Reducing agency conflict between bank stakeholders: the role of independent-but-related directors

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Abstract

We examine for a panel of European banks whether having a board structure that includes directors that are independent from insiders but related to non-controlling shareholders is effective in limiting expropriation by insiders, but also prevents excessive risk taking. We find that the inclusion of such "independent-but-related" directors increases bank board effectiveness for both controlled and widely held banks as it reduces the probability of default; it also decreases the cost of equity and results in higher market valuations for controlled banks. However, the inclusion of such directors is more likely to be successful if bank-level governance is accompanied by a strict supervisory regime.

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1. Introduction

Failure of a variety of internal governance mechanisms has been highlighted as a major contributing factor to the 2007–2008 financial crisis (Kirkpatrick, 2009; Basel Committee on Banking Supervision, 2010; Board of Governors of the Federal Reserve System, 2010). As corporate governance, and board oversight in particular, is essential in addressing agency problems and controlling risk within the firm, several international reform initiatives regarding the corporate governance of banks are in progress. In this paper, we query what forms of corporate governance in banks could lead to the most efficient outcome for society in terms of both performance and financial stability. We examine in particular whether an effective way of achieving these objectives is to create strong boards for banks where directors are not just independent from insiders (managers or controlling shareholders) but, more importantly, in fact related to non-controlling shareholders.

Financial firms, and banks in particular, are different from nonfinancial firms, due to their specific regulation, capital structure (i.e. deposit funding with high leverage), and their inherent complexity and opacity. Debtholders such as depositors cannot easily prevent bank shareholders from pursuing more risk, as issuing 'complete' debt contracts is generally impossible due to high information asymmetry (Dewatripont and Tirole, 1994). As a consequence, bank shareholders have strong incentives to favor 'excessively' risky investments, with potential losses largely shifted to the deposit insurer and/or taxpayers (Galai and Masulis, 1976; Jensen and Meckling, 1976; Merton, 1977). As the traditional corporate governance approach focuses only on the interests of shareholders, it largely abstracts from these features and is thus insufficient. This explains why the proposals drawn up by the Basel Committee (2010), OECD (2010) and the European Union (2010) refer to multiple objectives for bank corporate governance, that of serving welfare, not only of shareholders, but also of depositors, regulators, clients, employees and society more widely. Strong corporate governance is supposed to encourage insiders to act in the best interest of all shareholders and other stake-holders (Shleifer & Vishny, 1997). However for banks, tight regulation combined with restrictions on bank entry and activities limit the effectiveness of many mechanisms intended to address corporate governance problems (Billett et al., 1998; Levine, 2004). Furthermore, external governance mechanisms such as takeovers hardly exist in banking, unlike in other industries (Prowse, 1997; Levine, 2004). All combined, these elements strengthen the important role for more effective monitoring by boards of directors in the banking sector.

How effective a board is in monitoring bank insiders, and limiting their opportunistic behavior, depends on its setup and also on the ownership structure of the bank**.** Apart from the agency

conflict between shareholders and debtholders, the agency conflict arising between insiders and non-controlling shareholders is different when banks have dispersed or concentrated ownership structure, and the composition of the board of directors should be adapted to solve the prevailing problems in each case. In banks with a dispersed ownership structure, the agency conflict is between managers and non-controlling shareholders as managers have incentives to maximize their own benefits at the cost of shareholders, while dispersed shareholders do not have incentives to monitor managers (Shleifer and Vishny, 1997). In banks with concentrated ownership, the conflict of interest is between controlling shareholders and non-controlling shareholders. Controlling shareholders might have the incentives and ability to monitor managers to make decisions that increase overall shareholder value and thereby benefit all shareholders (Jensen and Meckling, 1976; Shleifer and Vishny, 1986). On the other hand, controlling shareholders may also be tempted to reap private benefits of control through diversion of assets and profits outside of the firm (Johnson et al., 2000).

The prevailing view among regulators[2] is that having independent directors can effectively curtail agency problems between insiders and non-controlling shareholders. Fama and Jensen (1983) argued that independent directors have incentives to monitor insiders, as this may strengthen their reputation of effective and independent decision making. Following this view, in widely held banks a strong board should include directors that are independent from managers, whereas in banks with concentrated ownership it should include directors that are independent from controlling shareholders. These independent directors can monitor the insiders on behalf of non-controlling shareholders and play an important role in limiting extraction of private benefits, potentially leading to an increase in firm value (Bhagat and Black, 2002; Hermalin and Weisbach, 2003; Dyck and Zingales, 2004; Adams and Ferreira, 2007, Adams et al. 2008). However, several factors may also limit the effectiveness of independent directors in this context. Their independence may be compromised by the fact that they are appointed by insiders, or alternatively by "independent" nomination committees which may in turn depend on insiders. Furthermore, even independent directors may avoid actions that could encourage insiders to replace them, although reputation and human capital arguments may limit this effect (Fama and Jensen, 1983). A further complication may arise through the fact that insiders may be reluctant to provide relevant inside information to independent directors, limiting their scope for exercising effective governance (Adams and Ferreira, 2007; Kumar and Sivaramakrishnan, 2008; Harris and Raviv, 2008). These different elements may make it difficult for insiders to credibly commit to outsiders

[2] See e.g. OECD Principles of Corporate Governance 2004, Commission of the European Communities Recommendation 2005, Corporate Governance Standard of the New York Stock Exchange 2009.

through the appointment of independent directors. As a way out of these different problems, some jurisdictions in Europe, such as Italy and Spain, have created a new type of board director in their Corporate Governance Law/Code,[3] which, while independent from insiders, are nominated by or at least linked to non-controlling shareholders. These directors, being related to non-controlling shareholders, should be more effective in reducing the occurrence of value being expropriated from non-controlling shareholders, as they are not indebted to insiders. While having such "independent-but-related" directors might be a means to curtail agency problems between non-controlling and controlling shareholders in banks with concentrated ownership structure, it might create additional agency conflicts in widely held banks. Non-controlling shareholders that nominate or are at least linked to such directors might benefit from certain degrees of decision power they might use to divert corporate resources from other shareholders in turn.

Furthermore, whether or not independent directors and "independent-but-related" directors can curtail the agency conflict arising between shareholders and debtholders/regulators is less obvious. On the one hand, managers may prefer less risk than that desired by shareholders due to their non-diversifiable human capital investment in the companies they manage (Faleye and Krishnan, 2010). Having more directors that are independent from managers in banks with dispersed ownership structure could therefore lead to greater risk-taking if they seek to maximize shareholder wealth. Similarly, in banks with a concentrated ownership structure, having directors that are independent from controlling shareholders, but related to non-controlling shareholders, would lead to higher risk taking if the risk appetite of non-controlling shareholders is higher, as the latter have a lower number of shares and might have more of a short term focus. On the other hand, independent directors may be better placed to supervise and control risk taking if a director's reputation is important in the market for directorships, as suggested by Fama and Jensen, (1983); a good reputation might lead to obtaining more board seats. This argument might be less relevant for "independent-but-related" directors, as they should have no incentives to act against the interest of non-controlling shareholders, especially if their link is through being employed by one of them. It might furthermore depend on whether non-controlling shareholders that are related to these directors are also concerned with the safety and soundness of the bank they are involved with.

The institutional and regulatory environment in place may further affect the ability and incentives of directors to effectively monitor insiders. Firstly, the effectiveness of independent

[3] Spain has introduced a proportional voting system that allows for a minority of shareholders to appoint directors in proportion to their equity stake in the corporation, for both listed and non-listed corporations. An Italian reform of 2005 gives listed companies the right to reserve at least one seat on the board of directors to persons that are not appointed by the controlling shareholder.

directors' monitoring might depend crucially on the quality of any anti-self-dealing regulation. Similarly, if non-controlling shareholders want to nominate directors to board positions, they then need to rely on the existence of formal legal procedures to oversee and safeguard the process, making strong minority shareholder laws an additional complementary corporate governance mechanism. In addition, strict banking supervision might provide incentives to both independent and related directors to soundly and effectively monitor insiders, as regulators may fine or dismiss bank directors without trial or hearing in such an environment. On the other hand, greater minority shareholders protection and banking supervision may act as a substitute for monitoring by boards, reducing the incentives of independent and "independent-but-related" directors to diligently and effectively monitor insiders.

The existing literature, whether on financial or non-financial firms, examines the impact of director independence on firm performance without allowing for the fact that those directors may in fact be related to non-controlling shareholders. As surveyed by De Haan and Vlahu (2016), existing studies on the banking industry mostly focus on listed US banks, generally characterized by a dispersed ownership structure, highlighting that the positive association between board independence and performance found for non-financial firms[4] does not hold for banks. Although most studies on this issue find non-significant coefficients for various measures of performance (e.g. Adams and Mehran, 2012; Aebi et al., 2012; Minton et al. 2014), Pathan and Faff (2013) and Andres and Vallelado (2008) find, respectively, a decreasing and an inverted U-shaped relation between the proportion of independent directors and performance. To our knowledge, Dahya et al (2008) is the only study that investigates the relationship between corporate value and board independence in the case of concentrated ownership structure, for a large panel of non-financial firms from 22 countries; they find that a higher proportion of the board being independent from the largest non-controlling shareholder is associated with higher performance, especially in countries with weak legal protection of shareholders. Regarding empirical studies that examine the relationship between the number of independent directors and bank risk, the results obtained are rather mixed. Some studies find no significant relationship (Berger et al. 2014; Erkens et al. 2012; Minton et al., 2014), whereas others conclude that board independence is associated with lower risk (Pathan, 2009; Wang and Hsu, 2013; Brandão Marques and Opper, 2014).

The general message from these different studies is that having directors that are independent from managers in widely held banks does not constitute a strong board that will increase banks' market value in line with the interest of shareholders, but possible results in lower risk-taking in

[4] See Nguyen and Nielsen (2010) for a survey.

line with the interests of debtholders and regulators. As bank insiders are bound to weigh up the costs, i.e. a reduction in insiders' private benefits, and the benefits of setting up good corporate governance, they might see no upside in nominating independent directors in this context. This might be facilitated by the "comply-or-explain" approach adopted in many countries, including in Europe, that leaves considerable discretion to insiders to decide whether to nominate independent directors to protect non-controlling shareholders.

Our paper complements this literature on corporate governance mechanisms in banks to address agency problems between stakeholders, by examining in more detail the potential role played by directors that are considered as independent from insiders, but which are in fact related to non-controlling shareholders. This will allow us to determine whether there are advantages in having a board structure of banks including such "independent-but-related" directors in the sense that it is both effective in limiting expropriation of non-controlling shareholders by insiders and prevents excessive risk taking by banks. A bank board could then be considered "strong" both from the perspective of non-controlling shareholders as well as for debtholders and regulators if the inclusion of such "independent-but-related" directors can increase a bank's market valuation without necessarily impacting its probability of default. We pay particular attention to the fact that the interplay of agency problems in question varies depending on whether banks are widely held or have controlling shareholders, and is generally also strongly influenced by the institutional and regulatory environment in place.

For our investigation of whether the presence of "independent-but-related" directors in bank board is effective for reducing agency conflicts between the different stakeholders, we use a novel data set on the ultimate ownership structure and board composition of banking firms. In particular, we use a sample of 104 listed European banks based in 15 Western European countries, which shows a substantial amount of variability between individual levels of ownership concentration given the lack of regulatory limitations on the percentage of bank capital owned by a single entity in Europe. We find that the presence of "independent-but-related" directors is more effective than having independent directors for curtailing the agency conflict between shareholders and debtholders in both controlled and widely held banks. Such "independent-but-related" directors appear also effective in reducing the agency conflict between controlling and non-controlling shareholders in controlled banks, whereas it is the presence of directors that are independent from managers that are effective in reducing agency conflicts between shareholders and managers in widely held banks. We additionally find that the inclusion of "independent-but-related" directors is more likely to be successful if bank-level governance is accompanied by a strict supervisory regime. Levels of shareholder protection do not influence the way directors monitor insiders in

either widely held or controlled banks, irrespective of their degree of relatedness with insiders and non-controlling shareholders.

Our contributions to the literature are manifold: we firstly contribute to the corporate governance literature more generally by examining what constitutes a strong board for banks. In this, we highlight the potentially important role played by "independent-but-related" directors in addressing the complex interplay of agency problems faced by the many stakeholders relevant for banks, and also contribute to the wider discussion relating to the ownership structure of banks. We also contribute to the literature on bank regulation through our focus on how potential novel aspects of bank boards currently under discussion interact with the institutional and regulatory environment that banks operate in, and their consequent impact on financial stability in general.
The remainder of the paper is organized as follows. Section 2 describes our data, provides definitions of the key variables used in the analysis and presents the methodology we use to conduct our empirical investigation; Section 3 discusses our results; Section 4 contains robustness checks; and Section 5 concludes the paper and provides relevant policy implications.

2. Data and methodology

2.1. Sample and data sources

Our sample consists of listed banks, including bank holding companies, commercial banks and investment banks, from 17 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom) over the period 2011-2013. We identify all active listed banks as at the end of December 2013 provided by Bankscope, resulting in 145 banks. As the main concern in our study is the relatedness of the board of directors to shareholders and managers, we only retain banks for which we have information on their board structure, leaving us with a sample of 124 banks. Additionally, we also exclude banks for which there is no information to compute the variables of interest. Consequently, we end up with a final sample of 104 banks in 15 countries (Table 1 gives a breakdown of these by country)[5]. On average, our sample covers more than 84% of banks' total assets of all listed banks provided by Bankscope (see Table 1).

We assemble data on ownership structure and board of directors as of 2013 for our 104 banks. We use Bloomberg, BvD Bankscope, Amadeus, as well as websites of banks/firms for information

[5] We exclude 20 banks lacking information to compute the cost of equity (including all 7 banks in Greece, and all 3 banks in Luxembourg), and 21 banks without information on the board structure.

on ownership structure. The data on board structure and the biographies of the board of directors are in part taken from Bloomberg, but mostly hand-collected from corporate governance reports or annual reports. We further collect our financial statement data from BvD Bankscope, market data from Bloomberg, and use macroeconomic data provided by the World Bank.

2.2. Definition of variables and descriptive statistics

2.2.1. Dependent variables

We use a measure of stock market valuation and a measure of the probability of default to examine whether the inclusion of "independent-but-related" directors in banks' boards is effective in both limiting expropriation of non-controlling shareholders by insiders and preventing excessive risk taking by banks; we would then expect to see an increase in the market value and no significant impact or a decrease in the probability of default. We furthermore consider a measure of the cost of equity to examine whether a board including "independent-but-related" directors can reduce the equity risk premium required by non-controlling shareholders when there is a risk of expropriation (Chen et al., 2009), which would enable banks to access capital markets on better terms. This is particularly important in a context where many banks face substantial challenges in raising their capital levels to the new levels set out by banking regulators in the Basel III agreement. The description and data sources of each variable are presented in Table 2, with associated summary statistics.

