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Bondholder representatives on bank boards: a device for market discipline [1]

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Abstract

We examine whether board representation of bondholders can be an effective market discipline mechanism to reduce bank risk, using a unique dataset combining information on bondholders and boards of directors of European listed banks. Our results show that the influence of bondholder representatives on the bank board significantly reduces bank risk without impacting profitability. The beneficial effect of this market discipline mechanism is stronger when bondholder representatives have regulatory experience, current or long relationships with their affiliated bondholders, and for more complex banks. In contrast, the reducing impact on bank risk is smaller for banks with lower capitalization levels.

JEL Classification: G21, G28

Keywords: Market discipline; bank risk; board of directors; bondholder representatives

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1. Introduction

The use of market discipline for prudential purposes has gained importance in recent years, especially after the financial crisis of 2007-2008. Policymakers have increasingly recognized its significance in safeguarding financial stability and incorporated it in regulatory frameworks such as Pillar 3 of the Basel 2 and 3 frameworks (Bank for International Settlements, 2006) and the new resolution mechanisms designed by the Financial Stability Board (FSB, 2013). The idea behind market discipline in the banking industry is to use private investors as monitoring agents to mitigate excessive risk-taking behavior driven by financial safety nets (Bliss and Flannery, 2019). Among bank stakeholders, bondholders' preferences are most clearly aligned with supervisors' for exerting direct discipline that could help prevent banks from taking such excessive risks (Bliss and Flannery, 2019).[2] However, one of the most critical challenges is determining which instruments are likely to help bondholders influence bank behavior and achieve this most efficiently.

While there is an extensive empirical literature evaluating the ability of market participants to price actual changes in bank risk (e.g., Longstaff et al., 2005; Curry et al., 2008; Balasubramnian and Cyree, 2011; Bennett et al., 2015; Cutura, 2021; Francis et al., 2019), less research has been undertaken on the efficacy of direct discipline to shape bank risk-taking. There is evidence that market participants are not able to influence managerial actions to reduce bank risk (Bliss and Flannery, 2002) unless they can influence bank behavior. Ashcraft (2008) provides evidence that bondholders are able to discipline banks when they have control over managers' behavior through restrictive covenants.[3] However, contractual features that are efficient ex-ante may imply inefficient outcomes in some states of the world and may increase default risk ex-post (Holmström and Myerson, 1983). Therefore, covenants are not widely included in debt contracts as they inflict costs not only on lenders but also on borrowers (Helwege et al., 2017). Consequently, borrowers are often willing to accept higher interest rates in return for looser covenants. Moreover, since the implementation of the first Basel Accord,

[2] The market might help to discipline banks through two mechanisms (Bliss and Flannery, 2002; Ashcraft, 2008). First, the market could reveal information about default risk that helps supervisors to correctly allocate supervision resources, or might keep supervisors from engaging in forbearance against problem banks (indirect market discipline). Second, market participants can also influence a bank's risk-taking behavior, for example by including covenants on debt issues or by recognizing franchise value in a bank's stock price (direct discipline). In this paper, we focus on direct market discipline.

[3] The result of Ashcraft (2008) is in line with the theoretical literature showing that debt covenants can reduce default risk ex-ante by better aligning the interests of shareholders and managers with those of bondholders and by prohibiting actions that might increase the likelihood of distress (Smith and Warner, 1979; Holmström and Myerson, 1983; Colonnello et al., 2021).

the use of debt covenants is even more limited for banks as a subordinated bond cannot have restrictive covenants to be counted as Tier 2 capital (Ashcraft, 2008).[4]

This paper investigates an alternative mechanism for bondholders to influence managerial decisions and limit excessive bank risk-taking: the inclusion of directors affiliated with bondholders (referred to as bondholder representatives from here on) on bank boards. To the best of our knowledge, it is the first paper to investigate whether the inclusion of bondholder representatives on the boards of banks is an effective market discipline device to limit bank risk. Our paper argues that if bondholders have affiliated directors on the bank's board of directors, they could exert influence as they can monitor and advise managers and ensure that the bank is managed in their interest. Moreover, having affiliated directors should provide private information about banks that might be more detailed, current, and forward-looking than infrequent financial information (Stearns and Mizruchi, 1993). Therefore, access to the boardroom should help alleviate information problems between bondholders and borrowing banks, thus improving the monitoring function of bondholders. Consequently, we expect that the discipline bondholders impose upon banks through these affiliated directors can limit excessive risk-taking that might lead to bank insolvency.

Bondholder discipline through board representation can only be effective if bank shareholders accept to appoint such directors affiliated with bondholders. We could expect shareholders to nominate directors affiliated with bondholders on boards if the benefits of their presence are likely to exceed associated costs. One of the principal costs would be that bondholders' risk aversion, which might help to reduce bank risk-taking, might also decrease profitability. However, bondholders frequently do not hold their bonds until maturity and therefore evaluate their investments more from a market-pricing perspective. Bondholders' incentives thus often parallel those of equity investors, as the valuation of both types of securities is linked to bank performance. Banks may furthermore benefit from bondholder representatives on their board through other avenues. Bondholders would have better access to proprietary information about banks, leading to more effective monitoring and a reduced cost of information collection by bondholders. As a consequence of more effective monitoring, banks might be able to issue more bonds with more favorable price terms. If the influence of

[4] Banks have to meet regulatory requirements in terms of capital. Regulatory capital is the sum of two elements: Tier 1 and Tier 2 capital. Tier 1 is going-concern capital. It absorbs losses immediately when they occur. It includes common stock, retained earnings, disclosed reserves, and non-redeemable non-cumulative preferred stock. Tier 2 capital is gone-concern capital. It absorbs losses, when a bank fails, before depositors and general creditors do. It includes undisclosed reserves, asset revaluation reserves and subordinated debt under certain conditions (Basel Committee on Banking Supervision, 2020).

bondholder representatives on bank boards helps to reduce excessive risk-taking that could result in bank insolvency with however a neutral effect on profitability, we can conclude that their inclusion contributes to mitigating the agency cost of debt without the negative impact on profitability observed with other market discipline mechanisms such as debt covenants (Kahan and Yermack, 1998).

Our paper also aims to determine if the effectiveness of market discipline applied by bondholders through their representation on the board of banks depends on the incentives and ability of bondholders and their representatives to monitor banks. Incentives of bondholders and their representatives to monitor bank risk could depend on several factors, such as the conflict of interest they might face, the amount of debt held by the bondholders, the time dimension of the relationship between bondholders and their representatives, the reputation directors want to build in the market for directorships, and the level of capitalization of banks. Furthermore, we investigate whether bondholder representatives' ability to limit excessive risk-taking depends on the complexity of banks and bondholder representatives' expertise in grasping this complexity.

Our analysis of these issues is based on a unique dataset of board ties between listed European financial institutions and their bondholders after the effective implementation of the Banking Recovery and Resolution Directive (BRRD) in 2016. Our analysis focuses on European banks because one of the objectives of the BRRD is to strengthen market discipline by implementing a bail-in tool that allows to write down debt owed by a bank to creditors or to convert it into equity (Fiordelisi et al., 2020). The fact that bailed-in bondholders suffered losses at several European banks (three Italian banks and Banco Popular in Spain) in 2017 established the credibility of the BRRD bail-in mechanism.[5] In this context, we could expect bondholders to have incentives to apply effective market discipline through their representation on the bank's board. Our final dataset includes 105 European banks (out of 155 banks listed on the stock market), for which we were able to collect data for 1381 directors and 82,503 bondholders for the year 2017.

Establishing causality between the influence of bondholder representatives and bank risk is particularly challenging due to the endogenous nature of board composition (e.g. Hermalin and Weisbach 1998; Adams et al. 2010). To do so, we propose a novel instrumental variable that builds on the work of Bernile et al. (2018), Bernstein et al. (2016), and Giroud (2013) by exploiting the number of direct scheduled airline flights from bank headquarters to the

[5] Cutura (2021) confirms that the BRRD's credibility diminished bail-out expectations, with European bank bonds carrying a 10 basis points bail-in premium in terms of the yield spread.

headquarters of firms included in a European benchmark index. The rationale for our instrument rests in the potential director supply argument of Knyazeva et al. (2013) and Bernile et al. (2018), that flight connectivity influences the number of available potential directors that the firm can look for. Using two-stage least squares (2SLS) regressions, we find that the influence of bondholder representatives on the board of banks significantly reduces all dimensions of bank risk considered without a decrease in profitability. Therefore, our study provides strong evidence that the influence of directors affiliated with bondholders on the banks' board is an effective market discipline mechanism to limit bank risk. Further investigations show that having bondholder representatives with either regulatory experience, current or long relationships with the bondholders they are affiliated with has a stronger impact on reducing individual bank risk. We also find that the influence of bondholder representatives on the board of banks has a more substantial effect on risk when banks display higher opacity levels, and for global systemically important banks (G-SIBs). On the other hand, we find that the influence of bondholder representatives has a lower impact for banks with lower capitalization levels in line with a "gambling for resurrection" effect. Additional investigations show that the influence of bondholder representatives on banks' boards also contributes to reducing systemic risk.

Our study complements the existing literature on the efficacy of bondholders' market discipline, being the first to consider bondholder representatives as a market discipline device to limit excessive firm risk-taking more generally. We focus on banking firms in particular, as avoiding excessive risk-taking by banks is particularly important for regulators/policymakers given the significant spillover effects of individual bank failures. Bank shareholders have strong incentives to favor 'excessively' risky investments, with potential losses largely shifted to debtholders, the deposit insurer, and taxpayers (Galai and Masulis, 1976; Jensen and Meckling, 1976; Merton, 1977). Our paper also contributes to the corporate governance literature for banks, highlighting the potentially important role of bondholder representatives in addressing the complex interplay of agency problems faced by the many stakeholders relevant to banks. Our study has, as a consequence, significant implications for regulators and corporate governance reform proponents evaluating the effectiveness of both market discipline and boards in controlling bank risk-taking. First, financial regulators are acutely aware that ever more complex and large banking organizations are increasingly challenging to monitor and control using the standard supervisory toolkit, and therefore look towards market disciplinary forces as a complement to the monitoring provided by supervisory agencies (Bliss and Flannery, 2002, 2019). Second, the failure of a variety of internal governance mechanisms has been highlighted as a significant contributing factor to the global financial crisis of 2008

(Kirkpatrick, 2009; Basel Committee on Banking Supervision, 2010). One of the recommendations of the Basel Committee on Banking Supervision (2015), OECD (2010), and European Union (2010) is that corporate governance of banks should have multi-faceted objectives of enhancing welfare, not only of shareholders but also of debtholders and regulators. Similarly, IMF (2014, p.7) suggests that "the potential merits (and possible unintentional consequences) of including representation for debtholders on bank boards should be studied".

The remainder of the paper is organized as follows. Section 2 describes our sample, explains how we identify bondholder representatives, and provides some descriptive statistics. Section 3 presents the methodology used to conduct our empirical investigation. Section 4 presents our results and further investigations and contains robustness checks, and Section 5 concludes the paper.

2. Sample and data description

2.1. Our sample

Our sample includes commercial banks and bank holding companies from 15 Western European countries[6] listed on the stock market. We only consider listed banks as most non-listed banks do not issue bonds; we also were unable to collect data on the board structure of non-listed banks (even examining annual reports). We initially identified all active bank holding companies and commercial banks listed on the stock market in 2017, resulting in 155 banks. Among these banks, we were able to assemble data on board directors from BoardEx for 105 banks (79 commercial banks and 26 bank holding companies); see Table A.1 in the online appendix for a breakdown by country. On average, our sample covers around 97% of banks' total assets of all listed banks covered by Bloomberg in 2017. We collect, bank by bank, all information available in Bloomberg on their bondholders for the year 2017 (Bloomberg provides only information on current bondholders, with no historical detail).[7] With board terms normally ranging from 3 to 4 years, the literature provides evidence that the board structure is relatively stable for a short period of analysis (Yermack, 2004; Crutchley et al., 2002). Similarly, we can assume that the list of bondholders is relatively stable over a short period. Of

[6] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. We do not consider Eastern European countries in our sample to have a sample of banks with access to similar well developed bond markets.

