negative effect of board size on performance, thus not supporting hypothesis 1a. The effect of the percentage of women on board is shown in Model 2b and proves to be positive

but scarcely significant as the effect of the percentage of independent directors shown in Model 2c, supporting hypotheses 2b and 2c. Finally, Model 2d shows the conjunct effect of the three board characteristics we measure on ROA. Summing up, wider boards with a high percentage of women and independent directors reach better performance.

Table 6. The effect of ownership structure on bank performance

	ROA	ROA	ROA	ROA
Control Variables	Model 3a	Model 3b	Model 3c	Model 3d
<i>Ln(assets)</i>	0.022**	0.189**	0.822*	0.053*
<i>Tier1 capital ratio</i>	0.563*	1.253*	0.0267*	0.782*
<i>Deposits/assets</i>	0.567	0.612	0.278	0.055
<i>Loans/assets</i>	0.822	0.892	0.692	1.263
Independent Variables				
<i>Director ownership</i>	0.265			0.226
<i>Institutional ownership</i>		0.176**		0.278***
<i>Block ownership</i>			- 0.286	-0.427
N	149	151	154	210
R ²	0.17	0.18	0.15	0.17
R ² - Adjusted	0.09	0.10	0.08	0.10

* Significance at the 10% level; ** Significance at the 5% level; *** Significance at the 1% level.

Table 6 reports the results about the effects of ownership structure on bank performance. In Model 3b, it highlights the positive effect of institutional ownership on ROA, while the effects of directors ownership (Model 3a) and block ownership (Model 3c) seem to be not significant. Therefore, just hypothesis 2b is supported. The results remain the same also when considering the conjunct effect of the three ownership structure's variables (Model 3d). Put it differently, just the presence of institutional owners seems to lead to better performance.

Table 7. The effect of board characteristics on risk governance

	Risk committee	Nr. of meetings of risk committee	Nr. of directors in risk committee	% of indep. directors in risk committee	CRO in executive board
Control Variables	Model 4a	Model 4b	Model 4c	Model 4d	Model 4e
<i>Ln(assets)</i>	0.024	- 0.105**	- 0.037*	- 0.289	- 0.223
<i>Tier1 capital ratio</i>	0.867	0.789	0.062	0.345	0.782
<i>Deposits/assets</i>	- 0.128	- 0.782	- 0.762	- 0.126	- 0.172
<i>Loans/assets</i>	- 0.238	- 0.933	- 0.091	- 0.328	- 0.672
Independent variables					
<i>Ln(Board size)</i>	0.252***	0.378***	0.367	0.367	0.786
<i>Gender diversity</i>	- 0.256	0.312	0.372	0.382	0.546
<i>Board independence</i>	- 0.286	0.499	0.271	0.356**	0.234
<i>Director ownership</i>	- 0.237	0.378	0.289	0.267	0.523
<i>Institutional ownership</i>	- 0.269	0.367	0.251	0.229	0.273***
<i>Block ownership</i>	- 0.267	0.278	0.256	0.286	0.862
N	206	204	202	206	208
R ²	0.38	0.33	0.31	0.36	0.38
R ² - Adjusted	0.19	0.18	0.12	0.17	0.19

* Significance at the 10% level; ** Significance at the 5% level;*** Significance at the 1% level.

Table 7 reports the results of regression models investigating the effects of corporate governance variables (board characteristics and ownership structure) on risk governance. More in details, Model 4a shows the positive effect of board size on Risk committee. Model 4b suggests the significant and positive effect of board size on the number of meetings of risk committee. The percentage of independent directors on board has, instead, a positive

effect on the percentage of independent directors on risk committee, as show in Model 4d. Finally, the institutional ownership has a positive effect on the presence of a CRO in executive board. Summing up, banks with wider board od directors have a risk committee that moreover organizes a higher number of meetings in one year; if the percentage of independent directors is higher on board of directors, consequently, it is higher also on risk committee; finally, the presence of institutional owners is positively linked to the presence of a CRO in executive board, maybe in order to guarantee a grater control.

Table 8. The mediating role of risk governance

	ROA	ROA	ROA
Control Variables	Model 5	Model 6a	Model 6b
<i>Ln(assets)</i>	0.032**	0.052**	0.055**
<i>Tier1 capital ratio</i>	0.245*	0.326*	0.278*
<i>Deposits/assets</i>	0.167	0.278	0.128
<i>Loans/assets</i>	0.324	0.432	0.289
Independent Variables			
<i>Ln(Board size)</i>	-0.289**		- 0.178
<i>Gender diversity</i>	0.678*		0.456
<i>Board independence</i>	0.298*		0.679
<i>Director ownership</i>	0.187		0.365
<i>Institutional ownership</i>	0.278**		0.874
<i>Block ownership</i>	0.189		0.736
Mediating Variables			
<i>Risk committee</i>		0.167***	0.635***
<i>Nr. of meetings of risk committee</i>		0.564**	0.367**
<i>Nr. of directors in risk committee</i>		0.356	0.487
<i>% of indep. directors in risk committee</i>		0.376**	0.226**
<i>CRO in executive board</i>		0.453*	0.217*
N	278	267	289
R ²	0.38	0.36	0.42
R ² - Adjusted	0.21	0.22	0.29

* Significance at the 10% level; ** Significance at the 5% level; *** Significance at the 1% level.

Table 8 illustrates the mediating effect of risk governance on the direct relationship corporate governance-bank performance. Model 5 just shows the effects of risk management-related corporate governance mechanisms on ROA suggesting the significant and positive effect of the presence of a risk committee, the number of meetings, the percentage of independent directors on risk committee and the presence of a CRO in the executive board. In Model 6a, ROA is regressed on board characteristics and risk governance. The results suggest the mediation role of risk governance (risk committee, number of meetings of risk committee, percentage of independent directors on risk committee) and support hypotheses 3a. In Model 6b, ROA is regressed on ownership structure and risk governance. The results suggest the mediation role of risk governance (risk committee, number of meetings of risk committee, percentage of independent directors on risk committee) and support hypotheses 3b. Put it differently, when risk management-related corporate governance mechanisms are added to the main effects, corporate governance variables lose their significance indicating a full mediation of risk governance. In other words, the positive effect of such corporate governance variables is explained by the positive effect that they have on risk governance.

Besides, we conducted some robustness checks (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), by considering as dependent variable ROE. Also in this case, the mediation effect remains.

5. Conclusion

In this paper, we analyze how bank governance (board size, board composition, ownership structure) affects performance (ROA), by considering the mediating role of risk governance (presence of a risk committee, the number of meetings of the risk committee in one year, the risk committee size, the percentage of independent directors in the risk committee, and the presence of a chief risk officer). The main findings suggest that risk governance fully mediates the corporate governance-bank performance relationship. Specifically, we find that the board size is positively related to the presence of a risk committee and to the number of meetings. The

percentage of independent directors in board is positively related to the percentage of independent directors in the risky committee and, in turn, has a positive effect on performance. Finally, the presence of institutional owners is positively related to the presence of a chief risk officer and, thus, to bank performance. Summing up, banks with wider and more heterogeneous boards of directors have better risk management-related corporate governance mechanisms and reach higher performance levels.

Despite the interesting results, the study suffers from some limitations. First, the analysis is just on two years (2016 and 2017), but we have data available to carry out a panel analysis, also with GMM, and try to catch the regulation changes over the years. Moreover, we could consider other control variables, such as the risk and the degree of system competition that are determining factor for bank profitability.

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