Measure of stock market valuation

We use Tobin's Q ratio ($Tobin\_Q_{it}$) as a proxy of stock market valuation, following the existing literature (e.g. Andre and Vallelado., 2008; Dahya et al., 2008). This ratio is computed as the book value of assets minus the book value of equity plus the market value of equity, divided by the book value of assets. The average of Tobin's Q ratio in our sample is 1.07 (see Table 2).

Measure of bank risk

We compute a proxy for the probability of default of a given bank based on its distance to default. The Merton model is the most commonly used method to measure distance to default, but is computationally intensive. Bharath and Shumway (2008) propose an alternative method to compute distance to default ("naïve" distance to default $DDnaïve_{it}$), which is relatively simpler to implement than the Merton model, and may even slightly better in predicting default probability. In this study, we follow Bharath and Shumway (2008) to compute a "naïve" distance to default for each bank as follows:

$$DDnaïve_{it} = \frac{\ln\left[\frac{(E+F)}{F}\right] + (r_{it-1} - 0.5\ naïve\ \sigma_V^2) * T}{naïve\ \sigma_V * \sqrt{T}} \quad (1)$$

where: *naïve* $\sigma_V = \frac{E}{E+F}\sigma_E + \frac{F}{E+F}$ *(0.05 + 0.25 * σ_E)*; E is the market value of the bank's equity; F is the face value of the bank's debt; and σ_E is the volatility of the bank's equity.

We then calculate the probability of default (PD_{it}) according to the following equation:

$$PD_{it} = N(-DDnaïve_{it}) \quad (2)$$

where N(.) is the cumulative standard normal distribution. The average of the probability of default (PD_{it}) in our sample is 0.31% (see Table 2).

Measure of cost of equity

We use the single-factor capital asset pricing model (CAPM) to estimate the cost of equity in this study, as in Barnes and Lopez (2005) and King (2009); this is also the method used by the Federal Reserve System since October 2005 (Barnes and Lopez, 2006). According to this model, the cost of equity of a firm is the sum of the time value of money expressed by the risk free rate R_f, and the firm's risk expressed by the firm-specific premium $\beta_{im}(E[R_m] - R_f)$.

We first calculate monthly returns on individual bank stocks (R_{it}), and the market index (R_{mt}) using month-end values. Then we subtract the risk free rate (R_{ft}) from the monthly returns on stocks and the market index, to get the ex-post excess return of stocks and market index, respectively. We define the risk free rate R_f as the annual yield on a 10-year government bond. Monthly excess stock returns for each bank are then regressed on the excess market returns to estimate the CAPM beta, using the following equation:

$$R_{it} - R_{ft} = \alpha_i + \hat{\beta}_{im}(R_{mt} - R_{ft}) + \varepsilon_{it} \quad (3)$$

In this study, we use the 5 years (60 months) rolling window beta.

Bank-specific equity premia are computed as the product of the CAPM beta (β_{im}) and a country's historical equity market risk premium ($E[R_m] - R_f$), where the estimated market return $E[R_m]$ is taken from the Dividend Discount Model in the Bloomberg database. We then estimate the risk-adjusted cost of equity of each bank ($E[R_i]$) as a linear combination of the nominal risk free rate and a bank-specific risk premium, as follows:

$$E[R_i] = R_f + \beta_{im}(E[R_m] - R_f) \quad (4)$$

Finally our measure of cost of equity (CoE_{it}) is adjusted for inflation by subtracting year-ahead inflation expectations from the nominal risk-adjusted cost of equity ($E[R_i]$). On average, the cost of equity in our sample is 12.75% (see Table 2).

[Insert Table 2 here]

2.2.2. Measures of relatedness of directors

We first build the control chain to determine if a bank is widely held or is controlled by one or several shareholders by using the control threshold of 20%, following the existing literature (La Porta et al., 1999); Claessens et al., 2000; Facio and Lang, 2002).[6] Beside control rights of controlling shareholders, we also compute their relative voting power by taking into account the probability of coalition between them.

After identifying for each director if they are related to a given shareholder (controlling and/or non-controlling), we then compute for controlled banks three indices measuring respectively the presence/influence of directors in their board that are (i) independent from controlling-shareholders but related to non-controlling shareholders, (ii) independent and not related to non-controlling shareholders, and (iii) not independent because they are related to controlling shareholders. For widely held banks, we construct two indices measuring the presence/influence of directors in their board that are respectively independent from managers and independent but related to non-controlling shareholders.

Construction of control chains

Our first step is to build control chains for each bank to identify both direct and indirect owners, and their control rights in the control chain. Previous studies (La Porta et al., 1999; Shleifer, 1999; Barry et al., 2011) show that ownership structure is relatively stable over time. As one may argue that this is less true during a period of banking crisis, we construct the control chains for the year 2013, after the subprime and the sovereign debt crisis, and consider them to be unchanged for our study period 2011-2013. Control chains are thus not constructed for each year; this, in any case, would be infeasible as ownership data in BvD Bankscope, Amadeus and Bloomberg is only updated every 18 months.

At the first level in the control chain, we divide our sample into widely held banks (no shareholders holding more than 20% of total outstanding shares), and banks with controlling shareholders holding at least 20% of outstanding shares. We consider a controlling shareholder to be an ultimate owner when the shareholder is an individual, a family, or a government, or if they are widely held. We stop the building of control chains for these types of controlling shareholders. At this level, ultimate owners are direct shareholders of the banks.

[6] Alternatively, we apply a threshold of 10% in the robustness tests.

For banks with controlling shareholders for whom we can continue building the control chains, at each of the following levels in the chain, we collect information on ownership structure of controlling shareholders of the bank/firm under consideration at this level. We continue the control chains until we find ultimate owner(s) of the banks. In our sample, the maximum number of levels in a bank's control chain is eight. For each bank, we may have several ultimate owners, who can be direct or indirect shareholders of the bank, the ownership structure of which is one of the following types: Individuals/Families; Public authority, State, Government; or Widely held; and for whom the voting rights are more than 20%.

To determine the control rights of a direct/indirect shareholder in the control chain, we use the method of La Porta et al. (1999). According to this method, for each shareholder of a bank, we define his direct control rights (the percentage of the bank's shares directly held by this shareholder), and his indirect control rights (the percentage of shares directly held by the shareholder at the first level in the control chain, which is controlled by the shareholder under consideration through the intermediate entities in the chain of control). The aggregate control rights of a shareholder are the sum of their direct and indirect control rights held in the bank (see Figure A1 in Appendix 1 for an example of the chain of control).[7]

We find in our sample that 40 banks (38.46%) are widely held banks and 64 banks (61.54%) are controlled banks; amongst the latter, 35 banks (33.65%) are directly controlled by one or several shareholders, and 29 banks (27.88%) are controlled through a pyramidal structure (see Table 3 for more details by country). The average control rights of the biggest shareholder are 55.51% while being 57.39% for all controlling shareholders. The total control rights of non-controlling shareholders, which corresponds to the percentage of shares they hold, is relatively high at 42.61% on average (see Table 3). In terms of the type of the biggest ultimate owner, in our sample, there are 12 banks controlled by an individual or a family; 10 banks controlled by a government; 18 banks controlled by a privately held company (widely held industrial company, or widely held mutual funds); and 24 banks controlled by a privately held financial firm (widely held banks, or widely held financial company).

[Insert Table 3 here]

[7] In our sample, there are some special cases: if a bank has several ultimate owner having the same control rights (because of the same controlling shareholder at the first level in the chain), we rely on the aggregate control rights of ultimate owners on the controlling shareholder at the next levels to identify the ultimate controlling owner of this bank.

Relative voting power of controlling shareholders

As the real voting power of a given controlling shareholder also depends on the possible coalitions between the other controlling shareholders, we use a measure of "relative voting power" alternatively to the control rights to estimate the potential influence of each shareholder in the decision process. Gelman et al. (2002) define that "voting power is the probability that a single vote is decisive - is affected by the rule for aggregating votes into a single outcome". In a bank with ultimate owners, if the probability of coalition of multiple large shareholders is high, the voting power of the largest ultimate owner relatively decreases, i.e. they may not be the ones making decisions in this bank. We find that in our sample there are 21 banks (20.19%) which, besides the largest ultimate owner, also have other ultimate owners holding more than 20% of control rights. Hence, these can enter coalitions with other shareholders to obtain the excess control rights over the largest ultimate owner to make decisions in banks (see Figure A1 in Appendix 1 for an example of such a coalition).

To proxy for relative voting power of shareholders in the control chain, we use the "Banzhaf Power Index" (*BPI*). This index takes into account voting rights, and the possibility to unite with other shareholders to make decisions in a bank (see Appendix 2 for the definition and an example of the *BPI* Index). As for the ownership structure, we compute the *BPI* Index for shareholders for the year 2013, and suppose that relative voting power is also unchanged for our study period. To compute the *BPI* Index for shareholders in the control chains, we use the computer algorithms for voting power analysis (using the method of generating functions) provided by Dennis Leech at the University of Warwick.[8] This index will vary from 0 to 1. The higher the index, the more relative voting power has the shareholder. In widely held banks there are no controlling shareholders, so we set voting power of all shareholders of these banks equal to 0. In concentrated ownership banks, the voting power of a controlling shareholder having aggregate voting rights superior to 50% is 1; the voting power of other controlling shareholders are all 0 (as no coalition can be built to exceed voting rights at 50%).

We calculate the relative voting power for direct shareholders and for ultimate owners at the last level in the control chain. Relative voting power of ultimate owners in the control chain is calculated as the product of the percentage of shares directly held by the shareholders at each intermediate level of indirect control chains linking to an ultimate owner and the relative voting power of the ultimate owner.

[8] See http://homepages.warwick.ac.uk/~ecaae/ipgenf.html.

Indices of relatedness of directors

After identifying for each bank the different direct shareholders and indirect shareholders (ultimate owners) and their decision power, we next determine if they are related to any directors on the board. We collect for that information on the biographies of directors for the year 2013. As board terms range normally from 3 to 4 years, we suppose that the measures of relatedness we are computing remain the same from 2011 to 2013.[9] Instead of using directly the percentage of directors that are independent/dependent as in previous studies (e.g. Dahya et al., 2008; Adams and Mehran, 2012; Pathan and Faff, 2013), we build more refined measures by assigning weights to three factors that characterize the strength of the relatedness between a director and a shareholder/ultimate owner.

The first factor we consider is whether a director is directly related to a direct shareholder (controlling or non-controlling) or to an ultimate owner. We consider a director to be related to a direct shareholder if: (1) they are an employee of the direct shareholder; (2) they are one of the direct shareholders of the bank; (3) they have the same family name as one of the direct shareholders of the bank; (4) they are a shareholder of the direct shareholder of the bank if the latter is a firm; and (5) they are a politician or employee of a government agency when the shareholder is state owned. To determine if directors are related to the ultimate owners of the bank, we further need to consider if they are related to any firms in the control chain. A director is then identified as related to an ultimate owner in one of the following cases: (1) they are an employee either of the ultimate owner or in one of the firms controlled by the ultimate owner in the control chains of the bank; (2) they are one of the ultimate owners or one of the indirect non-controlling shareholders in the control chain of the bank; (3) they have the same family name as the ultimate owner or as one of the indirect non-controlling shareholders in the control chain of the bank; (4) they are shareholders in at least one of the firms controlled by the ultimate owner in the control chains of the bank; (5) they are a politician or employee of a government agency when one of the ultimate owner is state owned. A director who is not considered to be related to a shareholder or an ultimate owner is considered to be independent from shareholders.[10]

[9] Blomberg provided information on board structure of 62 banks among the 104 banks in our sample from 2011 to 2013. We notice that the board structure of these banks did not change for this period. Therefore, for the 42 remaining banks, we use 2013 annual reports for information on board structure, and also suppose that their board structure is stable during the period of study.

[10] In our sample, we also have 18 directors (1.51%) who are related to both controlling and non-controlling shareholders. We treat separately each of these 18 cases to make them related to only either controlling or non-controlling shareholders in function of the strength of their link with them. In robustness tests, we remove these 18 cases from the sample.

In our sample of controlled banks, we have on average 13.44% of directors that are related to controlling shareholders (direct or indirect), 18.29% that are related to non-controlling shareholders, and 68.27% that are independent (see Table 3). The proportion of "independent-but-related directors" is therefore relatively high on average, especially in Spain (66.67%) where the Corporate Governance Law recommends to include such directors in the board, but also in other countries that do not have such recommendations (Austria 27.63%, France 24.49%, Sweden 26.96%, the UK 40.48%). We also observe that the proportion of "independent-but-related directors" is high in widely-held banks, with an average value of 29.09%. Table 5 furthermore shows that in around 80% of the cases, directors are related to shareholders by being employed by one of them.

[Insert Table 4 and Table 5 here]

The second factor we are taking into account to compute our indices of relatedness of directors is whether their relationship with shareholders is in the present or in the past. When directors are, for example, current employees of shareholders of the bank, they might have strong incentives to act in the interest of the person that can fire them. However, when the relatedness is already in the past, the related director is just related to, but is not controlled by shareholders, thus their influence should be less significant than in the first case.

The third factor we considered is the position of directors in the board. We distinguish if directors are Chairman/Vice Chairman of the board, or other board members. The Chairman of the board has more rights in the directors meeting. In some countries (such as Italy and Portugal), when votes in the board are tied, the Chairman of the board can have the casting vote to make a decision. Besides the Chairman and the Vice Chairman can act in the Chairman's place such as presiding over board meetings, if the Chairman is not present. Therefore, when Chairman or Vice Chairman are related to shareholders, they might have greater opportunities to act in the interest of shareholders.

We use the three factors described above to compute several complementary indices to measure the strength of independence/dependence of the board of director for each bank (see Appendix 3 for details). These different indices are computed using either control rights (x = CR) or the Banzhaf Power Index (x = BPI) to measure the decision power of the shareholders; we use in both cases the threshold of 20% to determine whether shareholders are "non-controlling" or "controlling". For controlled banks, we compute three indices measuring, respectively, the presence/influence of directors in their board that are (i) independent from controlling-shareholders but related to non-controlling shareholders ($IndepRel\_x_i$), (ii) independent and not

related to non-controlling shareholders ($Indep\_x_i$), and (iii) related/dependent vis-a-vis controlling shareholders ($DepRel\_x_i$). These three indices range from 0 to 10. For widely held banks, we first construct an index measuring the presence/influence of directors in their board that are independent but related to non-controlling shareholders ($IndepRel\_x_i$); this index also ranges from 0 (no directors are independent) to 10 (all directors are independent). We also measure the presence of directors that are independent from managers through the percentage of independent directors, as provided in annual reports of each bank for the year 2013 ($IndepMger_i$).