[7] Bloomberg provides information on the name and type of the different bondholders, the amount held and the average yield to maturity. However, we do not have the information on the maturity for all bonds. We also checked that this information is not provided by Datastream. Moreover, a very low number of bonds are associated with covenants. As explained in the introduction, the use of debt covenants is very limited for banks as a subordinated bond cannot have restrictive covenants to be counted as regulatory capital.

the bondholders that we identified in 2017 as having representatives on the board of our sample of banks, 90.15% were still bank bondholders in February 2020. Centering our panel analysis around the year 2017, we then conduct our empirical analysis using financial statement data for the period 2016-2018. We also test our results' robustness by conducting our empirical analysis using two alternative periods of financial statement data, 2017-2019 and 2015-2017 (see Section 4.9).

We collect financial statement and market data from Bloomberg and macroeconomic data from the World Bank. Financial data was winsorized at the 1% and 99% levels (our results are generally similar using non-winsorized data). The variables used in the empirical analysis are defined in Table A.2 in the online appendix.

2.2. Measures of relatedness of bondholder representatives

To identify the bondholder representatives on a bank's board, we need to determine if a director is affiliated with at least one bondholder. We first identify, for each bank, the list of bondholders for the year 2017 (82,503 bondholders in total). We find that 97.55 % of the bondholders are institutional investors, with investment banks, commercial banks, and non-banking financial institutions (including insurance and fund management companies) representing 45.35%, 10.71%, and 41.49% of the bondholders, respectively (see Table A.3 in the online appendix). Non-financial firms account only for 2.45% of bank bondholders in our sample.

We next collect data on biographies of board directors for our sample of banks (1381 board members). We use two criteria matching both biographical information of directors and bank bondholders to identify if a director is affiliated with at least one bondholder: (1) they are or were an employee of one of the bondholders; (2) they are or were on the board of directors of one of the bondholders. From our set of bondholder representatives, we observe that 36% are currently affiliated with a bondholder by being one of its employees or directors, while 64% were affiliated in the past. Among banks with bondholder representatives, the proportion of bondholder representatives currently affiliated with a bondholder is, on average, 6.64%, while the proportion of bondholder representatives affiliated in the past reaches, on average, 21.94% (Table 1). Considering directors affiliated with a bondholder not only in the present but also in the past is important to assess all connections. Past relationships are particularly relevant when the length of the relationship is high: long-term affiliation with an institution could create network ties and provide incentives for a director to defend the interests of that institution in the future. We observe that the average length of relationships in our sample is over ten years

for bondholder representatives with either past or current relationships, which suggests the existence of network ties (see Table 1).

We then first measure board representation of bondholders (*BondRepProp*) by considering the proportion of directors affiliated with a bondholder either currently or at some point in the past. Secondly, to allow for directors being more indirectly influenced by bondholders when the relatedness is already in the past, we also construct an index that captures the relatedness of bondholder representatives by assigning different weights if the relationship between a director and a bondholder is in the present or the past. Specifically, we compute individual scores to measure the strength of the relatedness between a director and a bondholder, assigning the score of zero, one, and two when a director is not affiliated, affiliated at some point in the past with a bondholder, or currently affiliated, respectively. An overall index to measure the influence of directors related to bondholders (*BondRepIndex*) on the board is computed at the bank level by taking the average of the "score of relatedness" of all directors. An index value of zero indicates that the board of directors is independent of bondholders.

[Insert Table 1]

2.3. Risk and performance measures

We consider several standard measures of bank risk and profitability. We consider two measures of insolvency risk: the logarithm of the traditional time-varying Z-score measure (*LnZscore*) and the distance to default (*DD*) using the methodology developed by Merton (1977). The Z-score is defined as $(\mu_{ROA,t} + car_t)/\sigma_{ROA,t}$, where $\mu_{ROA,t}$ and $\sigma_{ROA,t}$ are the 3-year rolling window mean and standard deviation of return on assets, respectively, and *car* is the equity to total assets ratio at date t. As the Z-score risk measure is highly skewed, we use its natural logarithm (Lepetit and Strobel, 2015). For the distance to default, we use 10-year government bond rates of each country for the risk-free rate (as one-year rates are not consistently available), and the volatility measure is constructed as the annual volatility of daily stock returns. Note that the higher the Z-score and the distance to default, the lower is default risk.

As additional bank risk measures, we also consider the standard deviation of the return on assets (*SDROA*), calculated using three-year rolling windows, and the bank stock return volatility (*Volatility*) over the preceding twelve months. We lastly use the return on assets (*ROA*) to measure bank profitability.[8]

[8] We obtain similar results when we measure bank profitability with the return on equity (ROE).

2.4. Descriptive statistics

We find that bondholder representatives are present on the board of directors of 66 banks, i.e., 62.85% of our sample of banks (see Table 1; Table A.1 presents the distribution of banks by country). These bondholder representatives, when present, account on average for four board members, who represent around 28% of board seats, while the amount of debt held by bondholders with representatives corresponds, on average, to 5.08% of total long-term market funding (see Table 1). These descriptive statistics show that the proportion of bondholder representatives is thus relatively high on average in our sample of European listed banks. Therefore, we provide evidence that banks' shareholders accept to appoint directors affiliated with bondholders. This indicates that the benefits of such inclusion are likely to exceed associated costs. In line with this argument, we provide evidence that the inclusion of bondholder representatives provides added value on several dimensions. In Table A.4 in the online appendix, we observe that banks with bondholder representatives have a higher proportion of their funding provided by bondholders (13.23%) than banks without bondholder representatives (10.73%). They can also issue a significantly higher amount of bonds (0.13% of total assets versus 0.06% of total assets for banks without bondholder representatives) and at a lower spread (0.91% vs. 1.16%).

Banks with bondholder representatives are also larger, have lower equity and bank loans ratios, and have a lower degree of opacity than banks without bondholder representatives. Banks with bondholder representatives have more directors on their boards, with 14 board members on average against 11 for banks without bondholder representatives (see Table A.4). A larger number of banks with bondholder representatives has a two-tier board structure;[9] this is in line with the argument that a two-tier system provides more possibilities to add representatives of additional stakeholders, as the management board and supervisory boards are different (Solomon, 2013). We further find that 67.03% of our bondholder representatives are affiliated with a bondholder by being currently or in the past an employee of one of the bondholders, while 32.97% are or were on the board of directors of one of the bondholders.

[9] While the one-tier board of directors has a single body of directors that includes both executive and non-executive directors and makes strategic decisions, the two-tier board of directors is a system in which a firm has two distinct boards of directors, a management and a supervisory board. The management board is comprised of executive directors only and makes decisions related to the operational and tactical direction of the firm. The supervisory board consists exclusively of non-executive directors and makes decisions about long-term strategy. The supervisory board is responsible for the hiring and firing of the management board.

3. Methodology

3.1. Baseline specification

The econometric specification we use to examine whether the influence of bondholder representatives within bank boards has an impact on their risk and performance is as follows:

$$Y_{i,t} = \alpha_0 + \beta BondRep_i + \sum_p \delta_p BoardControls_{i,t} + \sum_m \theta_m BankControls_{i,t} + \sum_n \gamma_n CountryControls_{j,t} + \varepsilon_{i,j,t} \quad (1)$$

where subscript *i* denotes bank, *j* denotes the country, *t* the time period, and $\varepsilon_{i,j,t}$ is the idiosyncratic error term. $Y_{i,t}$ is the dependent variable that alternatively stands for: bank risk as measured by the logarithm of the Z-score (*LnZscore),* the distance to default (*DD*), the standard deviation of ROA (*SDROA*) or the bank's stock return volatility (*Volatility*), and bank profitability as proxied by the return on assets (*ROA*).

BondRep is the independent variable of interest that measures the board representation of bondholders. We alternatively consider the index *BondRepIndex* measuring the relatedness of bondholder representatives, and the proportion of bondholder representatives on the board *BondRepProp*. We expect the coefficient associated with *BondRepIndex* and *BondRepProp* to be significant and positive for the two default risk measures (*LnZscore* and *DD*) and negative for the standard deviation of ROA (*SDROA*) and the stock return volatility (*Volatility*) to be in line with the hypothesis that bondholders can exert effective market discipline through their representatives. Furthermore, we should find a non-significant relationship between *BondRepIndex* and *BondRepProp* and ROA if the influence of bondholder representatives does not reduce bank profitability.

We control for other board characteristics ($BoardControl_{i,t}$) commonly used in the literature, i.e. board size (*BoardSize*), board tier structure (*OneTierBoard*) and financial expertise of board members (*FinancialExpert*). In line with Güner et al. (2008) and Minton et al. (2014), we consider directors to have financial expertise if they have past or current employment experience in accounting or non-accounting financial activities. The existing literature that examines the impact of board expertise on firm risk and performance provides mixed results, with either a positive or a negative association between board expertise and firm value/performance/risk (Meng and Tian, 2020). We also control at the bank level ($BankControls_{i,t}$) for bank size, growth of assets, loan ratio, capital structure, deposit ratio, operating expenses ratio, and an index measuring bank opacity. We furthermore include the following country-level variables ($CountryControls_{j,t}$): the growth rate of GDP (*GDP*) and two

indices measuring the strength of supervision (*Supervision*) and the level of creditor rights (*CreditorRights*). All control variables are defined in Table A.2 in the online appendix with corresponding descriptive statistics. Table A.5 in the online appendix shows the correlation coefficients and collinearity diagnostics between our variables of interest (see Panel A). We ensure the absence of multicollinearity problems by computing the variance inflation factors (VIF), which have a mean value of 1.09 with a maximum of 2.99 (see Table A.5 Panel B).[10]

We have centered our panel analysis around the year 2017 and estimate all regressions over the period 2016-2018 using financial statement data for that period. We use country random-effects to control for possible within-country correlations that could bias our analysis. The country random-effects specification, which is commonly used in the literature when the temporal dimension of the main variable of interest is restricted (Dahya et al., 2008, Durnev and Kim, 2005, La Porta et al., 2002, Claessens et al., 2002), explicitly allows for correlated errors among the observations within a country and produces consistent standard errors. This specification is supported by the Breusch and Pagan (1980) Lagrange multiplier test, which rejects the null hypothesis that errors are independent within countries for all risk regressions. For the profitability regression, the Breusch and Pagan (1980) Lagrange multiplier test does not reject the null hypothesis that errors are independent within countries; the Hausman test indicates the presence of country fixed effects. Nevertheless, we also estimate this regression using country random effects, as such a specification has been shown to be preferable to a fixed-effects one when a sample consists only of a subsample of the total population of countries, as in our case (Greene, 1997, Claessens et al., 2002, Durnev and Kim, 2005), and as two country-level independent variables are time-invariant preventing the use of country-fixed effects. As a robustness check, we re-estimate all regressions with country fixed effects by removing time-invariant country-level variables (see Section 4.9).

3.2. Endogeneity issues and estimation methodology

To identify the causal effect of the presence of bondholder representatives on bank risk and profitability, we have to assume that our variable of interest (*BondRep*) is exogenous and uncorrelated with the error term. However, this may not be the case. The potential problem of endogeneity with key firm variables is a major concern of studies on corporate governance.

[10] The coefficient of correlation between the size and the two variables that measure the board representation of bondholders is greater than 0.6. Even if the VIF indicates that we do not have a collinearity problem between these variables, we test the robustness of our results by replacing the size variable by a dummy variable taking the value of one if the bank is systemically important. Our results are unchanged (see Section 4.9).

More generally, previous studies such as Hermalin and Weibach (1998, 2003) have raised this issue regarding the composition of the board of directors.

To address potential endogeneity issues caused by omitted variable bias, we use bank-level controls including board of directors' characteristics, country-level controls, and country random effects that account for unobserved country-specific factors that might be correlated with bank risk and performance. In addition, we deal with the problem of endogeneity by adopting an instrumental variable approach. To address the potential endogeneity issue between bank risk/profitability and the variable that measures the board representation of bondholders, we estimate an instrumental variable (IV) model using two-stage least squares instrumental variable regression. While finding valid instruments is challenging, the literature suggests that board composition can be adequately instrumented by the number of direct flights to and from a firm headquarter's city, by influencing the number of available potential directors that the firm can look for (Bernile et al., 2018; Bernstein et al., 2016; Giroud, 2013). Our analysis uses an alternative director supply-based instrumental variable approach to address potential exogenous variation in board composition. In particular, we instrument the variable measuring the influence of bondholder representatives within bank boards by the number of direct scheduled airline flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index. We focus on flight rather than train connections, as while for shorter distances train travel might be a viable alternative for business travelers in Europe (e.g., by train/plane, London-Paris is 2h30/1h30, London-Amsterdam is 4h/1h30), this becomes infeasible for longer distances (e.g., by train/plane, London-Zurich is 8h/1h45, London-Madrid is 22h30/2h30, London/Stockholm is 31h30/2h30).[11] We consider the S&P Europe 350 a useful benchmark index consisting of 350 leading companies trading in the 16 major developed European markets; it is market capitalization weighted and maintains a balanced country and industry sector representation.