2.2.3. Control variables

We have three different dependent variables, Tobin's Q ($Tobin\_Q_{it}$), a measure of the probability of default (PD_{it}) and a measure of the Cost of Equity (CoE_{it}). We follow the existing literature to determine the control variables included for each of these dependent variables. Table 2 presents definitions and general statistics for all our control variables.

In the regressions investigating the impact of relatedness of the board to shareholders on Tobin's Q ratio, we consider the following control variables: board size, bank size, risk, growth of assets, capital structure, and the loan ratio. Board size ($BoardSize_{it}$) is given as the natural logarithm of the number of directors on the board, and bank size ($Size_{it}$) is measured by the logarithm of total assets of banks. Following Hail and Leuz (2009), we use return variability, i.e. the standard deviation of monthly stock returns over the last twelve months, to proxy for the risk of banks ($Risk_{it}$). Growth of assets ($Growth_{it}$) is measured by the change of total assets between year $t+1$ and year t, divided by the total assets in year t. Capital structure ($Capital_{it}$) is measured as the ratio of equity to total assets of a bank, and the loan ratio ($Loan_{it}$) is a bank's ratio of loans to total assets.

In the regressions on the probability of default, the bank-level control variables are board size, bank size, capital structure, and the deposit and operating ratios. The deposit ratio ($Deposit_{it}$) is computed as the ratio of deposits to total assets, the operating ratio ($Operating$) is the ratio of total operating expenses to total operating income, and $BoardSize_{it}$, $Size_{it}$, $Capital_{it}$ are computed as defined above.

In terms of bank-level control variables in the regressions on the cost of equity, we consider board size, bank size, risk, growth of assets, opacity, leverage, and book to market ratio. To measure the opacity of banks in the sample ($Opacity_{it}$), we use data on trading volume to compute an index of opacity, following Leuz and Verrecchia (2000) and Bailey et al. (2003). Calculating first the natural logarithm of the average daily trading volume during the fiscal year, we then rank this proxy from the value of 1 (for banks with high trading volume) to the value of 10 (for banks

with low trading volume) to capture the opacity level of each bank, with the most transparent banks given a value of 1 and the most opaque banks a value of 10. Leverage ($Leverage_{it}$) is computed as the ratio of total debt to common equity. The book-to-market ratio ($Book\text{-}to\text{-}market_{it}$) is calculated as the ratio of book value to market value of equity. The variables $BoardSize_{it}$, $Size_{it}$, $GrowthAsset_{it}$, and $Risk_{it}$ are computed as above.

We furthermore include in all regressions the growth rate of GDP (GDP_{jt}) and an index measuring the level of minority shareholder protection for each country ($LEGAL_j$). We follow Rossi and Volpi (2004), Hagendorff et al. (2010) and Dahya et al. (2010) and compute an index of shareholder protection that combines an index measuring the level of shareholder rights (revised anti-director index of Djankov et al. (2008)) and an index measuring the quality of law enforcement (the rule of law index from the Worldwide Governance Indicators (World Bank)). The anti-director index measures how strongly the legal system favors minority shareholders vis-a-vis managers or majority shareholders in the corporate decision making process, including the voting process; it ranges from from 0 to 5. The rule of law index reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts; it ranges from -2.5 to 2.5. The index $LEGAL_j$ is defined as the revised anti-director rights index multiplied by the rule of law index, with a higher index indicating a higher level of shareholder protection.

2.3. Empirical framework

2.3.1. Empirical model

The econometric specification we use to examine whether a board including "independent-but-related" directors has an impact on banks' stock market valuation, probability of default and cost of equity, compared with having directors that are independent from insiders and related to controlling shareholders in controlled banks, is the following:

$$Y_{ijt} = \alpha + \beta Relatedness_{ij} + \sum_m \theta_m BankControl_{ijt} + \sum_n \gamma_n CountryControl_{jt} + \varepsilon_{ijt} \qquad (5)$$

where subscript *i* denotes bank; *j* denotes country; *t* the time period (t = 2011, 2012, 2013), and ε is the idiosyncratic error term. Y_{ijt} is either Tobin's Q $Tobin\_Q_{ijt}$, the probability of default PD_{ijt}, or the bank cost of equity CoE_{ijt}. $Relatedness_{ij}$ is for controlled banks either the index measuring the presence/influence of directors that are "independent-but-related" ($IndepRel\_x_i$), the index measuring the presence/influence of directors that are related to controlling-shareholders ($DepRel\_x_i$), or the index measuring the presence/influence of independent directors ($Indep\_x_i$),

with x= *CR* or *BPI* when we consider, respectively, the control rights or the Banzhaf Power Index to differentiate between controlling or non-controlling shareholders. $Relatedness_{ij}$ is for widely held banks either $IndepRel\_x_i$ or $IndepMger_j$. $BankControl_{ijt}$ are bank control variables, and $CountryControl_{jt}$ are country control and legal environment variables.

We run our regression separately for controlled and widely held banks. For controlled banks, the three indices $IndepRel\_x_i$, $DepRel\_x_i$ and $Indep\_x_i$ cannot be included together as they are complementary. We first include them one by one, and we also include $IndepRel\_x_i$ and $DepRel\_x_i$ together. Similarly, for widely held bank, we first include $IndepRel\_x_i$, and $IndepMger_j$ one by one, and then also together.

To estimate Eq. (5), we employ the generalized least square (GLS) random effects technique, having examined and discarded the need to correct for endogeneity (see Section 2.3.2). The random effects model has the benefit of taking into account time-invariant explanatory variables that are eliminated by first-differencing when using the fixed effects model. Moreover, it also accounts for unobserved, individual-specific variation, which reduces potentially omitted variables bias. In order to test whether the individual-specific effect is not correlated with explanatory variables, we use the method described by Arellano (1993) and Wooldridge (2002), which is a robust Hausman test that is equivalent to the traditional Hausman test under conditional homoscedasticity. The robust Hausman test indicates that the random effect method is suitable in our panel. However, we cannot reject that the data does not have first order- autocorrelation. Consequently, we use the generalized least square (GLS) random effect technique, which is also robust to first-order autocorrelation disturbances. We checked the correlation among our variables of interest and find some multicollinearity problems, which we resolved by orthogonalizing the variables in question (see Table A1 in Appendix 1).

2.3.2. Endogeneity issues

One of the main concerns of studies on corporate governance in general, and regarding the board of directors in particular, is the endogeneity problem, which is raised in previous studies such as Mak and Li (2001), Hermalin and Weibach (1998, 2003). However, the "Code of Best Practices for Corporate Governance" is implemented in all countries in our sample, thus banks have to set their board of directors in compliance with the recommendations in the "Code of Best Practices"; if this is not the case, they have to explain this to regulators. From this point of view, the board of directors can arguably be considered as exogenously determined.

However, we still empirically test for the presence of endogeneity problems for the variables of relatedness of board of directors to shareholders in our study. We use the two-stage least squares (2SLS) method, finding instrument variables for each of the index of relatedness of board in each of the regression on Tobin's Q, probability of default and cost of equity. After each regression, we carry out tests to verify the validity of our model specification. We obtain the Sargan-Hansen statistic for test of over-identification, the Cargg-Donald Wald F statistic for test of weak identification, and the LM statistic for under-identification test. The results show that the instrument variables are valid in each regression (see Tables A2-A4 in Appendix 1 for definition and result of the tests of validity of instrument variables in each regression).

Thereafter, we carry out the endogeneity tests[11] to test the endogeneity problem for our variables of interest. The results show that we cannot reject the null hypothesis in the endogeneity tests (with p-value strictly greater than 10%); we can therefore conclude that the variables of relatedness of board of directors to shareholders in our sample are strictly exogenous.

3. Empirical results

3.1 Relatedness of directors to shareholders and agency conflicts

The estimation results for Eq. (5) are given in Tables 6 and 7 for controlled banks and Table 8 for widely held ones.

We find for the sample of controlled banks that the presence and influence of "independent-but-related" directors in the board has a significant and positive impact on Tobin's Q, and a significant and negative impact on the cost of equity. Results are similar when we use either control rights (Table 6) or relative voting power (Table 7) to identify controlling shareholders. These results indicate that having directors that are related to non-controlling shareholders is effective to convince outside shareholders that controlling shareholders will refrain from diverting resources. The reduction of the market value discount and the equity risk premium result in an increase in stock market valuation and enable banks to access capital markets on better terms. Our results further show that the presence and influence of "independent-but-related' directors in the board significantly decreases the probability of default (for both control rights and relative voting power). This is consistent with the argument that "independent-but-related' directors are better placed to supervise and control risk taking if a director's reputation is important in the market for directorships. Having directors that are related to non-controlling shareholders seems therefore

[11] Null hypothesis is that there is no systematic difference between the estimator of the 2SLS technique and the one of the GLS random effects technique. Alternative hypothesis is that there is a systematic difference between the two estimators.

effective to curtail the agency problem we have in controlled banks between controlling and non-controlling shareholders, as well as between shareholders and debtholders. As expected, our results show, on the contrary, that the presence/influence of directors that are related to controlling shareholders contribute to amplify the agency conflicts between the different stakeholders, as we find that this is associated with a decrease in Tobin's Q, an increase in the probability of default and an increase in the cost of equity.

In the sample of widely held banks, we find that the presence/influence of "independent-but-related" directors in the board has a significant and negative impact on the probability of default (Table 8), again in line with the argument that they are better placed to supervise and control risk taking. However, in contrast to controlled banks, we do not find a significant impact of having "independent-but-related' directors on Tobin's Q and the cost of equity. These two results might be explained by the argument that shareholders not related to directors might not appreciate the fact that related shareholders might benefit from certain degrees of decision power.

Regarding the presence of directors that are independent from insiders, we find for controlled banks that this is associated with a significant decrease in Tobin's Q (Tables 6 and 7). This result is in contrast to those of Dahya et al. (2008) on non-financial firms who find a significant and positive relationship. This can be explained by the fact that we exclude from these independent directors those that are related to non-controlling shareholders, for which we find a positive and significant impact on Tobin's Q. The negative relationship between independent directors and stock market valuation might be explained by the difficulty for controlling shareholders to credibly commit that to not expropriating by including independent directors in the board, knowing that the latter are appointed by them, or alternatively by "independent" nomination committees which may also depend on them. However, this significant negative reaction of minority shareholders to the presence of independent directors is not observed for the cost of equity. We furthermore find that the presence of independent directors has no significant impact on the probability of default of controlled banks. In widely held banks, the presence of directors that are independent from managers is associated with a significant decrease in the cost of equity, while having no significant impact on Tobin's Q or the probability of default (Table 8).

In summary, these different results seem to indicate that for controlled banks only the presence/influence of "independent-but-related" directors is effective to curtail the agency conflict either between non-controlling and controlling shareholders, or between shareholders and debtholders. On the contrary, the presence/influence of directors related to controlling shareholders is detrimental for agency conflicts and results in lower performance and higher probability of default. For widely held banks, the presence of either "independent-but-related"

directors or independent directors could contribute to reducing agency conflicts between shareholders and debtholders but not those between shareholders and managers.

[Insert Tables 6 to 8 here]

3.2. Role of institutional and regulatory environment

We now examine whether the institutional and regulatory environment may affect the way directors monitor insiders. A stronger supervisory regime or higher levels of minority shareholder protection may reduce the incentives of independent and "independent-but-related" directors to diligently and effectively monitor insiders. On the contrary, stronger supervisory regimes or higher levels of minority shareholder protection may act as complementary corporate governance mechanisms if they provide greater ability and incentives to both independent and related directors to soundly and effectively monitor insiders. To examine these issues, we augment Eq. (5) with interaction terms between our indices of relatedness and a regulatory/instructional variable (Env_j) as follows:

$$Y_{ijt} = \alpha + \beta Relatedness_{ij} + \gamma Relatedness_{ij}.Env_j + \sum_m \theta_m BankControl_{ijt} + \sum_n \gamma_n CountryControl_{jt} + \varepsilon_{ijt} \quad (6)$$

For the regulatory/instructional variable (Env_j) we first compute an index for strength of supervisory regime (SP_j) using the World Bank's 2003 Bank Regulation and Supervision Database. It can range from zero to ten, and indicates capital stringency and powers to intervene in and resolve troubled banks (for more details see the definition in Table 2). In our sample, the index has a median of six and ranges from zero to ten, reflecting the different propensities of regulatory authorities to do on-site examinations (for an overall assessment of banks' economic condition), and to spot potential opportunistic behavior (such as lending corruption). It also reflects regulators' varying ability to remove and replace managers and directors, or to require banks to change their internal organizational structure upon detection of problems.

We alternatively consider the index measuring the level of minority shareholder protection ($LEGAL_j$) defined in Section 2, which combines an index measuring the level of shareholder rights and an index measuring the quality of law enforcement.

We then compute the dummy variable $d(LEGAL_j)$ that takes the value of one for a country if the index $LEGAL_j$ is greater than the cross-country median (and zero otherwise), and the dummy variable $d(SP_j)$ taking the value of one for a country if the index SP_j is greater than the cross-country median (and zero otherwise).

The estimation results for Eq. (6) are given in Tables 9 to 11 when we consider the index of supervisory strength, and in Tables 12 to 14 for the index of minority shareholder protection.

On the one hand, we find that the level of minority shareholder protection has no impact on the way that directors monitor insiders in either widely held or controlled banks, whatever their degree of relatedness with insiders and non-controlling shareholders.

On the other hand, we observe that the strength of the supervisory regime impacts the way "independent-but-related" directors monitor insiders. We first observe from Tables 9 and 10 that the presence/influence of "independent-but-related" directors in the board of controlled banks is significantly associated with an increase in Tobin's Q, a decrease in the cost of equity and a decrease in the probability of default only in countries with strong supervisory regimes. These results are in line with the argument that a complementary relationship exists between the strength of supervision and the incentives of "independent-but-related" directors to monitor insiders. The stronger is the mandate that regulators have been given to intervene and discipline, the greater is the "threat of action" (Booth et al., 2002) that regulators pose to "independent-but-related" directors. Results are less clear for widely held banks, with no impact of the strength of supervisory regimes on the relationship between Tobin's Q and the presence of "independent-but-related" directors (see Table 11). On the contrary, we find that the presence of such directors increases the cost of equity and has no impact on the probability of default in countries with strong regulatory regimes, while it decreases the cost of equity and the probability of default in countries with weak regulatory regimes.

Our results further show that the strength of the supervisory regime does not affect the way in which the presence of directors that are independent from insiders impacts Tobin's Q, cost of equity or probability of default in widely held banks (see Table 11), whereas results are rather mixed for controlled banks (see Tables 9 and 10). We find that the presence of independent directors is associated with a decrease in Tobin's Q and an increase in the cost of equity in countries with strong supervisory regimes, while we find no impact on Tobin's Q and a decrease in the cost of equity in countries with weak supervisory regimes. We furthermore find no impact of the presence of independent directors on the probability of default, whatever the strength of the supervisory regime.

Moreover, for controlled banks, our results highlight that the negative impact of having directors related to controlling shareholders on market valuation and the cost of equity are observed both in countries with weak and strong supervisory regimes (see Tables 9 and 10). However, we find that the presence of such directors increases the probability of default only in countries with weak supervisory regimes.

[Insert Tables 9 to 14 here]

4. Robustness tests

We further check the robustness of our results as discussed in section 3 in several ways.[12]

First, we exclude from the initial sample banks cross-listed on a US exchange. Theoretical and empirical works on corporate governance show that cross-listing on a more transparent market, with higher requirements in terms of published information, is considered a mechanism to reduce risk of expropriation from insiders (e.g. Reese and Weisback, 2002; Doidge et al., 2004). As our study is on Western European countries, where stock markets are developed and quite transparent, we take the US exchange as a reference of an even more transparent market compared to the stock market of countries in our study. We exclude eight banks that are cross-listed on a US exchange from the initial sample in order to exclude the effect of cross-listing on bank performance, cost of equity, and probability of default. Our main results are unchanged.

Next, we exclude from the initial sample banks having dual class shares. The existence of dual class shares can bias voting rights in a bank (Faccio and Lang 2002), and thereby might weaken the relevance of "dependent-related directors" in our study. Therefore, we exclude eight banks having dual class stock, with our conclusions from the section 3 still prevailing in reduced sample.

We then verify our results using alternative measures of our dependent variables. For bank performance, we alternatively use shareholder market return (SMR), in line with Andres and Vallelado (2008). In order to compute the SMR, we calculate monthly returns from share prices of each bank, calculate the average monthly returns for each year, and then annualize them. We still find that having "independent-but-related" directors on the board ameliorates Tobin's Q, but independent or "dependent-related" directors on the board reduce it in the controlled banks sample. Relatedness or independence of directors from shareholders still have no impact on Tobin's Q of widely held banks.

We also, reestimate Eq. (5) and (6) using an alternative measure of bank cost of equity. Following Barnes and Lopez (2006), we now incorporate firm-specific factors into the cost of equity estimates. Thus, we compute beta for firms' underlying assets by adjusting equity betas for leverage and tax exposure, following this equation:

$$\beta_{A,i} = \beta_{Ei}\,(1 + (1 - \tau_i)\left(\frac{D}{E}\right))^{-1}$$

where $\beta_{A,i}$ is the asset beta (leverage adjusted beta); β_{Ei} is equity beta of bank i; τ_i is the marginal tax rate; $\left(\frac{D}{E}\right)$ is the book value debt to equity ratio. We use the obtained betas from the equation to

[12] While we do not include the estimation results discussed in this section, they are available on request.

compute the cost of equity following the CAPM model. The results on the impact of relatedness of board of directors to controlling and non-controlling shareholders on the cost of equity using leverage adjusted beta remain unchanged. The results of regressions on controlled banks sample show that the relatedness of board of directors to controlling shareholders leads to an increase in the bank cost of equity, whereas banks can benefit from a lower cost of equity when the board of directors is more related to non-controlling shareholders. In widely held banks, independence of board of directors from managers has a positive impact on the bank cost of equity in this case.

We also consider an alternative measure of bank risk of insolvency, i.e. the widely used Z-score defined as $Z_{ROA} = \mu_{ROA} + EQ/\sigma_{ROA}$, with μ_{ROA} and σ_{ROA} respectively the mean and the standard deviation of ROA, and EQ the bank's capital-asset ratio (Lepetit and Strobel (2013, 2015)). We compute Z-scores using using moving mean and standard deviation estimates for ROA, with window widths of three observations, and current values of EQ. A higher Z-score indicates that a bank is more stable, and thus has a lower risk of insolvency; as Z-scores tend to be skewed, we use their natural logarithm. We still find that having "independent-related directors" on the board reduces insolvency risk; however the presence of "dependent-related directors" increases insolvency risk in banks with concentrated ownership structure.

We then reestimate Eq. (5) and (6) using alternative measures of relatedness of board directors to shareholders. Firstly, we use the percentage of relatedness of board to shareholders; results are unchanged. Our results are thus robust to different measures of the representation of "independent-related directors" or "dependent-related directors" on the board.

We also alternatively investigate the relationship between cost of equity and relatedness of board of directors to shareholders using the threshold of control at 10%. Several papers on ownership structure (La Porta et al., 1999, 2002; Caprio et al., 2007, Lepetit et al., 2015) use the threshold of 10% to determine the ultimate owner. Therefore, we also test our hypothesis on relatedness of board of directors to shareholders holding more (or less) than 10% of control rights, or 10% of relative voting power. Our main results remain unchanged.

We had considered "having the same family name with shareholder" as one of the criteria to identify "related directors". In our main results, we only considered related directors having the same family name with shareholders when it is not a common family name in each country. As a robustness test, in order to ensure that the presence or absence of related director in our sample according to "having the same family name" criterion does not drive our principal results, we exclude all the 8 related directors according to this criterion from the initial sample. Our main conclusions are unchanged;

Finally, we consider excluding from the initial sample directors relating to both controlling and non-controlling shareholders. In our initial sample, there are 18 directors relating to both controlling and non-controlling shareholders. In the main regressions, we treated each case of these 18 directors to classify them to one of the two categories: related to controlling or related to non-controlling shareholders. In the robustness test, we exclude these 18 related directors from the initial sample. Results are similar to those obtained before.

5. Conclusion

We examine whether having a board structure of banks that includes directors that are independent from insiders but related to non-controlling shareholders is effective in limiting expropriation by insiders but also prevents excessive risk taking by banks. For this, we analyse the impact of the presence/influence of such "independent-but-related" directors on stock market valuation, cost of equity and probability of default of both controlled and widely held banks, in comparison to the presence on the board of independent directors not related to any shareholders. As a secondary focus, we also explore whether the institutional and regulatory environment may affect the way these two types of directors monitor insiders. For this purpose, we assemble a novel hand-collected data set on banks' ultimate control, ownership structure and board composition for a sample of 104 European listed banks from 15 countries.

We find for the sample of controlled banks that the presence and influence of "independent-but-related" directors is effective to convince outside shareholders that controlling shareholders will refrain from diverting resources, as we observed a positive and negative significant impact on, respectively, Tobin's Q and the cost of equity. We do not observe such results for the sample of widely held banks, as shareholders not related to directors might not appreciate the fact that related shareholders might benefit from certain degrees of decision power. We furthermore find that the presence/influence of "independent-but-related" directors in the board has a significant and negative impact on the probability of default for both controlled and widely held banks, consistent with the argument that such directors are better placed to supervise and control risk taking. The introduction of directors that are related to non-controlling shareholders seems therefore effective to curtail the agency problem between shareholders and debtholders. In comparison, the presence of independent directors contributes to reducing the probability of default of widely held banks, but not the one of controlled banks. Moreover, the presence of independent boards in controlled banks has a negative impact on stock market valuation, probably explained by the fact that these directors might not be truly independent as they are generally appointed by controlling shareholders.

Taken all together, these results indicate that only the presence of "independent-but-related" directors is effective to curtail both the agency conflict between shareholders and debtholders, and between controlling and non-controlling shareholders in controlled banks. For widely held banks, having either "independent-but-related" directors or independent directors reduces agency conflicts between shareholders and debtholders, but not those between managers and shareholders.

We furthermore find that for controlled banks strong supervisory regimes increase the incentives of "independent-but-related" directors to monitor more soundly and effectively. This result suggests that the inclusion of such directors is more likely to be successful if bank-level governance is accompanied by a strict supervisory regime. Our results further show that levels of shareholder protection do not influence the way directors monitor insiders in either widely held or controlled banks, irrespective of their degree of relatedness with insiders and non-controlling shareholders.

Our findings contribute to the current policy debate on what forms of corporate governance in banks could lead to the most efficient outcome for society in terms of both performance and financial stability. The inclusion of directors that are independent from insiders but nominated by or related to non-controlling shareholders could increase bank board effectiveness for both controlled and widely held banks. Firstly, it could ensure that the risk-taking incentives of insiders are better aligned with the interests of other stakeholders such as depositors, debt holders, banking supervisors, and society in general. Secondly, it could also allow controlling shareholders to credibly commit that they will not divert corporate resources, reflected in higher market valuations. As a consequence, it seems advisable that Corporate Governance Law should recommend allowing "independent-but-related" directors to be present in bank boards. However, another important implication of our work is that regulation and governance cannot and should not be viewed in isolation. Attempts to raise directors' ability to soundly and effectively monitor insiders are more likely to be successful if bank-level governance is accompanied by a strict supervisory regime.

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Table 1: Number of banks in each country

Country	Number of listed banks in Bankscope in 2013	Number of banks in the sample	Total assets of the sample banks divided by total assets of all listed banks in Bankscope (%)
Austria	6	5	99.91
Belgium	4	4	100
Denmark	28	12	98.26
Finland	4	3	81.36
France	9	9	100
Germany	13	12	99.99
Greece	7	0	0.00
Ireland	2	2	100
Italy	19	15	92.37
Luxembourg	3	0	0.00
Netherlands	5	3	92.91
Norway	2	2	100
Portugal	4	3	93.79
Spain	7	5	76.42
Sweden	5	4	99.99
Switzerland	15	14	99.75
United Kingdom	12	11	99.98
Total	**145**	**104**	**84.40**

Table 2: Variable definition, data sources and summary statistics

Variables	Definition	Source	Mean	Median	Standard Deviation	Min	Max
Dependent variables							
Tobin_Q	Bank value: Book value of assets minus the book value of equity plus the market value of equity divided by the book value of assets	Bloomberg	1.07	0.99	0.38	0.56	6.74
PD	Probability of default: cumulative standard normal distribution of the negative of distance to default which is taken from the naïve method.	Bloomberg, Bankscope	0.31	0.33	0.19	3.6e-31	0.72
CoE	Inflation-adjusted cost of equity: Nominal cost of equity estimated by CAPM subtract year-ahead inflation expectations	Bloomberg. World Bank	12.93	12.36	6.85	0.25	33.76
Indices of relatedness of board of directors							
IndepRel _CR	Index on the relatedness of board of directors to shareholders having less than 20% of control rights.	Bloomberg, annual reports (Details on these indices are given in the Appendix 3)	3.47	2	3.55	0	10
DepRel_CR	Index on the relatedness of board of directors to shareholders having at least 20% of control rights.		2.13	0	3.25	0	10
Indep_CR	Index on the independence of board of directors to both controlling and non-controlling shareholders (at the threshold of 20% of control rights)		6.43	6.5	2.85	0	10
IndepRel _BPI	Index on the relatedness of board of directors to shareholders having less than 20% of relative power.		3.63	3	3.54	0	10
DepRel_BPI	Index on the relatedness of board of directors to shareholders having at least 20% of relative power.		2.26	0	3.33	0	10
Indep_BPI	Index on the independence of board of directors to both controlling and non-controlling shareholders (at the threshold of 20% of relative power)		6.28	6.5	2.91	0	10
IndepMger	Percentage of independent directors from managers.		51.57	50.00	27.81	0	100
Bank-level variables							

BoardSize	Natural logarithm of the number of directors on the board	Bloomberg	2.31	2.40	0.50	0.69	3.25
Opacity	The average of the rank from 1 to 10 of indicator about Opacity (Trading volume: the natural logarithm of the average trading volume during the fiscal year). Opacity is orthogonalized on Size		5.43	5	2.87	1	10
Size	Natural logarithm of Total Assets. Size is orthogonalized on Leverage	Bankscope	16.94	16.95	2.83	8.60	21.75
Leverage	Total debts divided by common equity		0.55	0.68	0.33	0	1.05
Risk	The standard deviation of monthly stock returns over the last twelve months		2.79	0.33	29.24	0.20	522.7
GrowthAsset	The annual change in total asset from year t to year t+1 divided by total assets year t		0.085	0.023	0.70	-0.35	12.67
Book-to-Market	The ratio of book value to market value of equity		2.16	1.22	8.25	0.045	126.5
Loan	The ratio of gross loan to total assets		0.49	0.54	0.25	0.0006	0.91
Capital	Total equity divided by total assets		0.14	0.07	0.18	-0.02	0.99
Deposit	Deposits divided by total assets		0.58	0.57	0.20	0.009	0.94
Operating ratio	The ratio of total operating expenses over total operating income		1.38	1.49	7.82	-3.75	23.56
Country-level variables							
GDP	GDP growth rate	World Bank	0.36	0.58	1.61	-4.02	3.59
LEGAL	Product of Revised anti-director index (RADI) and index Rule of Law (RoL) • RADI: Take the value of 1 for each of these indicators: Vote by mail. Shares not deposited. Cumulative voting. Oppressed non-controlling. Pre-emptive rights. Capital to call a meeting) • RoL: index measuring the quality of law enforcement	Djankov. La Porta. Lopez-de-Silanes. and Shleifer et al. (2008)	5.24	5.27	2.32	0.71	8.83
dLEGAL	Dummy variable takes the value of one in countries with better quality of legal environment (the level of quality of legal environment is higher than the cross-country median), and zero if otherwise.	Worldwide Governance Indicators (World Bank	-	-	-	-	-
SP	Index measuring the strength of supervisory regime. The yes/no responses to the following questions are coded as 1/0: (1) Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank? (2)	Bank regulation and supervision database (The	10	11	2.33	4	13

	Are auditors required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud, or insider abuse? (3) Can supervisors take legal action against external auditors for negligence? (4) Can the supervisory authority force a bank to change its internal organizational structure? (5) Are off-balance sheet items disclosed to supervisors? (6) Can the supervisory agency order the bank's directors or management to constitute provisions to cover actual or potential losses? (7) Can the supervisory agency suspend directors' decision to distribute: (a) Dividends? (b) Bonuses? (c) Management fees? (8) Can the supervisory agency legally declare - such that this declaration supersedes the rights of bank shareholders - that a bank is insolvent? (9) Does the Banking Law give authority to the supervisory agency to intervene that is, suspend some or all ownership rights in a problem bank? And (10) Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency do the following: (a) Supersede shareholder rights? (b) Remove and replace management? (c) Remove and replace directors? A higher value indicates wider and stronger authority for bank supervisors.	World Bank 2003)					
dSP	Dummy variable takes the value of one in countries with higher level of supervisory power (the level of supervisory power is higher than the cross-country median), and zero if otherwise.		-	-	-	-	-
Instrument variables							
indy	Independence : percentage of years since 1776 that country has been independent	Beck et al. (2003)	0.94	1	0.18	0.29	1
avelf	Ethnic fractionalization - probability that two randomly selected individuals in a country will not speak the same language		0.12	0.07	0.11	0.0025	0.36
lat_llsv	Latitude (as measured by LLSV) : absolute value of the latitude of a country		0.54	0.56	0.09	0.20	0.71
legor_uk	British legal origin (dummy variable)		-	-	-	-	-
legor_fr	French legal origin (dummy variable)		-	-	-	-	-
legor_ge	German legal origin (dummy variable)		-	-	-	-	-
legor_sc	Scandinavian legal origin (dummy variable)		-	-	-	-	-
Avg_DepRel	Average of the percentage of dependent related directors in a country	-	2.12	2.33	1.09	0	5.5