The conceptual premise for the relevance of our IV is that the presence of more abundant travel opportunities increases the ease and thus the likelihood of being able to recruit directors from companies in the S&P Europe 350 index. We expect a negative relationship between the presence of bondholder representatives and the degree of flight connectivity from the bank headquarters to the headquarters of firms in the S&P Europe 350 index for the following reason. Whereas 97.55% of the debtholders of the banks in our sample are financial institutions, the latter make up only 15.5% of firms in the S&P Europe 350 index. A higher degree of flight

[11] We use the website of the SNCF (https://www.sncf.com/en) to estimate the time to go from one city to another.

connectivity with firms in the S&P Europe 350 index could facilitate the recruitment of directors affiliated with those firms. As most of the firms in the S&P Europe 350 index are not a debtholder of our sample of banks, assuming otherwise equal qualification levels of director candidates, we could therefore expect a higher degree of flight connectivity to decrease the likelihood of recruiting bondholder-related directors to the board. In line with this argument, we observe that only 12.5% of the bondholder representatives of our sample are working for or have worked for at least one firm in the S&P Europe 350 index, while around 47% of the directors not related to a bondholder are working for or have worked for at least one firm in the S&P Europe 350 index.

The first stage analysis of our instrumental variable approach explicitly tests this conjecture. Tables 2 and 3 report these results in column (1) when the board representation of bondholders is proxied by the index measuring the relatedness of bondholder representatives (*BondRepIndex*) or the proportion of bondholder representatives on the board (*BondRepProp*), respectively. We find a strong negative relationship between the IV and the two measures of relatedness of the board of directors to bondholders. This finding is consistent with our expectation that more flights from the bank headquarter to the headquarters of companies in the S&P Europe 350 index facilitate the recruitment of directors from these companies, thereby reducing the likelihood of having bondholder-related directors on the board. As we do not have the same number of observations on the dependent variables due to data availability, the first-stage analysis is specific to each second-stage regression. For brevity, we only report in Tables 2 and 3 the first stage analysis results for *LnZscore* as the dependent variable; similar results are obtained for the other dependent variables considered in the second stage.

In Tables 2 and 3, we provide, for each regression, the first stage F-statistic on the instrument and the p-value related to the Anderson canonical correlation LM statistic for the relevance of the instrument. We verified that all F-statistics are greater than ten and that we can reject the null of the Anderson canonical correlation LM test.

[Insert Tables 2 and 3]

4. Empirical results

We first examine whether the influence of bondholder representatives impacts bank risk and profitability, then investigate several factors related to the incentives and ability of bondholders and their representatives to monitor banks that could affect these relationships, and finally perform a range of further robustness checks.

4.1. Core results

Our instrumental variables approach's second stage regression results are reported in Tables 2 and 3 Panel A, columns (2) to (6). As a robustness test, we also report in Tables 2 and 3 Panel B the results when using non-instrumented estimations with country random effects.[12]

Results in Table 2 Panels A and B show that the influence of bondholder representatives within the board proxied by the relatedness index *BondRepIndex* significantly increases the distance to default and the Z-score, and decreases the stock return volatility and standard deviation of ROA. We observe a similar significant relationship between the proportion of bondholder representatives *BondRepProp* and our insolvency and bank risk measures (see Table 3 Panels A and B). Our results, therefore, show that the influence of bondholder representatives significantly decreases bank risk. We report in Table 3 the economic significance of the impact of the proportion of bondholder representatives on the insolvency and bank risk measures. For example, the coefficient estimate on the standard deviation of ROA in Table 3 Panel A Column (4) implies that a one standard deviation increase in the proportion of bondholder representatives decreases the average standard deviation of ROA by 0.87%, all else equal. A further interesting result is that this risk-reduction is not accompanied by a decrease in profitability, as reflected by the non-significant impact of the influence of bondholder representatives on ROA (Tables 2 and 3 Panels A and B).

Our results also show that the board size (*BoardSize*) decreases bank risk when significant. At the same time, the proportion of directors with financial expertise (*FinancialExpert*) significantly increases bank risk. The latter result is in line with those of Minton et al. (2014), showing there is a "dark side" to financial expertise, as expert board members may be hired to increase risk-taking to boost the residual claims of shareholders.

Overall, our results show that the influence of bondholder representatives on bank boards is an effective market discipline mechanism to limit excessive risk-taking without damaging profitability. The influence of directors related to bondholders gives the latter an instrument to influence managers and ensure that the bank is managed in their interest. The fact that this market discipline leads to a decrease in insolvency risk and general bank risk reinforces its value in complementing bank supervision and ensuring banking stability. Moreover, the neutral effect on profitability makes the influence of bondholder representatives on banks' boards a

[12] We furthermore test the robustness of our results using country fixed effects with the Lewbel (2012) method that exploits information from the heteroscedastic structure of the data for improved identification. We also run our regressions over the periods 2015-2017 and 2017-2019 using alternatively 2SLS and non-instrumented estimations with country random effects. Our results remain unchanged (see Section 4.9).

particularly promising mechanism for reducing agency conflicts between shareholders and debtholders/regulators.

However, this general result might potentially conceal some disparities in the effectiveness of such a mechanism across banks. To investigate this further, we consider several factors related to the incentives and ability of bondholders and their representatives to monitor banks to capture better the impact of bondholder representatives' influence on banks' risk.

4.2. Competing interests

The effectiveness of the market discipline applied by bondholders through their representatives depends on their incentives to deter banks from taking excessive risks. We consider three situations where bondholder and their representatives could potentially have a conflict between competing duties.

First, the disciplinary role of bondholders and their representatives could be questioned if they are also bank shareholders. As shareholders, they can benefit from the outcome of a successful risky project, so they are more likely to encourage excessive risk-taking. Moreover, directors affiliated with both a bondholder and a shareholder conflict with the two competing duties, balancing the interests of these two stakeholders. We identify bondholder representatives who might have a competing interest by being related to a shareholder using the following criteria: (i) they are one of the shareholders of the bank (ii); they are affiliated with a bondholder who is also a shareholder of the bank; (iii) they are or were affiliated with a shareholder by being one of their employees or being on their board of directors. For this, we collected the list of direct shareholders for our sample of banks in 2017 (from BankFocus and Bloomberg), as well as (from BoardEx) data on biographies of their board directors. We find that, on average, around 51% of bondholder representatives have such a competing interest. We then create the dummy variable *DCompeting1* taking the value of one if, for a given bank, all bondholder representatives have a conflict of interest in their incentives to lobby for less risk-taking by being a shareholder or affiliated with a shareholder.

Second, bondholder representatives who are not independent of the company and its management board are also potentially in a conflict between competing duties. Conversely, independent directors should be more successful at constraining opportunistic behavior since they can monitor managers better (Fama and Jensen, 1983). We use the information provided by BoardEx to identify which directors are classified as independent (outside directors) for each bank. We then identify amongst the directors we classified as affiliated with a bondholder who is considered non-independent (inside directors); we find that, on average, around 54.23% of

bondholder representatives are independent. We further observe that 51.12% of bondholder representatives with past affiliations are independent against 68.80% for those with current affiliations. As a significant proportion of the bondholder representatives are classified as non-independent, we examine whether they have fewer incentives to discipline banks. We compute the dummy variable *DCompeting2*, which takes the value of one if, for a given bank, all bondholder representatives are considered non-independent directors.

Third, bondholders with representatives on a bank's board could have few incentives to discipline the bank through their representatives when the bank has, in turn, representatives on the board of the bondholder.[13] We identify twelve banks (among 105 banks) where bondholders have such an inverse relationship with the bank. We use the same criteria to identify bank representatives as those to identify bondholder representatives. For this, we collected data on biographies of the board of directors of the bondholders that have representatives on the banks' board (from BoardEx). We compute the dummy variable *DCompeting3* taking the value of one for these twelve banks having at least one representative on the board of one of their bondholders who have representatives on their board.

To examine if the results we found previously depend on the potentially competing interests of bondholders and their representatives, we then augment Equation (1) with an interaction term between the measure of relatedness of the board of directors to bondholders (*BondRepIndex* or *BondRepProp*) and alternatively the dummy variable *DCompeting1*, *DCompeting2* and *DCompeting3*, as follows:

$$Y_{i,t} = \alpha_0 + \beta_1 BondRep_i + \beta_2 BondRep_i \times DCompeting_i + \beta_3 DCompeting_i + \sum_p \delta_p BoardControls_{i,t} + \sum_m \theta_m BankControls_{i,t} + \sum_n \gamma_n CountryControls_{j,t} + \varepsilon_{i,j,t} \quad (2)$$

where *BondRep* stands for either the index *BondRepIndex* measuring the relatedness of bondholder representatives or the proportion of bondholder representatives on the board *BondRepProp*, and the variable *DCompeting* stands for either *DCompeting1*, *DCompeting2* or *DCompeting3*.

The estimation results for Equation (2) use the same 2SLS estimation methodology as for Equation (1). In the second stage, the model estimated values from stage one are used in place

[13] The information we have does not allow us to identify all possible inverse relationships between a bank and its bondholders with representatives, such as bond holdings or business ties.

of the actual value of the relatedness index of the board of directors to bondholders for both the non-interacted and interacted term. For brevity, we only report in Table 4 the second stage regression results when we consider the index of relatedness *BondRepIndex*. We obtain similar results when we alternatively consider the proportion of bondholder representatives; they are provided in Table A.6 in the online appendix.

Results in Table 4 Panel A (and in Table A.6 Panel A) show that the influence of directors affiliated with bondholders contributes to significantly reducing bank risk irrespective of whether those bondholder representatives have a conflict of interest in their incentives to lobby for less risk-taking by being a shareholder or affiliated with a shareholder. Results in Table 4 Panel B further show that the influence of bondholder representatives contributes to reducing bank risk significantly overall irrespective of whether those bondholder representatives are considered independent or not. Similarly, our results show that bondholder representatives' influence significantly reduces bank risk irrespective of whether banks have representatives on the board of their bondholders (Table 4 Panel C). Our results further show that the neutral effect on performance holds independently of the potentially competing interests of bondholder representatives.

Overall, our results show that the discipline exerted by bondholders through their representatives is effective in reducing bank risk and seems to be not conditional on the potential competing interests they might have.

[Insert Table 4]

4.3. Reputation in the market for directorships

Another important factor that may influence the incentives of bondholder representatives to monitor banks is their reputation in the market for directorships. Fama and Jensen (1983) argued that directors have incentives to monitor managers to strengthen their reputation for effective decision-making. In addition, a strong reputation could help obtain other board seats (Gilson, 1990; Kaplan and Reishus, 1990). Therefore, bondholder representatives might have more substantial incentives to monitor banks when they aim to get new board positions.

We identify for each bondholder representative if they obtain new board positions in other firms during the two years after we identified them as a bondholder representative. We then compute the dummy variable *DReputation* taking the value of one if at least one of the bondholder representatives has at least one new board position in other firms. Table A.2 in the online appendix shows that, on average, around 53% of banks have at least one of their bondholder representatives associated with new board positions.

We augment Equation (1) with an interaction term between the measure of relatedness of the board of directors to bondholders (*BondRepIndex* or *BondRepProp*) and the dummy variable *DReputation*. We report in Table 5 the results of the second stage regressions when we consider the index of relatedness *BondRepIndex*. Results in Table 5 show that our previous results of bondholder representatives being linked to lower bank risk hold independent of whether or not bondholder representatives are motivated to monitor banks to get new board positions. We find similar results when considering the proportion of bondholder representatives instead of the relatedness index (see Table A.7 in the online appendix). Also, our results again show that the neutral impact of the influence of bondholder representatives on ROA holds in all cases (see Tables 5 and A.7).