Table 3: Statistics on ownership structure (threshold of control at 20%)

	Widely held banks (%)	Controlled banks (%)	Controlled banks				
			Banks with direct ultimate owners (%)	Banks with pyramidal structure (%)	Average voting rights of the biggest shareholder (%)	Average voting rights of controlling shareholders (%)	Average voting rights of non-controlling shareholders (%)
Austria	20.00	80.00	0.00	80.00	71.25	71.25	28.75
Belgium	25.00	75.00	25.00	50.00	41.34	41.34	58.66
Denmark	58.33	41.67	25.00	16.67	55.75	60.31	39.69
Finland	33.33	66.67	33.33	33.33	61.35	61.35	38.65
France	11.11	88.89	44.44	44.44	51.21	57.73	42.27
Germany	41.67	58.33	41.67	16.67	69.19	69.19	30.81
Ireland	50.00	50.00	50.00	0.00	99.42	99.42	0.58
Italy	26.67	73.33	46.67	26.67	48.41	55.89	44.11
Netherlands	50.00	50.00	50.00	0.00	97.81	97.81	2.19
Norway	0.00	100.00	100.00	0.00	32.50	32.50	67.50
Portugal	50.00	50.00	50.00	0.00	46.22	46.22	53.78
Spain	60.00	40.00	20.00	20.00	36.06	36.06	63.95
Sweden	50.00	50.00	25.00	25.00	21.20	21.20	78.80
Switzerland	40.00	60.00	26.67	33.33	56.49	59.34	40.66
United Kingdom	63.64	36.36	27.27	9.09	44.50	51.21	48.79
AVERAGE	**-**	**-**	**-**	**-**	**55.51**	**57.39**	**42.61**

Table 4: Statistic on relatedness of board of directors to shareholders in widely held and controlled banks (threshold of control at 20%)

	Controlled banks				Widely held banks		
	Number of directors (average)	Related directors to Controlling SH (%)	Related directors to Non-controlling SH (%)	Independent directors from shareholders (%)	Number of directors (average)	Related directors to Non-controlling SH (%)	Independent directors from managers (%)
Austria	19	14.47	27.63	57.89	15	26.67	33.33
Belgium	15.33	23.91	10.87	65.22	10	30.00	80.00
Denmark	9.8	20.41	4.08	75.51	8.43	5.08	25.40
Finland	7.5	6.67	6.67	86.67	8	75.00	87.50
France	12.25	18.37	24.49	57.14	14	14.29	71.43
Germany	9.5	22.37	3.95	73.68	12.5	4.00	30.00
Ireland	11	0.00	9.09	90.91	14	14.29	57.14
Italy	10.81	16.81	12.61	70.59	17.5	24.29	65.59
Netherlands	9.5	5.26	5.26	89.47	4	25.00	100.00
Norway	6.5	0.00	15.38	84.62		-	-
Portugal	23	13.04	15.22	71.74	20	5.00	35.00
Spain	10.5	14.29	66.67	19.05	14.67	72.73	63.99
Sweden	13	3.85	26.92	69.23	9	38.89	54.17
Switzerland	7.5	35.00	5.00	60.00	8.33	12.00	49.79
United Kingdom	10.5	7.14	40.48	52.38	13.57	60.00	58.49
AVERAGE	**11.71**	**13.44**	**18.29**	**68.27**	**12.07**	**29.09**	**57.99**

Table 5: Statistic on the relatedness of board of directors to shareholders according to different criteria (threshold of control at 20%)

			Controlled banks			Widely held banks				
	Employee of shareholder(s) (%)	Shareholder of the bank (%)	Same family name with shareholder(s) (%)	Shareholder of shareholders of the bank (%)	Politician / Employee of government agency (%)	Employee of shareholder(s) (%)	Shareholder of the bank (%)	Same family name with shareholder(s) (%)	Shareholder of shareholders of the bank (%)	Politician / Employee of government agency (%)
Austria	100	0	0	0	0	100	0	0	0	0
Belgium	87.50	0	0	0	12.50	100	0	0	0	0
Denmark	100	0	0	0	0	100	0	0	0	0
Finland	80.00	20.00	0	0	0	100	0	0	0	0
France	85.42	4.17	8.33	2.08	0	100	0	0	0	0
Germany	94.74	5.26	0	0	0	100	0	0	0	0
Ireland	100	0	0	0	0	50.00	0	0	0	50.00
Italy	64.71	35.29	0	0	0	100	0	0	0	0
Netherlands	100	0	0	0	0	100	0	0	0	0
Norway	100	0	0	0	0	-	-	-	-	-
Portugal	85.71	7.14	7.14	0	0	100	0	0	0	0
Spain	30.00	70.00	0	0	0	11.76	85.29	2.94	0	0
Sweden	100	0	0	0	0	85.71	14.29	0	0	0
Switzerland	80.65	0	0	19.35	0	16.67	83.33	0	0	0
United Kingdom	26.32	68.42	5.26	0	0	33.33	64.91	1.75	0	0
AVERAGE	**82.34**	**14.02**	**1.38**	**1.43**	**0.83**	**78.39**	**17.70**	**0.34**	**0**	**3.57**

Table 6: Regressions on the sample of controlled banks (threshold of control at 20% of control rights)

	Tobin's Q				Probability of Default				Cost of Equity			
IndepRel	0.0594***		0.0599***		-0.00139***		-0.00130***		-0.551***		-0.434***	
	(5.89)		(5.84)		(-3.66)		(-3.54)		(-6.89)		(-6.21)	
DepRel		-0.0196**	0.0000878			0.00716***	0.00414**			0.362***	0.225***	
		(-2.17)	(0.01)			(3.78)	(2.38)			(4.39)	(2.93)	
Indep				-0.0480***				0.00368				0.159
				(-3.44)				(1.20)				(1.54)
BoardSize	-0.106	0.0148	-0.156*	-0.0208	0.0228	-0.0172	0.00489	0.00338	0.304	-0.429	0.307	0.383
	(-1.39)	(0.19)	(-1.77)	(-0.24)	(1.18)	(-0.96)	(0.25)	(0.17)	(0.59)	(-0.68)	(0.51)	(0.57)
Size	-0.131***	-0.109***	-0.133***	-0.124***	0.0266***	0.0256***	0.0288***	0.0262***	0.872***	0.976***	0.438**	0.657***
	(-9.28)	(-8.09)	(-9.25)	(-9.81)	(6.38)	(5.94)	(7.33)	(5.63)	(3.06)	(3.62)	(2.13)	(4.30)
Growth	-0.464***	-0.345***	-0.465***	-0.405***					-2.490***	-2.863***	-2.403***	-3.739***
	(-5.16)	(-3.39)	(-5.15)	(-4.28)					(-2.87)	(-3.16)	(-2.69)	(-4.36)
Risk	0.00292***	0.00235***	0.00292***	0.00300***					-0.00124	-0.00315	0.00285	0.00255
	(3.97)	(3.33)	(3.97)	(4.02)					(-0.09)	(-0.21)	(0.21)	(0.18)
Loan	-0.579***	-0.733***	-0.581***	-0.700***								
	(-4.51)	(-4.39)	(-4.58)	(-5.37)								
Capital	-1.534***	-0.894***	-1.584***	-1.275***	-0.443***	-0.432***	-0.346**	-0.456***				
	(-6.10)	(-3.98)	(-6.03)	(-5.38)	(-3.12)	(-2.94)	(-2.34)	(-3.04)				
Opacity									4.443***	4.653***	4.722***	1.215***
									(19.32)	(18.38)	(22.76)	(8.62)
Leverage									-0.713***	-0.540**	-0.718***	-1.386
									(-3.37)	(-2.20)	(-3.20)	(-1.53)
Book-to-Market									0.0151	0.0203	0.00952	0.0208
									(0.82)	(1.01)	(0.51)	(1.01)
Deposit					-0.0487	-0.0166	-0.0473	-0.0322				
					(-0.92)	(-0.34)	(-0.93)	(-0.59)				
Operating					0.000505	-0.000109	0.000478	-0.00018				
					(0.08)	(-0.19)	(0.08)	(-0.03)				
LEGAL	-0.0111	-0.0100	-0.0114	-0.0172	-0.00457*	-0.00413	-0.00269	-0.0075***	0.392***	0.363***	0.308***	0.210**
	(-1.12)	(-0.74)	(-1.15)	(-1.44)	(-1.87)	(-1.42)	(-1.12)	(-2.82)	(4.28)	(2.90)	(2.93)	(2.18)
GDP	-0.0241**	-0.0279**	-0.0238**	-0.0264**	-0.0142***	-0.0107***	-0.0144***	-0.0134***	-0.300***	-0.165*	-0.158	-0.270***
	(-2.06)	(-2.35)	(-2.04)	(-2.21)	(-4.44)	(-2.90)	(-6.17)	(-3.71)	(-3.27)	(-1.72)	(-1.61)	(-2.66)
_cons	3.678***	3.556***	3.713***	4.096***	0.0186	-0.0360	-0.0508	-0.0148	12.84***	10.24***	12.26***	-4.880**
	(14.32)	(15.16)	(14.21)	(14.58)	(0.17)	(-0.36)	(-0.49)	(-0.13)	(36.85)	(12.16)	(14.94)	(-2.43)
N	191	191	191	191	171	171	171	171	181	181	181	181
Robust-Hausman test												
Chi-square	4.355	3.796	4.329	4.131	11.161	8.031	10.013	9.045	10.911	10.178	11.360	8.379
p-value	0.7382	0.8029	0.7412	0.7645	0.1035	0.2358	0.1080	0.1711	0.1425	0.1787	0.1237	0.2116

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 7: Regressions on the sample of controlled banks (threshold of control at 20% of relative voting power)

	Tobin's Q				Probability of Default				Cost of Equity			
IndepRel	0.0599***		0.0559***		-0.00651***		-0.00700***		-0.407***		-0.404***	
	(6.58)		(5.87)		(-2.72)		(-3.00)		(-5.33)		(-6.30)	
DepRel		-0.0227***	-0.00227			0.00517***	0.00457**			0.358***	0.319***	
		(-2.71)	(-0.27)			(2.70)	(2.12)			(5.13)	(5.01)	
Indep				-0.0446***				0.00314				0.0971
				(-3.09)				(1.04)				(0.98)
BoardSize	-0.197**	0.0417	-0.200**	-0.0297	0.0323	-0.0203	0.0236	0.00720	0.447	-0.864	-0.0923	0.262
	(-2.18)	(0.57)	(-2.21)	(-0.31)	(1.45)	(-1.20)	(1.03)	(0.32)	(0.87)	(-1.30)	(-0.17)	(0.38)
Size	-0.130***	-0.109***	-0.120***	-0.121***	0.0294***	0.0267***	0.0300***	0.0264***	0.934***	0.946***	1.028***	0.687***
	(-9.57)	(-7.96)	(-9.19)	(-9.11)	(6.18)	(6.22)	(6.62)	(5.61)	(3.33)	(3.72)	(3.64)	(4.54)
Growth	-0.425***	-0.338***	-0.406***	-0.425***					-2.467***	-3.525***	-2.888***	-3.791***
	(-5.06)	(-3.29)	(-4.67)	(-4.52)					(-2.78)	(-3.85)	(-3.23)	(-4.41)
Risk	0.00263***	0.00215***	0.00247***	0.00299***					-0.00032	-0.000590	0.00368	0.00104
	(3.93)	(3.08)	(3.62)	(3.99)					(-0.02)	(-0.04)	(0.27)	(0.07)
Loan	-0.694***	-0.705***	-0.679***	-0.712***								
	(-5.23)	(-4.21)	(-4.95)	(-5.26)								
Opacity									4.753***	4.762***	4.825***	1.183***
									(23.53)	(19.63)	(26.49)	(8.43)
Leverage									-0.608**	-0.463*	-0.628**	-1.385
									(-2.56)	(-1.78)	(-2.57)	(-1.48)
Book-to-Market									0.0161	0.0135	-0.000147	0.0210
									(0.85)	(0.70)	(-0.01)	(1.01)
Deposit					-0.0159	-0.00902	-0.0414	-0.0334				
					(-0.28)	(-0.18)	(-0.70)	(-0.60)				
Operating					-0.000551	-0.000903	0.0000528	-0.00024				
					(-0.01)	(-0.15)	(0.09)	(-0.04)				
Capital	-1.533***	-0.888***	-1.308***	-1.235***	-0.348**	-0.462***	-0.283*	-0.454***				
	(-6.57)	(-3.80)	(-6.21)	(-5.11)	(-2.30)	(-3.21)	(-1.84)	(-3.01)				
LEGAL	-0.0173*	-0.0165	-0.0142	-0.0149	-0.00498*	-0.00329	-0.00269	-0.00581**	0.215***	0.385***	0.419***	0.206**
	(-1.86)	(-1.20)	(-1.53)	(-1.22)	(-1.75)	(-1.15)	(-1.12)	(-2.18)	(2.81)	(3.28)	(4.05)	(1.98)
GDP	-0.0237**	-0.0294**	-0.0234**	-0.0284**	-0.0105***	-0.0130***	-0.0144***	-0.0130***	-0.198**	-0.276***	-0.214***	-0.270***
	(-2.02)	(-2.53)	(-1.98)	(-2.37)	(-2.85)	(-3.71)	(-6.17)	(-3.45)	(-2.17)	(-4.62)	(-3.59)	(-2.58)
_cons	3.723***	3.599***	3.549***	4.010***	-0.0479	-0.0805	-0.0508	-0.0534	13.24***	10.17***	11.38***	-4.725**
	(15.27)	(14.98)	(15.45)	(14.46)	(-0.46)	(-0.70)	(-0.49)	(-0.45)	(37.09)	(12.49)	(14.80)	(-2.36)
N	191	191	191	191	171	171	171	171	181	181	181	181
Robust-Hausman test												
Chi-square	3.867	3.671	3.745	4.203	7.958	8.519	10.013	8.626	10.740	10.275	11.477	9.001
p-value	0.7949	0.8168	0.8086	0.7562	0.2412	0.2025	0.1080	0.1957	0.1504	0.1735	0.1191	0.2526

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 8: Regressions on the sample of widely held banks (threshold of control at 20% of control rights or relative voting power)

	Tobin's Q					Probability of Default					Cost of Equity				
		x=CR	x=CR	x=BPI	x=BPI		x=CR	x=CR	x=BPI	x=BPI		x=CR	x=CR	x=BPI	x=BPI
IndepRel_x		-0.00138	0.000419	-0.00134	0.000786		-0.009***	-0.011***	-0.008***	-0.010***		0.00846	0.0249	0.0226	0.0423
		(-0.73)	(0.16)	(-0.71)	(0.31)		(-4.04)	(-4.88)	(-3.64)	(-4.47)		(0.08)	(0.29)	(0.21)	(0.50)
IndepMger	0.000150		-0.0009		0.0008	-0.0005**		-0.0001		-0.0006	-0.082***		-0.086***		-0.086***
	(0.06)		(-0.03)		(0.03)	(2.14)		(0.35)		(0.18)	(7.36)		(6.79)		(6.95)
BoardSize	-0.0151	-0.065***	-0.0172	-0.064***	-0.0178	0.137***	0.144***	0.163***	0.142***	0.157***	-4.243***	-1.614	-4.274***	-1.643*	-4.248***
	(-0.85)	(-3.94)	(-0.99)	(-3.92)	(-1.04)	(5.03)	(5.95)	(5.47)	(5.93)	(5.24)	(-6.24)	(-1.63)	(-5.77)	(-1.67)	(-5.73)
Size	0.0134***	0.00465	0.0142***	0.00461	0.0139***	-0.00340	0.00107	-0.00152	-0.00061	-0.00267	1.946***	1.373***	2.168***	1.349***	2.146***
	(4.49)	(1.28)	(3.18)	(1.28)	(3.16)	(-0.67)	(0.16)	(-0.24)	(-0.01)	(-0.42)	(5.05)	(2.75)	(5.16)	(2.71)	(5.14)
Growth	0.219***	0.192***	0.222***	0.192***	0.220***						0.185	0.213	0.186	0.214	0.187
	(5.00)	(4.38)	(4.51)	(4.39)	(4.46)						(1.16)	(1.43)	(1.16)	(1.43)	(1.17)
Risk	0.000355	-0.00033	0.000222	-0.00032	0.000213						0.0095***	0.0129***	0.0097***	0.013***	0.0097***
	(0.33)	(-0.07)	(0.35)	(-0.06)	(0.33)						(7.58)	(2.87)	(8.18)	(2.84)	(8.50)
Loan	-0.140***	-0.087***	-0.129***	-0.086***	-0.129***										
	(-4.69)	(-3.47)	(-3.43)	(-3.45)	(-3.39)										
Opacity											3.876***	2.591***	3.764***	2.580***	3.723***
											(11.57)	(5.44)	(9.22)	(5.40)	(9.15)
Leverage											0.410	0.267	0.420	0.257	0.396
											(1.51)	(0.67)	(1.42)	(0.64)	(1.37)
Book-to-Market											0.549**	0.885***	0.506**	0.877***	0.511**
											(2.28)	(3.28)	(2.10)	(3.21)	(2.12)
Deposit						0.0354	-0.123**	-0.0224	-0.123**	-0.0236					
						(0.56)	(-2.38)	(-0.35)	(-2.34)	(-0.37)					
Operating						0.000489	-0.00138	-0.00102	-0.00134	-0.001					
						(0.25)	(-0.69)	(-0.48)	(-0.66)	(-0.46)					
Capital	2.394***	0.815***	2.497***	0.817***	2.493***	-3.383***	-2.453***	-3.271***	-2.526***	-3.332***					
	(11.21)	(2.69)	(12.51)	(2.71)	(12.58)	(-9.37)	(-6.39)	(-7.58)	(-6.63)	(-7.63)					
LEGAL	0.00468	0.000844	0.00417	0.000831	0.00401	-0.015***	-0.0078*	-0.0086*	-0.0077*	-0.0089*	0.372***	0.603***	0.297**	0.610***	0.296**
	(1.36)	(0.26)	(1.04)	(0.25)	(1.00)	(-4.11)	(-1.82)	(-1.75)	(-1.79)	(-1.80)	(3.31)	(3.76)	(2.24)	(3.78)	(2.24)
GDP	0.00475	0.00367	0.00486	0.00374	0.00493	-0.026***	-0.028***	-0.027***	-0.028***	-0.027***	-0.206*	-0.317**	-0.208*	-0.317**	-0.204*
	(1.43)	(1.22)	(1.42)	(1.23)	(1.44)	(-6.04)	(-5.71)	(-4.91)	(-5.49)	(-4.84)	(-1.76)	(-2.33)	(-1.80)	(-2.30)	(-1.76)
_cons	0.616***	0.888***	0.585***	0.888***	0.588***	0.746***	0.705***	0.765***	0.728***	0.794***	6.206***	8.657***	6.384***	8.576***	6.318***
	(8.00)	(10.25)	(5.77)	(10.34)	(5.82)	(6.31)	(4.54)	(4.82)	(4.74)	(4.97)	(5.98)	(7.50)	(5.99)	(7.44)	(6.00)
N	110	119	110	119	110	96	105	96	105	96	111	120	111	120	111
Robust Hausman test															
Chi-square	4.967	5.088	5.783	5.011	5.698	10.154	8.116	8.565	8.070	8.533	10.423	9.998	10.093	10.170	10.213
p-value	0.5481	0.5325	0.4480	0.5424	0.4578	0.1183	0.1500	0.1277	0.1524	0.1292	0.2366	0.1247	0.2586	0.1177	0.2504

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 9: Regressions on the controlled banks sample (threshold of control at 20% of control rights) for different levels of supervisory regime

	Tobin's Q				Probability of Default				Cost of Equity			
IndepRel (β1)	-0.00727		-0.0125		-0.00147		0.00239		-0.0364		0.0766	
	(-0.70)		(-1.11)		(-0.43)		(0.76)		(-0.27)		(0.52)	
IndepRel_dSP (β2)	0.114***		0.119***		-0.00827		-0.0125**		-0.549***		-0.568***	
	(6.73)		(6.80)		(-1.56)		(-2.44)		(-3.18)		(-3.15)	
DepRel (β3)		-0.0101	-0.0248			0.0117***	0.0127***			0.720***	0.801***	
		(-0.52)	(-1.19)			(5.54)	(5.78)			(5.19)	(5.84)	
DepRel_dSP (β4)		-0.00039	0.0253			-0.0074***	-0.00994***			-0.651***	-0.776***	
		(-0.02)	(1.05)			(-2.65)	(-3.07)			(-3.90)	(-4.82)	
Indep (β5)				0.0364				-0.00751				-0.680***
				(1.53)				(-1.36)				(-3.39)
Indep_dSP (β6)				-0.0973***				0.0149**				0.961***
				(-3.44)				(2.07)				(3.80)
dSP	-0.394***	-0.197**	-0.468***	0.454**	0.0657***	0.0688***	0.102***	-0.0479	3.193***	3.191***	4.954***	-3.994**
	(-6.05)	(-2.04)	(-4.60)	(2.21)	(2.99)	(5.02)	(4.76)	(-0.88)	(3.11)	(4.24)	(4.01)	(-2.35)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	191	191	191	191	171	171	171	171	181	181	181	181
Wald test												
β1+ β2=0	0.1067***		0.1065***		-0.00964**		-0.00921***		-0.585***		-0.4914***	
	(50.44)		(51.34)		(6.14)		(7.00)		(37.06)		(25.91)	
B3+ β4=0						0.00425**	0.00276			0.069	0.025	
						(4.40)	(1.12)			(0.64)	(0.12)	
B5+ β6=0				-0.0609***				0.00739				0.281**
				(14.59)				(2.50)				(5.06)
Robust-Hausman test												
Chi-square	3.909	4.493	3.855	4.361	7.201	7.314	8.681	7.600	10.540	11.583	11.805	9.572
p-value	0.6890	0.6102	0.6962	0.6280	0.1257	0.1983	0.1225	0.1797	0.1037	0.1151	0.1072	0.1439

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 10: Regressions on the controlled banks sample (threshold of control at 20% of relative voting power) for different levels of supervisory regime

	Tobin's Q				Probability of Default				Cost of Equity			
IndepRel (β1)	-0.0110		-0.00139		0.00125		0.00125		0.178		0.131	
	(-0.73)		(-0.09)		(0.38)		(0.34)		(1.59)		(1.04)	
IndepRel_dSP (β2)	0.0960***		0.0890***		-0.00791		-0.00916*		-0.794***		-0.716***	
	(5.04)		(4.62)		(-1.63)		(-1.80)		(-5.22)		(-4.29)	
DepRel (β3)		-0.0369**	-0.0324**			0.00918***	0.00996***			0.591***	0.585***	
		(-2.35)	(-2.13)			(2.71)	(3.25)			(4.33)	(4.44)	
DepRel_dSP (β4)		0.0229	0.0324*			-0.00588	-0.00957**			-0.424**	-0.455***	
		(1.29)	(1.82)			(-1.54)	(-2.45)			(-2.56)	(-2.86)	
Indep (β5)				0.0321*				-0.00726				-0.598***
				(1.76)				(-1.40)				(-3.50)
Indep_dSP (β6)				-0.0888***				0.0152**				0.878***
				(-3.76)				(2.20)				(4.12)
dSP	-0.424***	-0.252***	-0.440***	0.373**	0.0789***	0.0643***	0.0982***	-0.0482	4.583***	2.989***	5.039***	-3.281**
	(-4.64)	(-3.40)	(-4.73)	(2.25)	(3.80)	(4.36)	(3.87)	(-0.93)	(5.36)	(3.51)	(4.95)	(-2.32)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	191	191	191	191	171	171	171	171	181	181	181	181
Wald test												
β1+ β2=0	0.085***		0.0876***		-0.00666*		-0.00791**		-0.616***		-0.585***	
	(44.07)		(45.03)		(3.69)		(5.28)		(34.91)		(31.47)	
B3+ β4=0			0.00				0.00039			0.167**	0.13*	
			(0.01)				(0.02)			(4.21)	(3.79)	
B5+ β6=0				-0.0567***				0.00794*				0.28**
				(10.86)				(2.91)				(5.93)
Robust-Hausman test												
Chi-square	4.063	4.258	3.786	4.367	8.248	7.297	7.859	7.748	11.021	10.644	11.465	10.128
p-value	0.6682	0.6418	0.7056	0.6272	0.1431	0.1995	0.1642	0.1707	0.1377	0.1549	0.1196	0.1193

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 11: Regressions on the widely held banks sample (threshold of control at 20% of control rights or relative voting power) for different levels of supervisory regime

	Tobin's Q					Probability of Default					Cost of Equity				
		x=CR	x=CR	x=BPI	x=BPI		x=CR	x=CR	x=BPI	x=BPI		x=CR	x=CR	x=BPI	x=BPI
IndepRel (β1)		-0.012**	-0.014**	-0.011**	-0.012*		-0.025***	-0.025***	-0.019***	-0.024***		-1.542***	-1.189***	-1.319***	-0.546
		(-2.49)	(-2.07)	(-2.23)	(-1.81)		(-3.23)	(-3.47)	(-2.69)	(-3.34)		(-4.26)	(-2.77)	(-3.42)	(-1.04)
IndepRel_dSP (β2)		0.00535	0.0105	0.00435	0.0085		0.0239***	0.0216***	0.0176**	0.0212***		1.812***	1.592***	1.564***	0.917*
		(1.07)	(1.38)	(0.85)	(1.13)		(2.90)	(2.83)	(2.35)	(2.70)		(4.43)	(3.53)	(3.64)	(1.68)
IndepMger (β3)	-0.0017*		-0.0008		-0.001	0.001*		0.00133*		0.0023***	-0.0830		0.0132		-0.0091
	(-1.80)		(-0.75)		(-1.16)	(1.85)		(1.85)		(3.13)	(-1.64)		(0.19)		(-0.12)
IndepMger_dSP (β4)	0.0016*		0.000823		0.0012	-0.002**		-0.0019**		-0.0029***	0.00221		-0.107		-0.0824
	(1.70)		(0.74)		(1.15)	(-2.26)		(-2.35)		(-3.46)	(0.04)		(-1.53)		(-1.13)
dSP	0.0118	-0.114**	-0.115	-0.104**	-0.087	0.0354	-0.102*	-0.163**	-0.0640	-0.194**	0.191	-12.89***	-14.36***	-10.90***	-7.682
	(0.28)	(-2.51)	(-1.49)	(-2.30)	(-1.12)	(0.91)	(-1.66)	(-2.46)	(-1.07)	(-2.56)	(0.09)	(-4.54)	(-3.56)	(-3.59)	(-1.44)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	110	119	110	119	110	96	105	96	105	96	111	120	111	120	111
Wald test															
β1+ β2=0							-0.0014	-0.0031	-0.0014	-0.0032		0.27	0.403***	0.245	0.371***
							(0.29)	(1.01)	(0.25)	(1.08)		(2.28)	(13.78)	(1.94)	(10.04)
B3+ β4=0	0.00004					0.00052		0.00059		0.0006					
	(0.02)					(1.81)		(2.27)		(2.24)					
Robust-Hausman test															
Chi-square	5.687	5.687	6.197	5.744	6.271	9.164	6.367	4.775	6.184	4.721	8.331	10.034	5.665	10.413	5.938
p-value	0.3378	0.3378	0.2875	0.3319	0.2807	0.1027	0.1734	0.3111	0.1859	0.3171	0.2148	0.1867	0.5794	0.1663	0.5471

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 12: Regressions on the controlled banks sample (threshold of control at 20% of control rights) for different levels of minority shareholders protection

	Tobin's Q				Probability of Default				Cost of Equity			
IndepRel (β1)	0.0614***		0.0678***		-0.0128***		-0.0112***		-0.337***		-0.210**	
	(5.48)		(5.54)		(-3.74)		(-3.50)		(-3.90)		(-2.31)	
IndepRel_dLEGAL (β2)	-0.0167		-0.0179		0.00997**		0.00897**		-0.307**		-0.427***	
	(-1.32)		(-1.34)		(2.33)		(2.15)		(-2.53)		(-3.47)	
DepRel (β3)		-0.0239*	0.00394			0.00798***	0.00494***			0.387***	0.297***	
		(-1.80)	(0.30)			(3.56)	(3.10)			(4.34)	(3.52)	
DepRel_ dLEGAL (β4)		0.0286*	0.0109			-0.00397	0.000435			-0.221	-0.230*	
		(1.72)	(0.73)			(-1.02)	(0.11)			(-1.56)	(-1.84)	
Indep (β5)				-0.0620***				0.00687				-0.0181
				(-3.42)				(1.53)				(-0.12)
Indep_ dLEGAL (β6)				0.0173				-0.00771				0.461**
				(0.86)				(-1.19)				(2.55)
dLEGAL	-0.194	-0.0117	-0.224***	-0.0191	-0.0641***	-0.00633	-0.0477***	0.0155	0.767	1.180*	2.086***	-3.042**
	(-1.36)	(-0.20)	(-2.94)	(-0.23)	(-4.12)	(-0.35)	(-2.82)	(0.31)	(1.55)	(1.76)	(3.03)	(-2.32)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	191	191	191	191	171	171	171	171	181	181	181	181
Wald test												
β1+ β2=0					-0.00283		-0.00506		-0.644***		-0.637***	
					(1.06)		(0.63)		(42.18)		(34.50)	
B3+ β4=0											0.067	
											(0.38)	
B5+ β6=0												0.4429***
												(10.63)
Robust-Hausman test												
Chi-square	4.335	4.870	4.718	4.181	10.879	9.422	10.646	10.549	11.594	12.337	11.835	9.700
p-value	0.8257	0.7714	0.8582	0.8405	0.1440	0.2237	0.2226	0.1595	0.1703	0.1368	0.2228	0.2867