[Insert Table 5]

4.4. Debt amount held

The influence of bondholder representatives on bank risk could also depend on the amount of debt held by the bondholders they are affiliated with. We could expect bondholders with more significant debt amounts held to have stronger incentives to discipline banks through their representatives on the board. We compute three dummy variables based on the debt amount held by debtholders having bondholder representatives for each bank, which we normalized by the total long-term market funding. We first identify banks where debtholders with representatives hold a relatively large debt amount with the dummy variables *DHighDebtHeld1* and *DHighDebtHeld2,* taking the value of one if the debt amount held normalized by total long-term market funding is larger than the sample mean (5.08%) or the ninth decile (9.39%), respectively. We compute the dummy variable *DLowDebtHeld* that takes the value of one if debtholders with representatives hold less than the first decile (0.023%) to identify banks with debtholders with representatives who hold a relatively low amount of debt. We augment Equation (1) with an interaction term between the measure of the relatedness of the board of directors to bondholders (*BondRepIndex*) and, alternatively, the dummy variables *DHighDebtHeld1*, *DHighDebtHeld2*, and *DLowDebtHeld*.

The results displayed in Table 6, Panels A, B, and C show that the influence of debtholder representatives contributes to significantly reducing bank risk irrespective of the amount of debt held by the debtholders they are affiliated with. We find similar results when considering the proportion of bondholder representatives *BondRepProp* instead of the index of relatedness *BondRepIndex* (see Table A.8).

[Insert Table 6]

4.5. Time dimension of relationship

The incentives of bondholder representatives to discipline banks and represent the interest of the bondholders they are affiliated with could depend on the time dimension of their relationship, mainly if it is a current relationship or if they have established a long relationship.

The two proxies we used to measure the influence of bondholder representatives on bank boards, *BondRepIndex* and *BondRepProp,* have the advantage of considering directors affiliated with a bondholder not only in the present but also in the past. This is particularly relevant when the length of the relationship could create network ties. On the other hand, directors affiliated with a bondholder in the past might be more indirectly influenced by bondholders. We first examine whether the risk-reducing effect we observed when considering bondholder representatives with current and past relationships also holds for bondholder representatives with only a past relationship. Results in Table 7 Panel A show that the proportion of bondholder representatives with a past relationship (*BondRepPropPast*) is associated with a significant decrease in bank risk. The small proportion of bondholder representatives with a current relationship (see Table 1) does not allow for running Equation (1). We instead consider the potential advantage of a current relationship by interacting the index of relatedness (*BondRepIndex*) with a dummy variable (*DCurrent*), taking the value of one if at least one bondholder representative is currently affiliated with a bondholder. Around 33% of banks have at least one bondholder representative with a current relationship (see Table A.2. in the online Appendix). Results reported in Table 7 Panel B shows that the influence of bondholder representatives decreases insolvency risk and overall bank risk, with a more substantial effect for banks having at least one bondholder representative currently affiliated with a bondholder. Similar results are obtained using the proportion of bondholder representatives *BondRepProp* instead of the index of relatedness *BondRepIndex* (see Table A.9 Panel A).

Then, we consider the impact of the length of the relationship by constructing a dummy variable (*dHighLength*), taking the value of one if all bondholder representatives have a relationship of more than five years with the bondholder. Table A.2 shows that around 44% of banks have all their bondholder representatives with more than five years of relationship. As discussed above, both bondholder representatives with past and current relationships have, on average, a long relationship with the bondholders they are affiliated with, with a longer relationship for bondholder representatives with a current relationship (see Table 1). We augment Equation (1) with an interaction term between the relatedness index (*BondRepIndex*) and the dummy variable *dHighLength*. Results in Table 7 Panel C show that the influence of

bondholder representatives significantly reduces bank risk with a stronger impact for banks with bondholder representatives having a longer relationship with bondholders. This result indicates that the length of the relationship could create network ties leading to stronger market discipline. Again, we find similar results when considering the proportion of bondholder representatives *BondRepProp* instead of the index of relatedness *BondRepIndex* (see Table A.9 Panel B).

Overall, these results show that the discipline exerted by bondholders through their representatives contributes to reducing bank risk independently of the time dimension of their relationship, with, however, a larger risk-reducing effect for current and longer relationships.

[Insert Table 7]

4.6. Low levels of capitalization

Next, the incentives of bondholders to prevent excessive risk-taking behavior might also be influenced by the capital structure of banks. Banks that are weakly capitalized might not be able to absorb losses if some risks materialize. Consequently, incentives of bondholders, and indirectly those of their representatives, could be stronger to closely monitor such weakly capitalized banks to avoid excessive risk-taking decisions. On the other hand, the desire to monitor weakly capitalized banks might be reduced if bondholders prefer these banks to "gamble" for resurrection by adopting riskier strategies to increase the probability of recovering their funds (Gorton and Santomero, 1990; Calem and Rob, 1999; Rochet, 1992).

To examine this potential channel of impact, we augment Equation (1) with an interaction term between the relatedness index of the board of directors to bondholders (*BondRepIndex*) and the dummy variable *DLowEquity*, taking the value of one if a bank has a ratio of total equity to total assets lower than 5%.[14]

The results, displayed in Table 8 (and in Table A.10 in the online appendix for the proportion of bondholder representatives), show that bondholder representatives' influence significantly reduces bank risk with, however, a lower impact for banks with lower levels of capitalization. We continue to find that the influence of bondholder representatives does not significantly impact banks' profitability. Our findings show that bondholders, through their representatives, exert a significant discipline on banks to reduce their risk; however, weaker discipline is applied for banks with lower capitalization levels in line with the “gambling for resurrection” argument.

[14] There is no threshold used by the European Banking Authority to classify a bank as having a low level of capitalization. We therefore follow the definition of the FDIC (the Federal Deposit Insurance Corporation of the US) that a bank is not well capitalized if it has a leverage ratio lower than 5%.

[Insert Table 8]

4.7. Financial and regulatory experience

We next examine whether the significant effect of the influence of bondholder representatives on bank risk depends on their ability to grasp the complexity of financial operations. The ability of bondholder representatives to reduce excessive risk-taking that might lead to bank insolvency could rely on their expertise. We first follow the existing literature (Güner et al., 2008; Minton et al., 2014) and consider that among bondholder representatives, those with financial expertise could recognize risks with excessive downside and steer managers away from such risks. We consider that bondholder representatives have financial expertise if they have current or past employment experience in either accounting or non-accounting financial activities. As bank activities could be very complex, we next explore whether bondholder representatives with work experience in supervisory or regulatory authorities might further be able to identify excessive or damaging risks for the bank's financial stability. We consider that a director has regulatory experience if they have a position (present or past) in a supervisory/regulatory authority or a financial authority (such as finance ministry, stock exchange commission, money market authority, etc.). As directors are not authorized to work for a supervisory/regulatory authority or a financial authority as well as being on the board of a bank, most of the bondholder representatives with regulatory experience worked for a supervisory/regulatory authority or a financial authority in the past. Nevertheless, a small number of bondholder representatives (six) are currently working for such an authority, but in a different country to where they hold their board position.

We then compute the two following dummy variables: *DFinancialExp* takes the value of one if at least one bondholder representative has financial expertise, and *DRegulatoryExp* takes the value of one if at least one bondholder representative has regulatory experience. We observe that around 38% and 35% of banks have at least one bondholder representative with financial expertise and regulatory experience, respectively (see Table A.2 in the online appendix). Results obtained when we augment Equation (1) with an interaction term between the relatedness index of the board of directors to bondholders (*BondRepIndex*), and alternatively the dummy variables *DFinancialExp* and *DRegulatoryExp*, are presented in Table 9, panels A and B. Table A.11 in the online appendix reports the analogous results when we consider the proportion of bondholder representatives (*BondRepProp*).

Results in Table 9 Panel A (and in Tables A.11 panel A) show that the influence of bondholder representatives contributes to significantly decreased bank risk irrespective of

whether those bondholder representatives have financial expertise or not. This is particularly relevant in light of our previous results for Equation (1), where the control variable *FinancialExpert* on its own contributes to increased bank risk (see Tables 2 and 3). While directors with financial expertise could have incentives to increase risk-taking in line with the interests of shareholders, our results suggest that this is not the case for directors affiliated with bondholders.

Results in Table 9 Panel B (and in Tables A.11 panel B) further show that the influence of bondholder representatives decreases insolvency risk and overall bank risk, with however a more substantial effect for those having at least one bondholder representative with regulatory experience (see Tables 9 and A.11, panel B). These results are in line with the argument that regulatory experience helps bondholder representatives better recognize unsound risks related to financial stability.

Overall, our results show that the discipline exerted by bondholders through their representatives is effective in reducing bank risk and seems to be not conditional on the expertise they have. However, the discipline exerted by bondholders' representatives is stronger when they have regulatory experience. Therefore, our results suggest that, whereas regulatory experience of bondholder representatives is beneficial for financial stability, financial expertise is not.

[Insert Table 9]

4.8. Bank complexity

The complex and opaque nature of banking activities exacerbates information asymmetry problems and diminishes stakeholders' capacity to monitor banks' decisions (Furfine, 2001; Levine, 2004; Morgan, 2002; Becht et al., 2012; Laeven, 2013). Financial regulators are acutely aware that ever more complex and large banking organizations are increasingly challenging to monitor and control (Bliss and Flannery, 2002, 2019; Kaufman, 2015). The ability of directors to monitor insiders depends on the quality of information they can access (Hermalin and Weisbach, 2007; De Andres and Valledo, 2008). The influence of bondholder representatives on boards may thus be particularly beneficial in a context of high degrees of complexity; they have more specific information about the complexity of banks' activities and can better monitor bank risk efficiently.

We investigate if the relationship we found previously between the influence of bondholder representatives and bank risk could be explained by the degree of banks' complexity. First, we consider that global systemically important banks (G-SIBs) have higher levels of complexity.

We use the list of G-SIBs identified by the Financial Stability Board (FSB, 2017) to explore whether the impact of bondholder representatives on bank risk varies between banks depending on whether or not they figure in the list. We compute the dummy variable *DGSIB* that takes the value of one for the 12 banks of our sample in the list of global systemically important banks in 2017. Second, we consider that banks with a higher degree of opacity are also more complex to monitor. We follow Lepetit et al. (2017) and compute a composite index based on proxies that capture four components of opacity, i.e., earnings prediction errors, earning management, market funding, and lending activity. Incentives of bondholders, and indirectly those of their representatives, could be stronger to closely monitor such highly opaque and complex banks to avoid excessive risk-taking decisions. The variable *DHighOpacity* takes the value of one if a bank's opacity index is higher than the sample median.

We augment Equation (1) with an interaction term between the relatedness of the board of directors to bondholders and, alternatively, the dummy variable *DGSIB* and *DHighOpacity*. The issue of large, complex financial institutions has led to a re-examination of risk-assessment practices of the banking system, with a focus not only on individual bank risk but also on individual contributions to the risk of the banking system as a whole (Basel Committee on Banking Supervision, 2010; IMF, 2014). In this context, we examine whether the influence of bondholder representatives on the board of banks affects systemic risk. For this, we consider two commonly used measures of systemic risk. The first, Marginal Expected Shortfall (*MES*), introduced by Acharya et al. (2017) and Brownlees and Engle (2017), is defined as the marginal contribution of a bank to systemic risk as measured by the Expected Shortfall of the financial system. The second measure, Delta-CoVaR (*DCoVar*), introduced by Adrian and Brunnermeier (2016), corresponds to the Value at Risk of the financial system obtained conditionally on a specific event affecting a given bank.[15]

Table 10 Panel A (and Table A.12 Panel A in the online appendix) shows that the influence of bondholder representatives is associated with lower individual and systemic risk. We furthermore find that bondholders apply, through their representatives, a stronger discipline on banks in the list of global systemically important banks (G-SIBs). Table 10 Panel B (and Table A.12 Panel B) further provides evidence that the influence of bondholder representatives contributes to significantly reducing both individual and systemic risk, with a stronger impact

[15] To compute the *MES*, we follow Brownlees and Engle (2017) and implement a GARCH-DCC model, using a coefficient α of 5% and setting the threshold C equal to a fixed 2% market drop. Rather than estimating *DCoVaR* with a quantile regression, as proposed by Adrian & Brunnermeier (2016), we follow Benoit et al. (2014, Appendix F) and similarly implement a GARCH-DCC model for consistency. Our regressions use the respective Q4-averages of the daily measures computed.

on risk for banks with higher degrees of opacity. These results indicate that bondholders, through their representatives, apply a stronger discipline on banks with higher degrees of complexity. We furthermore find that the neutral impact of the influence of bondholder representatives on ROA continues to hold in all cases.