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 13: Regressions of on the controlled banks sample (threshold of control at 20% of relative voting power) for different levels of minority shareholders protection

	Tobin's Q				Probability of Default				Cost of Equity			
IndepRel (β1)	0.0638***		0.0632***		-0.00725**		-0.00709**		-0.289***		-0.182***	
	(5.84)		(5.41)		(-2.10)		(-2.12)		(-3.67)		(-3.38)	
IndepRel_dLEGAL (β2)	-0.0152		-0.0130		0.00287		0.00328		-0.340***		-0.427***	
	(-1.28)		(-1.02)		(0.67)		(0.76)		(-2.83)		(-3.42)	
DepRel (β3)		-0.0269**	-0.000756			0.00531**	0.00303			0.443***	0.355***	
		(-2.27)	(-0.06)			(2.33)	(1.28)			(5.02)	(4.52)	
DepRel_ dLEGAL (β4)		0.0275*	0.0110			-0.000989	0.00291			-0.327**	-0.304***	
		(1.29)	(1.82)			(-0.27)	(0.74)			(-2.42)	(-2.60)	
Indep (β5)				-0.0522***				0.00717*				-0.178
				(-2.84)				(1.81)				(-1.62)
Indep_ dLEGAL (β6)				0.00962				-0.00791				0.585***
				(0.49)				(-1.26)				(3.93)
dLEGAL	-0.00314	-0.218***	-0.0414	-0.111	-0.0517***	-0.0175	-0.0499**	0.0122	0.702	1.841**	2.568***	-3.661***
	(-0.06)	(-2.82)	(-0.47)	(-0.85)	(-3.03)	(-1.13)	(-2.42)	(0.25)	(1.36)	(2.56)	(3.59)	(-3.27)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	191	191	191	191	171	171	171	171	181	181	181	181
Wald test												
β1+ β2=0									-0.629***		-0.609***	
									(40.99)		(36.91)	
B3+ β4=0										0.116	0.051	
										(0.95)	(0.27)	
B5+ β6=0												0.407***
												(9.36)
Robust-Hausman test												
Chi-square	3.745	4.877	4.367	4.589	9.874	9.283	9.759	10.294	11.740	13.150	12.773	9.729
p-value	0.8793	0.7707	0.8856	0.8005	0.1958	0.2329	0.2824	0.1725	0.1632	0.1068	0.1731	0.2846

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Table 14: Regressions on the widely held banks sample (threshold of control at 20% of control rights or relative voting power) according to legal for different levels of minority shareholders protection

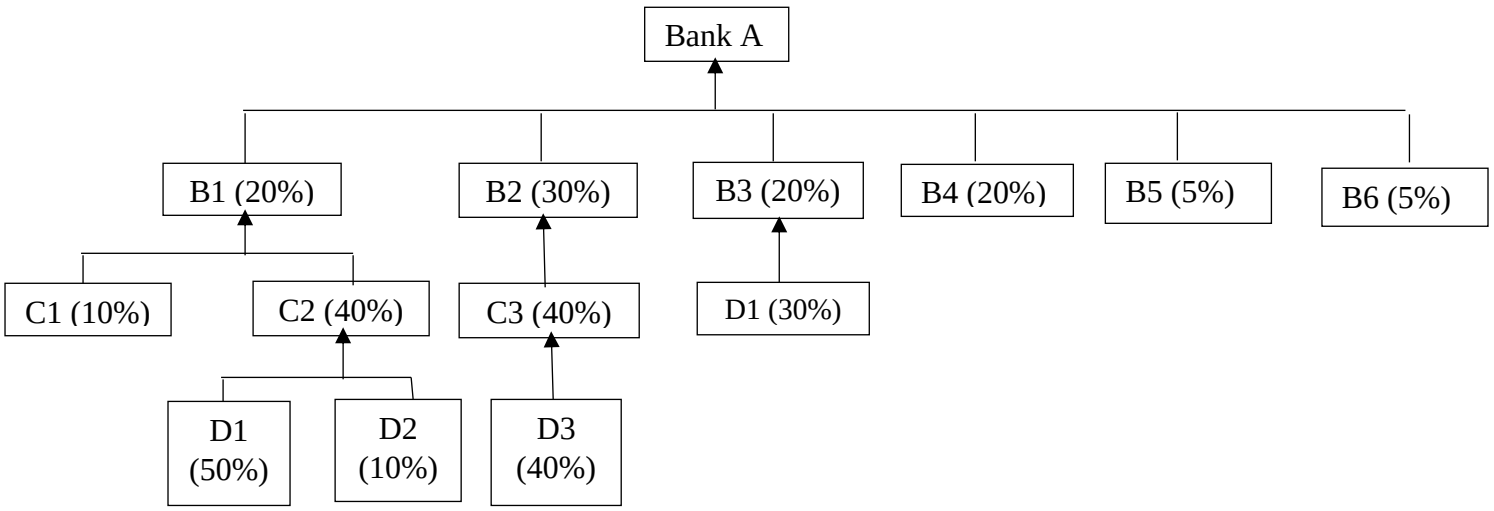
	Tobin's Q					Probability of Default					Cost of Equity				
IndepRel (β1)		-0.0034	-0.0017	-0.0034	-0.0018		-0.0034	-0.0079*	-0.0034	-0.0072*		0.232*	0.284**	0.228*	0.137
		(-1.08)	(-0.50)	(-1.07)	(-0.54)		(-0.79)	(-1.93)	(-0.78)	(-1.68)		(1.89)	(2.27)	(1.84)	(1.01)
IndepRel_dLEGAL (β2)		0.00336	0.00481	0.00346	0.00555		-0.0083*	-0.015***	-0.0067	-0.014***		-0.445***	-0.471***	-0.429***	-0.391***
		(0.94)	(1.28)	(0.97)	(1.50)		(-1.68)	(-3.03)	(-1.34)	(-2.60)		(-3.36)	(-3.68)	(-3.14)	(-2.62)
IndepMger (β3)	0.00056		-0.0005		-0.0005	-0.00074		-0.00095		-0.00104	-0.069***		-0.075***		-0.069***
	(0.09)		(-0.08)		(-0.08)	(-0.86)		(-1.39)		(-1.41)	(-4.40)		(-5.22)		(-5.00)
IndepMger_ dLEGAL (β4)	0.00042		0.00032		0.00027	0.000963		0.0024***		0.0025***	-0.0253		-0.00268		-0.00437
	(0.68)		(0.51)		(0.42)	(0.99)		(2.64)		(2.63)	(-1.40)		(-0.15)		(-0.24)
d_LEGAL	0.0355	-0.0098	0.00750	-0.0100	0.00134	0.0321	0.0161	0.147***	0.00984	0.152***	-3.070***	0.348	-0.652	0.287	-0.789
	(1.42)	(-0.44)	(0.22)	(-0.46)	(0.04)	(0.71)	(0.67)	(3.15)	(0.41)	(2.76)	(-3.01)	(0.41)	(-0.48)	(0.34)	(-0.58)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	110	119	110	119	110	96	105	96	105	96	111	120	111	120	111
Wald test															
β1+ β2=0							-0.012***	-0.023***		-0.022***		-0.213*	-0.187	-0.201	-0.254*
							(25.07)	(43.87)		(25.17)		(2.77)	(2.06)	(2.38)	(2.86)
B3+ β4=0								0.0014***		0.0015***					
								(7.39)		(6.32)					
Robust-Hausman test															
Chi-square	4.278	5.194	5.796	5.113	5.679	10.000	9.045	8.357	8.877	8.379	5.999	10.521	6.726	10.698	6.789
p-value	0.7472	0.6363	0.6700	0.6462	0.6831	0.1886	0.1710	0.3021	0.1806	0.3003	0.7400	0.3100	0.7510	0.2970	0.7452

*See Table 2 for Definition of variables. z-statistics are in parentheses, with *, **, and *** denote significance at 10%, 5% and 1%.*

Appendix 1

Figures and Tables

Figure A1: Example of a control chain



For Bank A (threshold of control: 20%)

1. Determine direct shareholders, their control rights, and their type of ownership
   - Controlling shareholders: B1, B2, B3, B4
   - Non-controlling shareholder: B5, B6
   - B4 is a family
     ➔ Continue chain of control for B1, B2, B3
2. Determine shareholders of B1, B2, B3 and so on.
3. Determine ultimate owners, and their control rights
   - For B4: 20%
   - For D3: 30%
   - For D1: 20% + 20% = 40%
4. A possible coalition between B4 and D3 to make a total control rights at 50%, which excess the control rights of D1.

Table A1: Matrix of correlation

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	Tobin_Q	1																					
2	PD	-0.491***	1																				
3	CoE	-0.130	0.397***	1																			
4	IndepRel_CR	0.0580	-0.158*	-0.0386	1																		
5	DepRef_CR	0.0937	0.0726	-0.0190	-0.251***	1																	
6	Indep_CR	-0.0436	0.0308	-0.0847	-0.808***	-0.194**	1																
7	IndepRel_BPI	0.0516	-0.142*	-0.0764	0.919***	-0.212**	-0.754***	1															
8	DepRel_BPI	0.0763	0.0289	-0.0352	-0.187**	0.966***	-0.218***	-0.192**	1														
9	Indep_BPI	-0.0314	0.0411	-0.0523	-0.775***	-0.228***	0.972***	-0.799***	-0.262***	1													
10	IndepMger	0.0778	-0.0685	-0.222***	0.0388	0.252***	-0.0304	0.0882	0.299***	-0.0940	1												
11	BoardSize	-0.224***	0.443***	0.347***	0.331***	-0.0100	-0.360***	0.360***	-0.0137	-0.370***	0.0636	1											
12	Size	-0.346***	0.547***	0.596***	0.182**	-0.165*	-0.226***	0.159*	-0.181**	-0.192**	-0.325***	0.644***	1										
13	Capital	0.586***	-0.540***	-0.385***	0.120	-0.0551	0.0335	0.116	-0.0271	0.0203	0.139*	-0.406***	-0.654***	1									
14	Loan	-0.318***	0.272***	0.0199	0.0276	0.0230	-0.0503	0.0637	-0.0242	-0.0444	0.134*	0.260***	0.226***	-0.395***	1								
15	Growth	0.146*	-0.163*	-0.222***	0.0296	0.0529	-0.0377	-0.0263	0.0854	-0.0216	0.0929	-0.138*	-0.222***	0.0119	-0.166*	1							
16	Risk	-0.00553	0.0415	0.120	-0.0791	-0.0449	0.0930	-0.0715	-0.0603	0.0972	0.0929	0.00442	0.00297	-0.0258	0.0303	-0.0365	1						
17	Deposit	-0.199**	-0.171*	-0.264***	-0.190**	0.129	0.129	-0.164*	0.109	0.119	0.102	-0.264***	-0.353***	-0.167*	0.308***	0.176**	0.0285	1					
18	Operating	0.00852	-0.0513	0.0642	0.00513	-0.0443	0.00486	0.0245	-0.0668	0.00718	-0.0588	-0.0564	-0.0362	0.0272	0.0608	0.0221	0.0539	0.114	1				
19	Opacity	-0.195**	0.451***	0.690***	0.208**	-0.194**	-0.261***	0.153*	-0.199**	-0.214**	-0.334***	0.558***	0.792***	-0.427***	0.0323	-0.201**	0.0159	-0.446***	0.0209	1			
20	BM	-0.0740	0.258***	0.0970	-0.125	0.107	0.0536	-0.133*	0.106	0.0547	0.0713	0.0472	0.0867	-0.0940	0.0144	-0.233***	-0.010	-0.216**	-0.278***	0.0961	1		
21	LEGAL	0.0735	-0.188**	0.0779	0.0313	-0.235***	0.0675	-0.00455	-0.250***	0.108	-0.0702	-0.215**	0.0270	-0.00598	0.0249	-0.146*	0.0895	-0.0164	0.0261	-0.0664	-0.042	1	
22	GDP	0.142*	-0.288***	-0.151*	0.0112	-0.0794	0.0610	0.0198	-0.0681	0.0538	-0.00832	-0.201**	-0.0576	0.115	-0.166*	-0.187**	0.0643	0.0169	0.0468	-0.241***	-0.010	0.452***	1

Table A2: Test of endogeneity: sample of controlled banks (threshold of control at 20% of control rights)

	Tobin's Q			Probability of Default			Cost of Equity		
IndepRel	0.0656*			0.00669			0.578		
	(1.88)			(0.52)			(1.12)		
DepRel		0.00199			0.0224			0.302	
		(0.06)			(1.44)			(0.67)	
Indep			-0.0331			-0.00913			-0.0109
			(-0.72)			(-0.55)			(-0.02)
BoardSize	-0.0619	-0.173	-0.0110	-0.0405	-0.0294	-0.0363	-3.693*	-2.146	-1.969
	(-0.52)	(-1.31)	(-0.11)	(-0.75)	(-0.69)	(-0.77)	(-1.77)	(-1.59)	(-1.08)
Size	-0.065***	-0.0488**	-0.069***	0.0276***	0.029***	0.0281***	2.391***	1.530***	0.999***
	(-3.10)	(-2.06)	(-3.29)	(2.72)	(2.68)	(2.77)	(2.92)	(2.60)	(3.00)
Growth	-0.165	-0.180	-0.154				-2.192	-1.892	-1.977
	(-1.47)	(-1.57)	(-1.37)				(-1.62)	(-1.51)	(-1.58)
Risk	-0.00018	-0.00014	-0.00021				-0.00135	-0.0005	-0.0014
	(-0.11)	(-0.09)	(-0.14)				(-0.07)	(-0.03)	(-0.08)
Loan	-0.297*	-0.267	-0.300*						
	(-1.86)	(-1.60)	(-1.86)						
Opacity							5.761***	5.142***	1.160***
							(6.83)	(8.42)	(5.10)
Leverage							-0.222	-0.315	-1.105
							(-0.47)	(-0.71)	(-0.64)
Book-to-Market							0.00480	0.00701	0.0056
							(0.18)	(0.29)	(0.23)
Deposit				-0.105	-0.107	-0.102			
				(-1.17)	(-1.13)	(-1.15)			
Operating				0.000288	0.00037	0.000292			
				(0.30)	(0.39)	(0.31)			
Capital	-0.608*	-0.779**	-0.554*	-0.580***	-0.411*	-0.533***			
	(-1.92)	(-2.28)	(-1.78)	(-2.73)	(-1.87)	(-2.89)			
LEGAL	0.00280	-0.00596	0.00220	-0.0128	-0.00554	-0.0111	-0.0655	0.108	0.0123
	(0.16)	(-0.32)	(0.12)	(-1.62)	(-0.63)	(-1.55)	(-0.23)	(0.39)	(0.05)
GDP	-0.0103	-0.00669	-0.0104	-0.00684	-0.00724	-0.0072	-0.283*	-0.301**	-0.289*
	(-0.79)	(-0.50)	(-0.80)	(-0.93)	(-1.00)	(-1.00)	(-1.80)	(-2.03)	(-1.95)
_cons	2.736***	2.348***	2.445***	0.125	-0.0358	0.175	20.44***	16.66***	-3.756
	(5.42)	(7.33)	(7.92)	(0.61)	(-0.15)	(0.74)	(4.33)	(4.26)	(-0.56)
N	192	192	192	174	174	174	186	186	186
Instrument variables	Legor_ge Legor_sc	avg_DepRel MINOR_20	avelf legor_uk	Avelf Legor_fr	avg_DepRel lat_llsv	lat_llsv avelf	legor_ge legor_sc	avg_DepRel legor_sc	Avelf indy
F-test	12.21	11.70	16.42	13.10	10.10	19.10	12.40	11.62	14.21
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
LM statistics	22.83	21.98	29.48	23.97	17.38	32.87	23.20	21.92	26.11
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Hasen statistic	0.455	0.368	2.442	0.712	0.05	0.336	0.012	0.417	0.080
	0.50	0.54	[0.11]	[0.40]	[0.82]	[0.56]	[0.92]	[0.52]	[0.78]
Endogeneity test	1.54	0.18	0.22	2.16	1.74	1.77	3.96	0.15	0.03
	[0.90]	[0.99]	[0.99]	[0.97]	[0.98]	[0.98]	[0.95]	[0.99]	[1.00]

Table A3: Test of endogeneity: sample of controlled banks (threshold of control at 20% of relative voting power)

	Tobin's Q			Probability of Default			Cost of Equity		
IndepRel	0.0400			-0.0117			-0.208		
	(1.13)			(-0.93)			(-0.38)		
DepRel		-0.0157			0.0204			0.237	
		(-0.45)			(1.42)			(0.63)	
Indep			-0.0206			-0.0089			-0.320
			(-0.41)			(-0.51)			(-0.51)
BoardSize	-0.0479	-0.132	0.000454	0.0192	-0.0294	-0.0392	-1.280	-2.161	-2.603
	(-0.36)	(-0.92)	(0.00)	(0.33)	(-0.67)	(-0.75)	(-0.60)	(-1.59)	(-1.39)
Size	-0.066***	-0.0553**	-0.067***	0.0247**	0.0292***	0.028***	1.514**	1.595***	0.999***
	(-3.07)	(-2.36)	(-3.23)	(2.53)	(2.60)	(2.73)	(2.15)	(2.92)	(3.00)
Growth	-0.162	-0.164	-0.147				-1.875	-1.949	-2.029
	(-1.43)	(-1.47)	(-1.29)				(-1.49)	(-1.55)	(-1.61)
Risk	-0.00017	-0.000234	-0.00026				0.000087	0.000342	-0.0014
	(-0.11)	(-0.15)	(-0.17)				(0.01)	(0.02)	(-0.08)
Loan	-0.292*	-0.271*	-0.301*						
	(-1.81)	(-1.68)	(-1.86)						
Opacity							5.038***	5.231***	1.160***
							(6.70)	(8.72)	(5.10)
Leverage							-0.310	-0.333	-1.105
							(-0.70)	(-0.75)	(-0.64)
Book-to-Market							0.00984	0.00727	0.00363
							(0.40)	(0.30)	(0.15)
Deposit				-0.118	-0.114	-0.0997			
				(-1.37)	(-1.19)	(-1.11)			
Operating				0.000441	0.000476	0.00028			
				(0.47)	(0.50)	(0.31)			
Capital	-0.578*	-0.648**	-0.555*	-0.440**	-0.445**	-0.53***			
	(-1.84)	(-2.04)	(-1.78)	(-2.24)	(-2.05)	(-2.87)			
LEGAL	0.00279	-0.00285	-0.00138	-0.00870	-0.00527	-0.0108	0.0528	0.0995	0.0402
	(0.16)	(-0.16)	(-0.07)	(-1.18)	(-0.58)	(-1.50)	(0.21)	(0.37)	(0.15)
GDP	-0.0108	-0.00923	-0.00924	-0.00832	-0.00749	-0.0076	-0.291**	-0.304**	-0.296**
	(-0.83)	(-0.71)	(-0.70)	(-1.20)	(-1.03)	(-1.07)	(-1.97)	(-2.03)	(-1.98)
_cons	2.621***	2.391***	2.474***	0.0697	-0.0236	0.169	16.62***	16.93***	-1.158
	(5.00)	(7.84)	(7.93)	(0.36)	(-0.10)	(0.72)	(3.79)	(4.49)	(-0.18)
N	192	192	192	174	174	174	186	186	186
Instrument variables	legor_ge legor_fr	avg_DelRel indy	avelf legor_ge	avelf legor_uk	avg_DelRel lat_llsv	lat_llsv avelf	legor_ge legor_sc	avg_DelRel legor_sc	avelf lat_llsv
F-test	10.46	10.21	11.48	11.84	10.92	14.14	9.65	16.35	14.93
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
LM statistics	19.99	19.47	21.61	21.86	20.44	23.59	18.56	29.43	27.224
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Hasen statistic	1.666	0.530	2.76	0.614	0.003	0.381	0.015	0.515	0.999
	0.19	0.47	0.11	[0.43]	[0.96]	[0.54]	[0.90]	[0.47]	[0.32]
Endogeneity test	0.30	0.23	0.23	1.95	2.21	1.46	3.11	0.13	0.58
	[0.99]	[0.99]	[0.99]	[0.98]	[0.97]	[0.99]	[0.97]	[0.99]	[0.99]

Table A4: Test of endogeneity: sample of widely held banks (threshold of control at 20% of control rights or relative voting power)

	Tobin's Q			Probability of Default			Cost of Equity		
		x=CR	x=BPI		x=CR	x=BPI		x=CR	x=BPI
IndepRel_x		-0.00477	-0.00966		-0.0170	-0.0147		0.140	0.619
		(-0.48)	(-0.86)		(-0.99)	(-1.03)		(0.19)	(0.72)
IndepMger	0.00111			0.00169			0.0430		
	(0.67)			(0.96)			(0.37)		
BoardSize	-0.0661	-0.0716*	-0.0634*	0.0700	0.147***	0.141***	-2.027	-0.609	-1.122
	(-1.59)	(-1.96)	(-1.69)	(1.28)	(3.11)	(3.34)	(-0.76)	(-0.28)	(-0.49)
Size	0.029***	0.0293***	0.0310***	-0.0196	-0.0172	-0.0181	2.697*	2.240**	2.160**
	(2.85)	(3.07)	(3.15)	(-1.24)	(-1.10)	(-1.35)	(1.84)	(2.21)	(2.02)
Growth	0.159**	0.167***	0.173***				0.223	0.200	0.190
	(2.58)	(2.83)	(2.85)				(0.99)	(0.93)	(0.89)
Risk	-0.0009	0.000025	-0.00064				0.0133**	0.013**	0.013**
	(-0.08)	(0.00)	(-0.05)				(2.44)	(2.49)	(2.48)
Loan	-0.0753	-0.0288	-0.0296						
	(-1.15)	(-0.49)	(-0.50)						
Opacity							4.143**	3.041**	2.428
							(2.09)	(2.12)	(1.56)
Leverage							0.703	0.575	0.343
							(1.09)	(0.80)	(0.45)
Book-to-Market							-0.337	-0.373	-0.347
							(-0.73)	(-0.86)	(-0.79)
Deposit				-0.0310	-0.157	-0.151			
				(-0.26)	(-1.35)	(-1.36)			
Operating				-0.00008	-0.0010	-0.00109			
				(-0.00)	(-0.37)	(-0.38)			
Capital	2.569***	2.557***	2.593***	-3.496***	-2.61***	-2.610***			
	(9.18)	(8.45)	(8.35)	(-4.59)	(-3.68)	(-4.14)			
LEGAL	0.00114	0.00225	0.00356	-0.0134	-0.0038	-0.00503	0.168	0.154	-0.028
	(0.17)	(0.30)	(0.47)	(-1.58)	(-0.39)	(-0.58)	(0.43)	(0.32)	(-0.06)
GDP	0.00430	0.00465	0.00458	-0.0235**	-0.022***	-0.023***	-0.216	-0.132	-0.106
	(0.88)	(1.05)	(1.01)	(-2.48)	(-2.59)	(-2.71)	(-0.89)	(-0.62)	(-0.50)
_cons	0.414**	0.476**	0.436**	0.850***	0.714**	0.737***	15.16***	13.71***	14.31***
	(2.21)	(2.53)	(2.25)	(2.61)	(2.17)	(2.64)	(2.82)	(2.62)	(2.59)
N	110	119	119	96	105	105	111	120	120
Instrument variables	lat_llsv legor_fr	legor_ge legor_sc	legor_ge legor_sc	lat_llsv legor_sc	RoL avelf	legor_ge legor_sc	lat_llsv legor_fr	lat_llsv legor_fr	lat_llsv RoL
F-test	8.08	13.10	12.92	14.50	10.86	11.42	18.69	10.59	10.06
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
LM statistics	15.44	23.22	22.97	25.96	20.38	21.30	32.90	18.09	15.59
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Hasen statistic	0.002	0.737	0.735	0.490	0.602	2.71	1.223	1.335	1.360
	0.96	0.39	0.39	[0.48]	[0.44]	[0.109]	[0.27]	[0.25]	[0.24]
Endogeneity test	0.36	0.66	0.76	0.46	0.20	0.04	0.25	0.51	0.25
	[0.99]	[0.99]	[0.98]	[0.99]	[1.00]	[1.00]	[0.99]	[0.99]	[0.99]

Appendix 2

Definition the Banzhaf Power Index (BPI)[13]

1. Notation

A *coalition* is any group of players that join forces to vote together.

- The total number of votes controlled by a coalition is called the *weight of the coalition*.
- A *winning coalition* is one with enough votes to win.
- A *losing coalition* is one without enough votes to win.
- A player whose desertion of a winning coalition turns it into a losing one is called a *critical player*.
- A player's power is proportional to the number of times the player is critical.
- The *quota* is the minimum number votes needed to pass a decision.

2. Computing the BPI for Player P

STEP 1: Determine all WINNING coalitions.

STEP 2: Determine the critical players in each winning coalition.

STEP 3: Find the number of times all players are critical.

STEP 4: Find the number of times Player P is critical.

STEP 5: *BPI(P)* is the number of times Player P is critical (from STEP 4) divided by the number of times all players are critical (from STEP 3).

3. Example

We determine relative voting power BPI for ultimate owners of bank A in the control chain in the Appendix 1.

Voting rights of B4, D3, D1 are 20%, 30%, 40% respectively. The quota is 51%.

STEP 1: Determine all WINNING coalitions.

Winning Coalitions	Explantation
{D1, D3} {B4, D1}	Shareholder D1 and D3 together have enough control rights to win. Shareholder B4 and D1 together have enough control rights to win. There are 2 winning coalitions having two players.
{B3, D1, D3}	The coalition containing all 3 ultimate owners wins.

[13] Extract from the website of the University of Alabama

STEP 2: Determine the critical players in each winning coalition.

To determine whether or not a Player is a critical Player in a winning coalition, count the number of votes the coalition has without that particular Player. If the coalition no longer has enough votes to win, then that Player is critical.

The critical Players are underlined below.

In {B4, D1}, both are critical since the coalition loses if either shareholder leaves.

In {D1, D3}, both are critical since the coalition loses if either shareholder leaves.

In {B4, D1, D3}, only D1 is critical since the coalition still wins if B4 leaves or if D3 leaves (but not if D1 leaves).

STEP 3: Find the number of times all players are critical.

5 (underlined above).

STEP 4: Find the number of times Player P is critical.

(See the underlined Players in STEP 2 above.)

D1 is critical 3 times, D3 is critical 1 time, B4 is critical 1 time.

STEP 5: *BPI(P)* is the number of times Player P is critical (from STEP 4) divided by the number of times all players are critical (from STEP 3).

BPI(D1) = 3/5 = 0.6 BPI(D3) = 1/5 =0.2 BPI(B4) = 1/5 = 0.2

Appendix 3

Construction of the indices of relatedness of directors

We assign weights to the factors we consider in characterizing the relatedness of a director, by giving a weight of one (as compared to zero) for each of the following criteria: (1) the director is considered to be *related* to a shareholder; (2) the director is related to a controlling shareholder; (3) the relatedness between the director and the shareholder is current; (4) the director is Chairman or Vice Chairman of the board.

For each director, we sum up the number of ones for all the connections they have with shareholders to obtain what we call the "score of relatedness" of a director. A "score of relatedness" is then computed at the bank level by taking the average of the "score of relatedness" of all directors. We then use theses scores to compute our indices.

If the "score of relatedness" of a bank is zero, it indicates that its board of directors is totally independent from shareholders, and we set the index of relatedness at 0. For banks with a positive "score of relatedness", we rank them into deciles to obtain an index of relatedness that ranges from 1 to 10. Finally, our index of relatedness of directors to shareholders varies from 0 to 10. The higher the index, the more the board of directors is related to shareholders.

We compute for both controlled and widely held banks the index $IndepRel_i$ that measures the presence/influence of "independent-but-related' directors in their board. For controlled banks, we additionally compute the index $DepRel_i$ that measures the presence/influence of directors that are related to controlling shareholders. An index measuring the presence/influence of independent directors in controlled banks is also computed by subtracting the average of the two indices of relatedness of board to controlling and to non-controlling shareholders from the highest value of the index (i.e. from 10):

$$Ind_i = 10 - \frac{(IndepRel_i + DepRel_i)}{2}$$

The higher the index of independence, the more independent from shareholders is the bank.