[Insert Table 10]

4.9. Robustness tests

We carry out several additional robustness checks on our empirical results.[16]

Alternative methods of estimation

We first re-estimate all regressions with country fixed effects instead of country random effects, using the Lewbel (2012) method that exploits information from the heteroscedastic structure of the data for improved identification. In particular, the alternative identification approach introduced by Lewbel (2012) generates additional instruments using heteroscedasticity in the error structure of the first stage IV regression to complement our existing external instrument (*DirectFlightsHeadQ*). As Baum and Lewbel (2019) highlighted, this approach can improve the efficiency of the IV estimator and, given the resulting overidentification, allow further specification tests, such as the Sargan-Hansen test, to simultaneously test the validity of both our external instrument and the constructed (internal) ones. To operationalize the fixed effects specification, we remove time-invariant country-level independent variables, including supervision and creditor rights. Table A.13 in the online appendix reports the results of Equation (1); the additional specification tests made possible by using the Lewbel (2012) method (reported as Hansen J statistic and C statistic) confirm the validity of all instruments, as well as of our external instrument (*DirectFlightsHeadQ*) in particular. Although the magnitudes and confidence levels of estimated effects of the bondholder relatedness index (*BondRepIndex*) on bank risk are slightly changed, our main results continue to hold throughout.

We next run our regressions for two alternative time periods. We collected data on bondholder representatives for the year 2017. With board terms ranging from 3 to 4 years, we

[16] We only include in the online appendix the estimation results for the core regressions (Section 4.1.) and when we consider the index of relatedness of bondholder representatives (*BondRepIndex*). Estimation results conducted to check the robustness of the results when using the proportion of bondholder representatives (*BondRepProp*) lead to similar results and are not included in the online appendix; they are available upon request. For brevity, we also do not include the estimation results conducted to check the robustness of the results presented in Sections 4.2. to 4.8.; they are also available upon request.

conducted our empirical analysis using financial statement data for the period 2016-2018. We test the robustness of our results by running our regressions using financial statement data for the alternative periods 2015-2017 and 2017-2019 instead of 2016-2018 using alternatively 2SLS and non-instrumented estimations with country random effects. Results, reported in Tables A.14 Panels A and B and A.15 Panels A and B in the online appendix, show that our conclusions remain unchanged.

Alternative characterizations of bondholders' board representation

In our main analysis, we use the bondholder representative index (*BondRepIndex*) and the proportion of bondholder representatives (*BondRepProp*) to conduct our investigation. For robustness, we use a dummy variable taking the value of one if at least one bondholder representative is present on the board of a bank (*DBondRep*). Table A.16 in the online appendix reports the results when we reexamine our Equation (1) with this alternative measure. We find that our main conclusions are unchanged: bondholder representatives within the board significantly reduce bank risk and have no significant impact on profitability.

We also examine if there is a critical mass effect for bondholder representatives to make a difference. The critical mass theory demonstrates that if the number of directors with the same orientation on a board is too small, problems of tokenism arise (hypervisibility, stereotyping, exclusion) (Kanter, 1977). More specifically, it shows that at least three directors must have the same orientation on a board before they make a difference; otherwise, they can be considered tokens (Konrad et al., 2008; Torchia et al., 2011). We test the critical mass argument by estimating an expanded version of our Equation (1), where we include an interaction term between the relatedness index of the board of directors to bondholders (*BondRepIndex*) and the dummy variable *DCriticalMass* taking the value of one for banks having at least three bondholder representatives. Results are reported in Table A.17 and show that the influence of bondholder representatives is associated with lower bank risk with, however, a more substantial impact on risk for banks with at least three bondholder representatives on their board.

Other controlling variables

We explore whether our results are sensitive to controlling for other board characteristics and ownership structure features of banks that could potentially affect the oversight of risk by the board of directors. In particular, we re-run our regressions including (i) the proportion of independent directors (*PropIndependent*); (ii) the proportion of directors having regulatory experience (*PropRegulatoryExp*); (iii) a dummy variable taking the value of one if at least one

shareholder holds more than 20% of shares (*DControllingSH*), to allow for shareholders with decision power. Table A.18 in the online appendix reports the results when we reexamine our Equation (1) with these three additional control variables; we find that our main conclusions are unchanged. We do not find evidence that the presence of independent directors or a shareholder with controlling power impacts bank risk-taking. Our results also do not show that directors with regulatory experience impact bank risk-taking behavior. This result, combined with the previous findings in Section 4.7. (see Tables 9 and A.11), provides evidence that regulatory experience of directors is not sufficient to reduce bank risk. Such directors also have to be affiliated with bondholders with incentives to exert, through their representatives, significant discipline on banks to reduce bank risk.

We also check that our results do not change when we consider another variable than the total assets of the bank to control for any size effects. Even if the VIF indicates that we do not have a collinearity problem between the variable *Size* and the two variables that measure the board representation of bondholders, we have a coefficient of correlation greater than 0.6. We, therefore, alternatively control for the size effect by including the dummy variable *DGSIB,* which takes the value of one if the bank is systemically important. Table A.19 in the online appendix shows that our results are unchanged.

6. Conclusion

This paper aims to examine whether the influence of bondholder representatives on banks' board of directors is an effective market discipline mechanism to reduce bank risk. For this, we use a unique dataset that brings together information on bondholders and boards of directors of European listed banks. We exploit flight connectivity between bank headquarters to the headquarters of S&P Europe 350 firms to allow for endogeneity issues related to banking risk and board composition.

Our results show that bondholders can exert direct market discipline through affiliated directors by reducing bank risk without damaging profitability. Therefore, these results provide strong evidence that the influence of affiliated directors on a bank board provides bondholders an opportunity to influence managers and ensure that the bank acts in their interest.

Further investigations show that the impact of bondholder representatives on bank risk is not conditional on the potential competing interests they might have, their reputation in the market for directorships, their financial expertise, or the amount of debt held by the bondholders they are affiliated with. On the other hand, our results show that the discipline exerted by bondholders through their representatives is stronger when these representatives have

regulatory experience and when they have current or long relationships with the bondholders they are affiliated with. Therefore, our findings suggest that, whereas the relationship length and the bondholder representatives' regulatory experience is beneficial for financial stability, financial expertise is not. We also find that the influence of bondholder representatives has a more substantial impact on risk for banks with higher degrees of opacity and G-SIBs. Our results show that bondholder representatives' influence also reduces systemic risk, with again a stronger impact for G-SIBs and banks with higher degrees of opacity. On the other hand, we find that the influence of bondholder representatives has a lower impact on risk for banks with lower capitalization levels, in line with a "gamble for resurrection" effect.

Our findings generate several important policy implications. First, our results support the view that the market discipline exerted by bondholders can strengthen financial stability and be a valuable complement to safety-and-soundness supervision by bank regulators. In particular, our results reinforce the importance of Pillar 3 of the Basel 2 and 3 accords, which promotes market discipline to complement supervisory discipline. Our results also indicate that the beneficial effect of this market discipline mechanism is likely to be stronger for banks with higher degrees of complexity and when bondholder representatives have regulatory experience, current or long relationships with the bondholders they are affiliated with.

Second, our findings contribute to the current policy debate on what forms of corporate governance in banks could lead to the most efficient outcome for stakeholders regarding financial stability. Corporate Governance Codes worldwide tend to be similar for nonfinancial and financial firms. However, banks are different from nonfinancial firms due to their specific regulation, capital structure, their inherent complexity and opacity, and the fact that the interests of shareholders of financial firms and those of their debtholders and regulators often diverge. As corporate governance traditionally focuses only on the interests of shareholders, it essentially abstracts from these features. This state of affairs can explain why the proposals drawn up by the Basel Committee (2010, 2015), OECD (2010), and the European Union (2010) recommend that corporate governance of banks should be different from that of nonfinancial firms, with the twin objectives of not only enhancing the welfare of shareholders but also of debtholders and regulators. IMF (2014) suggests that board representation for creditors could improve their monitoring but that the consequences of such a recommendation would have to be thoroughly analyzed before being implemented. We provide evidence that recommending the inclusion of bondholder representatives on bank boards could be one way to reduce excessive bank risk-taking. Therefore, the presence of bondholder representatives could allow

for bank board structures that more adequately represent bondholders' interests, leading to better alignment with regulators' objectives as a consequence.

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Table 1. Descriptive statistics on bondholder representatives and bondholders with representatives

	Mean	Standard deviation	Min.	Max.
Banks with at least one bondholder representative (%)	62.85	-	-	-
Debt amount held by bondholders with representatives (normalized by total long-term market funding) (%)	5.08	11.95	0	57.39
Number of directors (among banks with at least one bondholder representative)	14.27	4.73	7	32
Number of bondholder representatives (among banks with at least one bondholder representative)	4	2.50	1	11
Proportion of bondholder representatives (among banks with at least one representative) (%)	28.58	15.65	5.55	84.61
- Current relationship	6.64	7.47	0	28.57
- Past relationship	21.94	12.32	0	69.23
Length of the relationship between bondholder representatives and bondholders (years)	12.7	8.45	1	37
- With current relationship	18.52	6.94	4	32
- With past relationship	11.49	8.24	1	37

This table displays statistics on the proportion of banks having at least one bondholder representative on their board of directors, the debt amount held by bondholders with representatives normalized by total long-term funding, the total number of directors on the board, and the number of bondholder representatives among banks with at least one bondholder representative. We also provide the proportion of bondholder representatives with current or past affiliations, and the length of the relationship (years) between bondholder representatives and the bondholders they are affiliated with by distinguishing current and past affiliations.

Table 2. Influence of bondholder representatives and bank risk & performance, using the relatedness index

Panel A. 2SLS estimations, with country random effects

	BondRepIndex	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	1st Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage
BondRepIndex		2.437***	2.551**	-1.551***	-13.28**	-0.939
		(2.92)	(2.05)	(-3.03)	(-2.01)	(-1.60)
DirectFlightsHeadQ	-0.00904***					
	(-5.83)					
Size	0.105***	-0.252***	-0.520***	0.132**	2.319***	0.110
	(8.75)	(-2.67)	(-3.74)	(2.28)	(3.15)	(1.63)
GrowthTA	-0.00220	0.00680	-0.0107	0.00307	-0.0736	0.00900
	(-1.23)	(0.76)	(-0.84)	(0.56)	(-1.02)	(1.46)
Equity	-0.0172***	0.0152	0.0360	0.0259	0.0680	0.130***
	(-3.45)	(0.56)	(0.88)	(1.56)	(0.27)	(6.49)
Loan	-0.000535	0.00862**	0.00711	0.00190	-0.0119	-0.00453
	(-0.65)	(2.18)	(1.22)	(0.78)	(-0.35)	(-1.56)
Deposit	-0.000806	-0.000437	0.00269	0.00119	0.0225	0.00166
	(-0.82)	(-0.09)	(0.38)	(0.40)	(0.56)	(0.46)
Operating	-0.00378	0.0292**	0.0251	-0.0117	-0.471***	-0.0316***
	(-1.43)	(2.17)	(1.31)	(-1.42)	(-4.05)	(-3.25)
Opacity	-0.00441	-0.266***	-1.137***	0.0627	6.310***	-0.338***
	(-0.34)	(-4.17)	(-11.71)	(1.60)	(11.38)	(-2.94)
BoardSize	-0.0208	-0.0867	1.354***	-0.262*	-3.143	-0.584***
	(-0.44)	(-0.38)	(3.99)	(-1.86)	(-1.62)	(-3.44)
OneTierBoard	-0.211***	0.392	-0.0116	-0.163	-0.0251	-0.380**
	(-5.93)	(1.63)	(-0.03)	(-1.11)	(-0.01)	(-2.24)
FinancialExpert	0.00501***	-0.0141***	-0.0164**	0.00832***	0.110***	0.00346
	(7.31)	(-3.10)	(-2.51)	(2.98)	(3.14)	(1.08)
GDP	0.0528**	0.410***	0.470**	-0.187**	-3.451***	0.0441
	(2.05)	(3.16)	(2.45)	(-2.35)	(-3.09)	(0.46)
Supervision	-0.000202	-0.00543	-0.0315	-0.0193	0.559*	-0.0627**
	(-0.03)	(-0.15)	(-0.60)	(-0.88)	(1.89)	(-2.39)
CreditorRights	-0.0267*	-0.255***	-0.0406	0.140***	0.0293	0.0863
	(-1.71)	(-3.31)	(-0.36)	(2.96)	(0.05)	(1.54)
Country Random Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	309	302	309	305	315
IV F-stat	-	33.97	31.87	33.97	37.16	38.77
Anderson LM statistic p-val	-	<0.01	<0.01	<0.01	<0.01	<0.01

This table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables. All variables are as defined in Table A.2 in the online appendix. Column (1) reports 1st stage IV regression for *LnZscore* as dependent variable in the second stage; similar results are obtained for the other dependent variables considered in the second stage. Columns (2) to (6) report 2nd stage IV regression estimates obtained when the bondholder relatedness index (*BondRepIndex*) is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index (*DirectFlightsHeadQ*). The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels. Two identification test statistics are used. The first-stage F-statistic (IV F-statistic) tests if instruments are weak; if the IV F-statistic is smaller than 10, the instrument is weak. The Anderson canonical correlation LM statistic tests for underidentification, under the null hypothesis that excluded instruments are irrelevant.

Table 2. Influence of bondholder representatives and bank risk & performance, using the relatedness index

Panel B. Non-instrumented estimations, with country random effects

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
BondRepIndex	0.638***	0.719**	-0.0960**	-4.296**	-0.205
	(2.58)	(2.05)	(-2.22)	(-1.97)	(-1.10)
Size	-0.0897	-0.352***	0.00528	1.453***	0.0156
	(-1.58)	(-4.56)	(0.51)	(2.95)	(0.36)
GrowthTA	0.00199	-0.0192*	-0.00293**	-0.0504	0.0123**
	(0.25)	(-1.93)	(-1.97)	(-0.77)	(2.13)
Equity	-0.0114	0.0367	0.0148***	0.232	0.149***
	(-0.51)	(1.18)	(3.61)	(1.14)	(8.44)
Loan	0.00911**	0.00869*	0.000248	-0.0136	-0.00572**
	(2.50)	(1.79)	(0.38)	(-0.43)	(-2.08)
Deposit	-0.00217	0.00707	0.00236***	0.0200	0.00224
	(-0.49)	(1.18)	(3.08)	(0.52)	(0.68)
Operating	0.0208*	0.110	-0.00119	-0.377***	-0.0301***
	(1.74)	(0.56)	(-0.54)	(-3.27)	(-3.36)
Opacity	-0.284***	-1.213***	0.0551***	6.622***	-0.140***
	(-4.88)	(-15.80)	(5.32)	(12.48)	(-3.15)
BoardSize	-0.0928	1.618***	0.0943**	-3.115*	-0.633***
	(-0.44)	(5.54)	(2.40)	(-1.68)	(-3.90)
OneTierBoard	0.0321	-0.401*	0.00101	1.934	-0.115
	(0.19)	(-1.83)	(0.03)	(1.35)	(-0.92)
FinancialExpert	-0.00711**	-0.00812**	0.00220***	0.0815***	0.00181
	(-2.30)	(-2.06)	(3.97)	(3.17)	(0.80)
GDP	0.485***	0.772***	-0.0982***	-3.893***	-0.0124
	(4.20)	(4.96)	(-4.85)	(-3.72)	(-0.14)
Supervision	-0.00961	0.00885	0.00176	0.574**	-0.0541**
	(-0.29)	(0.21)	(0.30)	(2.01)	(-2.18)
CreditorRights	-0.287***	-0.0520	0.00720	0.351	0.119**
	(-4.11)	(-0.57)	(0.57)	(0.59)	(2.30)
Country Random Effect	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315

This table reports non-instrumented estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables. All variables are as defined in Table A.2 in the online appendix. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 3. Influence of bondholder representatives and bank risk & performance, using the proportion of bondholder representatives

Panel A. 2SLS estimations, with country random effects

	BondRepProp	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	1st Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage
BondRepProp		0.0550***	0.0532**	-0.0350***	-0.324**	-0.0209
		(2.86)	(2.00)	(-3.00)	(-2.13)	(-1.59)
Economic Significance		0,76	0,42	-0.87	-0.33	
DirectFlightsHeadQ	-0.401***					
	(-5.27)					
Size	4.368***	-0.237**	-0.547***	0.122**	2.394***	0.108
	(7.45)	(-2.57)	(-4.08)	(2.19)	(3.24)	(1.61)
GrowthTA	-0.168*	0.0107	-0.00410	0.000610	-0.137*	0.00685
	(-1.92)	(1.12)	(-0.30)	(0.11)	(-1.67)	(1.02)
Equity	-0.512**	0.00151	0.0174	0.0346**	0.129	0.137***
	(-2.10)	(0.06)	(0.47)	(2.21)	(0.56)	(7.30)
Loan	-0.0505	0.0101**	0.00849	0.000960	-0.0168	-0.00524*
	(-1.25)	(2.50)	(1.50)	(0.39)	(-0.50)	(-1.78)
Deposit	-0.0636	0.00110	0.00260	0.000210	0.0225	0.00107
	(-1.32)	(0.22)	(0.37)	(0.07)	(0.54)	(0.29)
Operating	-0.143	0.0278**	0.0205	-0.0109	-0.460***	-0.0308***
	(-1.10)	(2.04)	(1.12)	(-1.32)	(-3.94)	(-3.19)
Opacity	-0.518	-0.248***	-1.126***	0.0515	6.401***	-0.321***
	(-0.81)	(-3.75)	(-11.80)	(1.28)	(11.26)	(-2.83)
BoardSize	-1.699	-0.0441	1.489***	-0.289**	-3.122	-0.611***
	(-0.73)	(-0.19)	(4.46)	(-2.03)	(-1.59)	(-3.56)
OneTierBoard	-5.183***	0.163	-0.261	-0.0175	0.916	-0.302**
	(-2.97)	(0.82)	(-0.97)	(-0.15)	(0.56)	(-2.12)
FinancialExpert	0.265***	-0.0165***	-0.0163**	0.00984***	0.121***	0.00397
	(7.90)	(-3.13)	(-2.41)	(3.08)	(3.07)	(1.15)
GDP	0.755	0.497***	0.653***	-0.242***	-3.999***	0.0137
	(0.60)	(3.90)	(3.65)	(-3.13)	(-3.65)	(0.15)
Supervision	-0.628*	0.0286	0.0173	-0.0410*	0.349	-0.0744***
	(-1.75)	(0.74)	(0.33)	(-1.74)	(1.10)	(-2.70)
CreditorRights	0.773	-0.363***	-0.150	0.208***	0.533	0.120**
	(1.01)	(-4.51)	(-1.37)	(4.27)	(0.83)	(2.14)
Country Random Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	309	302	309	305	315
IV F-stat	-	27.72	29.09	27.72	29.08	31.85
Anderson LM statistic p-val	-	<0.01	<0.01	<0.01	<0.01	<0.01

This table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*) and control variables. All variables are as defined in Table A.2 in the online appendix. Column (1) reports 1st stage IV regression for *LnZscore* as dependent variable in the second stage; similar results are obtained for the other dependent variables considered in the second stage. Columns (2) to (6) report 2nd stage IV regression estimates obtained when the proportion of bondholder representatives (*BondRepProp*) is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index (*DirectFlightsHeadQ*). The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels. Two identification test statistics are used. The first-stage F-statistic (IV F-statistic) tests if instruments are weak; if the IV F-statistic is smaller than 10, the instrument is weak. The Anderson canonical correlation LM statistic tests for underidentification, under the null hypothesis that excluded instruments are irrelevant.

Table 3. Influence of bondholder representatives and bank risk & performance, using the proportion of bondholder representatives

Panel B. Non-instrumented estimations, with country random effects

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
BondRepProp	0.0133***	0.0119**	-0.00221**	-0.141**	-0.00584
	(2.60)	(2.00)	(-2.48)	(-2.26)	(-1.53)
Economic Significance	0.18	0.09	-0.06	-0.14	
Size	-0.0817	-0.253***	0.00424	0.627	0.0195
	(-1.47)	(-3.92)	(0.42)	(0.91)	(0.47)
GrowthTA	0.00279	-0.00524	-0.00309**	-0.235**	0.0115**
	(0.35)	(-0.58)	(-2.08)	(-2.49)	(1.99)
Equity	-0.0154	0.000398	0.0152***	0.289	0.149***
	(-0.69)	(0.02)	(3.74)	(1.05)	(8.59)
Loan	0.00948***	0.00791*	0.000209	-0.0104	-0.00590**
	(2.60)	(1.85)	(0.32)	(-0.23)	(-2.15)
Deposit	-0.00184	0.00241	0.00230***	-0.0234	0.00204
	(-0.42)	(0.45)	(3.01)	(-0.43)	(0.62)
Operating	0.0202*	-0.122	-0.00118	0.0515	-0.0303***
	(1.70)	(-0.69)	(-0.54)	(0.36)	(-3.39)
Opacity	-0.281***	-0.987***	0.0543***	7.257***	-0.142***
	(-4.81)	(-13.57)	(5.25)	(10.08)	(-3.20)
BoardSize	-0.0827	0.931***	0.0944**	-1.463	-0.638***
	(-0.39)	(3.59)	(2.41)	(-0.56)	(-3.94)
OneTierBoard	-0.0332	-0.187	0.0115	4.175**	-0.103
	(-0.21)	(-1.00)	(0.40)	(2.13)	(-0.85)
FinancialExpert	-0.00750**	-0.00765**	0.00233***	0.107***	0.00220
	(-2.39)	(-2.18)	(4.13)	(2.88)	(0.97)
GDP	0.508***	0.459***	-0.102***	-5.528***	-0.0194
	(4.42)	(3.39)	(-5.06)	(-3.89)	(-0.22)
Supervision	-0.00152	-0.0515	0.000156	0.851**	-0.0576**
	(-0.05)	(-1.36)	(0.03)	(2.11)	(-2.31)
CreditorRights	-0.313***	-0.164**	0.0122	0.750	0.128**
	(-4.48)	(-2.03)	(0.96)	(0.89)	(2.48)
Country Random Effect	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315

This table reports non-instrumented estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*) and control variables. All variables are as defined in Table A.2 in the online appendix. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 4. Bondholder representatives with competing interest, using the relatedness index

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Bondholder representatives affiliated with shareholders					
BondRepIndex (β_1)	3.264***	4.292***	-1.760***	-26.76**	-0.638
	(4.12)	(3.69)	(-3.91)	(-2.49)	(-1.44)
BondRepIndex * DCompeting1 (β_2)	-1.140	-1.662	0.654	-0.669	1.066*
	(-1.58)	(-1.61)	(1.60)	(-0.18)	(1.91)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	2.124**	2.629*	-1.106*	-27.42***	0.427
	(4.117)	(2.939)	(3.463)	(6.991)	(0.450)
Panel B: Non-independent bondholder representatives					
BondRepIndex (β_1)	3.124***	2.909*	-2.149***	-33.31**	-0.715
	(2.99)	(1.80)	(-3.56)	(-2.28)	(-0.90)
BondRepIndex * DCompeting2 (β_2)	0.835	0.542	-0.221	-2.726	-0.132
	(0.45)	(0.68)	(-0.75)	(-0.38)	(-0.09)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	3.958**	3.451**	-2.369***	-36.033**	-0.846
	(3.933)	(4.300)	(14.60)	(5.785)	(0.281)
Panel C: Banks with representatives on the board of debtholders					
BondRepIndex (β_1)	2.651***	4.195***	-1.635***	-16.46**	-0.783
	(3.86)	(3.24)	(-3.78)	(-2.39)	(-1.34)
BondRepIndex * DCompeting3 (β_2)	-0.393	-0.985*	0.221	0.675	0.691
	(-0.37)	(-1.80)	(1.21)	(0.24)	(0.78)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	2.258*	3.209**	-1.413***	-15.78**	-0.092
	(3.220)	(5.115)	(8.906)	(4.408)	(0.007)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one when bondholder representatives are related with shareholders (*DCompeting1*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one if, for a given bank, all bondholder representatives are considered as non-independent directors using the list of independent directors provided by banks (*DCompeting2*), and control variables. Panel C of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one if a bank has at least one representative on the board of one of its bondholders who have representatives on its board (*DCompeting3*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 5. Reputation of bondholder representatives in the market for directorships, using the relatedness index

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
BondRepIndex (β_1)	2.426***	4.628***	-1.729***	-27.48**	-0.811
	(3.00)	(3.34)	(-3.73)	(-2.51)	(-1.27)
BondRepIndex *DReputation (β_2)	-0.0946	-0.0402	0.556	-11.26	0.382
	(-0.13)	(-0.03)	(1.30)	(-1.13)	(0.66)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	2.330**	4.587***	-1.173**	-38.74***	-0.429
	(6.380)	(8.454)	(4.915)	(9.639)	(0.351)

This table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one when at least one of the bondholder representatives has at least one new board position in other firms during the two years after we identified him as bondholder representative (*DReputation*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 6. Debt amount held by bondholders with representatives, using the relatedness index

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Bondholders with high amount of debt (amount of debt held normalized by total long-term market funding larger than the mean, 5.08%)					
BondRepIndex (β_1)	2.683***	2.461**	-1.658***	-24.49**	-0.895
	(3.46)	(2.14)	(-3.71)	(-2.31)	(-1.46)
BondRepIndex * dHighDebtHeld1 (β_2)	-0.508	-0.00149	0.234	-5.223	1.102**
	(-1.45)	(-0.00)	(1.16)	(-1.08)	(2.22)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	2.175***	2.459**	-1.423***	-29.71***	0.207
	(8.032)	(4.670)	(10.36)	(7.922)	(0.570)
Panel B: Bondholders with high amount of debt (amount of debt held normalized by total long-term market funding larger than the ninth decile, 9.39%)					
BondRepIndex (β_1)	2.426***	2.254**	-1.576***	-25.71**	-0.930
	(3.18)	(2.43)	(-3.60)	(-2.47)	(-1.58)
BondRepIndex * dHighDebtHeld2 (β_2)	-0.108	-0.0661	0.209	-6.648	0.550
	(-0.23)	(-0.12)	(0.79)	(-1.05)	(1.48)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	2.318***	2.187**	-1.367***	-32.36***	-0.379
	(7.733)	(4.560)	(8.140)	(8.066)	(0.346)
Panel C: Bondholders with low amount of debt (amount of debt held normalized by total long-term market funding lower than the first decile, 0.023%)					
BondRepIndex (β_1)	2.403***	1.873**	-0.743***	-29.32***	0.498
	(3.15)	(2.00)	(-2.77)	(-2.81)	(1.27)
BondRepIndex * dLowDebtHeld (β_2)	-0.00717	0.116	-0.158	6.037	-0.781***
	(-0.02)	(0.27)	(-1.23)	(1.23)	(-2.89)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	2.395***	1.988**	-0.901***	-23.28**	-0.283
	(9.036)	(4.288)	(10.26)	(4.643)	(0.526)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding larger than sample mean (5.08%) (*dHighDebtHeld1*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding larger than ninth decile (9.39%) (*dHighDebtHeld2*), and control variables. Panel C of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding lower than the first decile (0.023%) (*dLowDebtHeld*), and control variables. All variables are as defined in Table A2. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 7. Time dimension of the relationship between bondholders and their representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Past relationship (proportion of bondholder representatives with past affiliation)					
BondRepPropPast	0.0597***	0.0634**	-0.0380***	-0.337**	-0.0233
	(2.91)	(2.06)	(-3.08)	(-2.04)	(-1.60)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Panel B: Current relationship (at least one bondholder representative with a current affiliation)					
BondRepIndex (β_1)	2.390***	4.095***	-0.509**	-21.90***	-0.847
	(4.11)	(3.17)	(-2.35)	(-3.32)	(-1.45)
BondRepIndex * dCurrent (β_2)	0.431**	2.842**	-0.133*	-12.18**	0.175
	(1.98)	(2.42)	(-1.67)	(-1.99)	(0.32)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	2.821***	6.937***	-0.641***	-34.07***	-0.672
	(21.34)	(16.86)	(8.147)	(15.60)	(0.748)
Panel C: Long relationship (all bondholder representatives with a relationship of more than five years)					
BondRepIndex (β_1)	2.911***	1.999**	-0.373**	-29.64***	-0.771
	(4.66)	(2.27)	(-2.42)	(-4.12)	(-1.32)
BondRepIndex * dHighLength (β_2)	1.152**	1.381**	-0.203*	-10.77*	0.228
	(2.27)	(2.05)	(-1.65)	(-1.85)	(0.47)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	4.062***	3.380***	-0.576***	-40.41***	-0.542
	(25.37)	(9.373)	(8.495)	(19.43)	(0.514)

Panel A of this table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives with a past affiliation (*BondRepPropPast*) and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one if at least one bondholder representative is currently affiliated to a bondholder (*dCurrent*), and control variables. Panel C of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one if all bondholder representatives have a relationship of more than five years with the bondholder (*dHighLength*), and control variables. All variables are as defined in Table A2. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 8. Bondholder representatives in weakly capitalized banks, using the relatedness index

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
BondRepIndex (β_1)	2.522***	3.587***	-2.087***	-28.40***	-0.322
	(4.06)	(3.68)	(-5.19)	(-3.04)	(-1.24)
BondRepIndex *DLowEquity (β_2)	-0.544*	-0.888*	0.970*	8.684*	-0.142
	(-1.68)	(-1.88)	(1.92)	(1.80)	(-0.42)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	1.977***	2.698***	-1.116*	-19.71**	-0.463
	(9.967)	(7.817)	(2.726)	(4.473)	(1.077)

This table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one for banks with a ratio of total equity over total assets lower than 5% (*DLowEquity*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 9. Role of bondholder representatives with financial expertise and regulatory experience, using the relatedness index

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Bondholder representatives with financial expertise					
BondRepIndex (β_1)	4.245***	4.633**	-2.300***	-37.19**	-0.693
	(3.95)	(2.53)	(-3.82)	(-2.57)	(-0.89)
BondRepIndex * DFinancialExp (β_2)	1.062	0.399	0.0883	-14.08	0.650
	(1.47)	(0.32)	(0.22)	(-1.44)	(1.15)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	5.307***	5.032***	-2.212***	-51.27***	-0.043
	(17.63)	(5.417)	(9.675)	(9.003)	(0.002)
Panel B: Bondholder representatives with regulatory experience					
BondRepIndex (β_1)	2.340***	3.541***	-1.548***	-21.40**	-0.891
	(3.26)	(2.72)	(-3.55)	(-2.06)	(-1.50)
BondRepIndex * DRegulatoryExp (β_2)	1.449**	3.069***	0.0745	-25.32***	0.483
	(2.23)	(2.67)	(0.46)	(-2.76)	(0.89)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	3.788***	6.609***	-1.473***	-46.72***	-0.408
	(18.77)	(18.14)	(10.76)	(14.17)	(0.317)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one when at least one bondholder representative has financial experience (*DFinancialExp*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one when at least one bondholder representative has regulatory experience (*DRegulatoryExp*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table 10. Role of bank complexity, using the relatedness index

	LnZscore	DD	SDROA	Volatility	ROA	MES	DCoVar
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Global systemically important banks							
BondRepIndex (β_1)	1.861***	1.653*	-0.564**	-15.59**	-0.812	-0.0123**	-0.00214**
	(3.01)	(1.77)	(-2.57)	(-2.43)	(-1.39)	(-2.36)	(-2.05)
BondRepIndex *DGSIB (β_2)	2.606**	0.809**	-0.785*	-5.021*	0.796	-0.00421**	-0.00396*
	(2.08)	(2.23)	(-1.68)	(-1.94)	(0.62)	(-2.01)	(-1.76)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315	315	315
Wald test:	4.466***	2.462**	-1.349***	-20.60***	-0.015	-0.0165***	-0.0061**
$\beta_1 + \beta_2 = 0$	(10.56)	(6.204)	(6.967)	(9.106)	(0.0001)	(8.855)	(6.267)
Panel B. High degrees of opacity							
BondRepIndex (β_1)	1.956***	2.388*	-1.677***	-15.27*	-0.446	-0.0128**	-0.00238*
	(2.91)	(1.81)	(-3.88)	(-1.87)	(-0.75)	(-2.34)	(-1.70)
BondRepIndex *DHighOpacity (β_2)	0.795**	1.367*	0.183	-10.04**	-0.274	-0.00627*	-0.00199**
	(2.00)	(1.75)	(1.23)	(-2.07)	(-1.30)	(-1.92)	(-2.39)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315	315	315
Wald test:	2.750***	3.754***	-1.493***	-25.31***	-0.720	-0.01910***	-0.00436***
$\beta_1 + \beta_2 = 0$	(16.28)	(7.565)	(11.20)	(11.41)	(1.383)	(11.28)	(9.128)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, return on assets *ROA*, systemic risk measures *MES* and *DCoVar*) on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one for banks classified as Global Systemically Important (*DGSIB*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one for banks with an index of opacity higher than the median sample (*DHighOpacity*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (7) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Online Appendix

Table A.1. Distribution of banks by country in 2017

Country	Number of listed commercial banks & bank holdings in Bloomberg	Number of listed commercial banks & bank holdings in the sample	Number of banks with at least one bondholder representative on their board	Total assets of sample banks divided by total assets of banks in Bloomberg (%)
Austria	8	5	4	89.7%
Belgium	3	2	2	95.9%
Denmark	23	5	3	96.2%
Finland	3	2	2	95.8%
France	16	9	4	98.5%
Germany	9	9	7	100%
Greece	5	3	2	97.3%
Italy	25	15	6	85.1%
Netherlands	5	5	3	100%
Norway	4	4	1	100%
Portugal	3	2	2	99.9%
Spain	8	8	6	100%
Sweden	6	6	4	100%
Switzerland	21	21	14	100%
United Kingdom	16	9	6	99.1%
Total	**155**	**105**	**66**	**97.16%**

This table reports, for the year 2017, the number of listed banks reported by Bloomberg, the number of banks in our sample, the number of banks with at least one bondholder representative on their board of directors, and the total assets of our sample of banks divided by the total assets of all listed banks in Bloomberg.

Table A.2. Definitions, data sources, and summary statistics for variables

Variables	Definition	Data sources	Mean	Median	Std Dev.	Min.	Max.
Dependent variables							
DD	Distance to default computed using the Merton (1977) model; uses 10-year government bond rates of each country for the risk-free rate (as one-year rates are not consistently available), with the volatility measure constructed as the annual volatility of daily stock returns.	Bloomberg	4.48	4.20	2.33	-0.02	15.74
LnZscore	Measure of bank's solvency, defined as the logarithm of $(\mu_{ROA,t} + car_t)/\sigma_{ROA,t}$, where $\mu_{ROA,t}$ and $\sigma_{ROA,t}$ are the 3-year rolling window average and standard deviation of return on assets, respectively, and *car* is the equity to total assets ratio at date t. A higher Z-score indicates that a bank has a lower risk of insolvency.	Bloomberg	4.31	4.39	1.33	0.42	8.36
SDROA	Standard deviation of the return on assets over the previous three years (%).	Bloomberg	0.30	0.10	0.71	0.004	4.97
Volatility	Standard deviation of monthly stock returns over the previous twelve months (%).	Bloomberg	29.84	24.68	17.92	6.63	126.90
ROA	Return on assets, net income divided by total assets (%).	Bloomberg	0.62	0.46	1.10	-2.51	9.97
Bondholder representatives							
BondRepProp	Proportion of directors on bank boards affiliated to a bondholder by being one of its employees or directors, either currently or at some point in the past (%).	BoardEx, Bloomberg	17.65	15	18.35	0	84.61
BondRepIndex	Index of the relatedness of the board of directors to bondholders. An individual score is computed to measure the strength of the relatedness between a director and a bondholder, assigning the score of zero, one, and two when a director is not affiliated, affiliated at some point in the past to a bondholder, or currently affiliated respectively. An overall index to measure the influence	BoardEx, Bloomberg	0.21	0.18	0.23	0	1

	of directors related to bondholders on the board is computed at the bank level by taking the average of the "score of relatedness" of all directors.						
DCompeting1	Dummy variable taking the value of one if for a given bank all bondholder representatives have a competing interest using the three following criteria: (1) they are one of the shareholders of the bank (2) they are affiliated to a bondholder who is also a shareholder of the bank; (3) they are affiliated to a shareholder by being one of their employees or being on their board of directors.	BoardEx, Bloomberg, BankFocus	0.26	0	0.43	0	1
DCompeting2	Dummy variable taking the value of one if for a given bank all bondholder representatives are considered as non-independent directors using the list of independent directors provided by banks (based on the Corporate Governance Codes).	BoardEx, Bloomberg	0.10	0	0.31	0	1
DCompeting3	Dummy variable taking the value of one if a bank has at least one representative on the board of one of its bondholders who have representatives on its board.	BoardEx, Bloomberg	0.12	0	0.32	0	1
DReputation	Dummy variable taking the value of one if at least one of the bondholder representatives has at least one new board position in other firms during the two years after we identified them as bondholder representatives.	BoardEx, Bloomberg	0.53	1	0.50	0	1
DHighDebtHeld1	Dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding larger than sample mean (5.08%)	BoardEx, Bloomberg	0.19	0	0.39	0	1
DHighDebtHeld2	Dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding larger than ninth decile (9.39%)	BoardEx, Bloomberg	0.15	0	0.35	0	1
DLowDebtHeld	Dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding lower than first decile (0.023%)	BoardEx, Bloomberg	0.35	0	0.47	0	1

BondRepPropPast	Proportion of directors on bank boards affiliated to a bondholder by having been one of its employees or directors at some point in the past (%).	BoardEx, Bloomberg	13.79	11.11	14.42	0	69.23
DCurrent	Dummy variable taking the value of one if at least one bondholder representative is currently affiliated with a bondholder.	BoardEx, Bloomberg	0.33	0	0.47	0	1
DHighLength	Dummy variable taking the value of one if all bondholder representatives have a relationship of more than five years with the bondholder.	BoardEx, Bloomberg	0.44	0	0.49	0	1
DFinancialExpert	Dummy variable taking the value of one if at least one bondholder representative has past or current employment experience in either accounting or non-accounting financial activities.	BoardEx, Bloomberg	0.38	0	0.48	0	1
DRegulatoryExp	Dummy variable taking the value of one if at least one bondholder representative has a position (past or present) in a supervisory/regulatory authority or in a financial authority (such as ministry of finance, stock exchange commission, money market authority, etc.).	BoardEx, Bloomberg	0.35	0	0.47	0	1
Board level control variables							
BoardSize	Natural logarithm of the number of directors on the board.	BoardEx	2.44	2.48	0.37	1.38	3.13
OneTierBoard	Dummy variable taking the value of one if the bank has a one-tier board and the value of 0 if the bank has a dual board (tier-two).	BoardEx	0.62	1	0.48	0	1
FinancialExpert	Proportion of financial experts on the board, i.e., directors with past or current employment experience in either accounting or non-accounting financial activities (%).	BoardEx	45.05	40	28.34	0	100
Bank level control variables							
Size	Natural logarithm of total assets.	Bloomberg	10.73	10.44	1.99	5.11	14.62
GrowthTA	Annual growth rate of total assets (%).	Bloomberg	2.53	2.52	9.50	-18.74	36.53
Loan	Gross loans divided by total assets (%).	Bloomberg	58.19	63.98	20.71	1.94	87.48
Equity	Total equity divided by total assets (%).	Bloomberg	8.16	7.184	3.61	2.14	20.45
Deposit	Deposits divided by total assets (%).	Bloomberg	54.47	57.50	17.83	7.25	89.78

Operating	Total operating expenses divided by total operating income (%).	Bloomberg	3.09	2.12	5.73	-18.77	26.26
Opacity	Index of opacity following Lepetit et al. (2017); the index is based on four opacity components (earnings prediction errors, earnings management, market funding, and lending activity) and ranges from 1 to 10, with higher levels of opacity for higher values of the index.	Bloomberg	5.59	5.5	1.47	1	9.75
Country-level control variables							
GDP	GDP growth rate (%).	World Bank	1.91	1.82	0.62	-0.19	3.17
Supervision	Index measuring the strength of supervisory regime. The yes/no responses to the given questions covered all aspects of the power of the supervisory agency: (1) Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank? (2) 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	World Bank	10.09	11	2.34	4	13

	shareholder rights? (b) remove and replace management? (c) remove and replace directors? A higher total value indicates wider and stronger authority for bank supervisors.						
CreditorRights	The creditor rights index measures four powers of secured lenders in bankruptcy. The yes/no responses to the following elements are coded as 1/0: (1) whether there are restrictions, such as creditor consent, when a debtor files for reorganization; (2) whether secured creditors are able to seize their collateral after the petition for reorganization is approved, that is, whether there is no automatic stay or asset freeze imposed by the court; (3) whether secured creditors are paid first out of the proceeds of liquidating a bankrupt firm; and (4) whether an administrator, and not management, is responsible for running the business during the reorganization. The index ranges from 0 to 4, with higher value indicating stronger creditor protection.	World Bank	1.90	2	1.11	0	4
Instrument variable							
DirectFlightsHeadQ	Number of direct scheduled airline flights from the bank headquarter to the headquarter of firms in the S&P Europe 350 Index.	Websites of airports	24.49	29	11.21	0	39
Further variables							
DLowEquity	Dummy variable taking the value of one for banks with the ratio of total equity to total assets lower than 5%.	Bloomberg	0.25	0	0.43	0	1
DGSIB	Dummy variable taking the value of one for banks in the list of global systemically important banks in 2017.	Financial Stability Board (FSB)	0.11	0	0.31	0	1
DHighOpacity	Dummy variable taking the value of one if the index of opacity of a bank is higher than the sample median (5.5).		0.60	1	0.48	0	1
MES	Marginal Expected Shortfall (MES), introduced by Acharya et al. (2017) and Brownlees and Engle (2017), is defined as the marginal	Datastream	0.01644	0.01699	0.01076	0.00003	0.05383

	contribution of a bank to systemic risk as measured by the Expected Shortfall of the financial system.						
DCoVar	Delta-CoVaR (DCoVar), introduced by Adrian and Brunnermeier (2016), corresponds to the Value at Risk of the financial system obtained conditionally on a specific event affecting a given bank.	Datastream	0.00401	0.00363	0.00284	0.00005	0.01218
DBondRep	Dummy variable taking the value of one if at least one bondholder representative is present on the board of a bank.	BoardEx,	0.63	1	0.48	0	1
DCriticalMass	Dummy variable taking the value of one for banks having at least three bondholder representatives.	BoardEx,	0.43	0	0.49	0	1
PropIndependent	Number of independent directors divided by total number of directors on bank boards (%)	BoardEx	53.23	55.55	29.78	0	100
PropRegulatoryExp	Number of directors with regulatory experience divided by total number of directors on bank boards (%).	BoardEx	6.01	3.57	8.15	0	45.83
DControllingSH	Dummy variable taking the value of one if at least one shareholder holds more than 20% of shares.	BankFocus	0.73	1	0.44	0	1

This table defines the variables and reports summary statistics for the full sample.

Table A.3. Proportion of bondholder type

Bondholder type	Average	Std. Dev	Min	Max
Investment banks	45.35	30.42	0	100
Non-banking financial institutions (including insurance & fund management companies)	41.49	29.26	0	100
Commercial banks	10.71	19.87	0	100
Non-financial firms	2.45	7.04	0	33.33

This table reports the proportion of banks' bondholders who are either investment banks, non-banking financial institutions, commercial banks, or non-financial firms.

Table A.4. Characteristics of banks with and without bondholder representatives

	Banks with bondholder representatives				**Banks without bondholder representatives**				**(Without – with)**
Variables	**Mean**	**StdDev**	**Min.**	**Max.**	**Mean**	**StdDev**	**Min.**	**Max.**	**Means test**
Number of directors	14.27	4.73	7	32	11.23	4.25	4	24	-3.04***
OneTierBoard	0.57	0.49	0	1	0.71	0.45	0	1	0.14***
Size	11.53	1.75	7.85	14.62	9.37	1.58	5.11	13.50	-2.16***
Loan	56.43	19.64	1.94	87.48	61.15	22.16	4.42	87.48	4.71*
Equity	6.97	2.39	2.14	14.15	10.17	4.37	3.06	20.45	3.20***
Long-term market funding	13.23	9.53	0.08	39.36	10.73	10.16	0	39.36	-2.49**
Loans from banks	10.90	6.79	0.04	37.13	15.23	17.32	0.005	57.08	4.32**
Opacity	5.14	1.29	1	9	6.42	1.45	2.75	9.75	1.27***
Bond spread	0.91	0.74	-0.55	3.43	1.16	0.91	0.10	5.18	0.255**
Bond issuance	0.13	0.24	0.00003	1.12	0.06	0.10	0.0002	0.37	-0.071**

This table reports mean tests which examine if the variable has the same mean in the sample of banks with bondholder representatives compared to banks without bondholder representatives (bilateral test): *Number of directors* = the total number of directors on the board; *OneTierBoard* = dummy variable taking the value of one for banks with a one-tier board and zero for banks with a two-tier board; *Size* = natural logarithm of banks total assets; *Loan* = gross loans divided by total assets (%); Equity = total equity divided by total assets (%); *Long term market funding* = senior debt maturing after one year (bonds, subordinated debt, liability component of convertible bonds and other borrowed funds) divided by total assets (%); *Loans from banks* = deposits, loans and repos from banks divided by total assets (%); *Opacity* = index of opacity, with higher levels of opacity for higher values of the index (see Table A.2 in the online appendix); *Bond spread* = (yield to maturity at the issuance date of rated bonds issued during the period 2016-2018) – (risk-free rate, the 10-year government bond yield) (%); *Bond issuance* = bond issuance amount during the period 2016-2018 over total assets (%).

Table A.5. Correlation and multicollinearity

Panel A. Correlation matrix

	(1)	(2)	(3)	(4)	(5)	61)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. BondRepIndex	1														
2. BondRepProp	0.907***	1													
3. Size	0.623***	0.615***	1												
4. GrowthTA	-0.293***	-0.322***	-0.344***	1											
5. Equity	-0.434***	-0.371***	-0.456***	0.197***	1										
6. Loan	-0.184**	-0.230***	-0.240***	0.0350	0.318***	1									
7. Deposit	-0.240***	-0.258***	-0.427***	0.221***	0.106	0.000936	1								
8. Operating	-0.0180	-0.00498	0.0114	0.0608	-0.0482	-0.224***	0.0885	1							
9. Opacity	0.0190	0.0355	0.0484	-0.201***	-0.0684	-0.168**	0.00426	0.0453	1						
10. BoardSize	0.198***	0.178**	0.447***	-0.112*	-0.0434	-0.152**	-0.282***	0.0452	0.0848	1					
11. OneTierBoard	-0.0905	0.0160	0.253***	-0.0547	-0.0131	-0.0857	-0.175**	-0.110	0.0376	0.131*	1				
12. FinancialExpert	0.421***	0.498***	0.344***	-0.116*	-0.153**	-0.315***	0.00410	0.104	0.131*	-0.0147	0.0580	1			
13. GDP	0.135*	0.0750	0.0195	0.0129	-0.0957	-0.0359	0.148**	0.0464	-0.108	-0.0497	-0.179**	0.0159	1		
14. Supervision	-0.113*	-0.204***	-0.119*	0.0153	0.00699	0.0235	0.179**	0.0381	0.0301	0.0995	-0.243***	-0.281***	-0.258***	1	
15. CreditorRights	0.104	0.172**	0.0152	0.0562	-0.0370	-0.173**	0.241***	0.118*	0.117*	-0.0238	-0.309***	0.339***	0.0534	0.0108	1

Panel B. Variance inflation factors

Variable	VIF	SQRT-VIF	Tolerance	R-Squared
BondRepIndex	1.95	1.39	0.5140	0.4860
Size	2.99	1.73	0.3341	0.6659
GrowthTA	1.24	1.11	0.8093	0.1907
Equity	1.56	1.25	0.6409	0.3591
Loan	1.28	1.13	0.7827	0.2173
Deposit	1.48	1.21	0.6779	0.3221
Operating	1.09	1.04	0.9176	0.0824
Opacity	1.12	1.06	0.8943	0.1057
BoardSize	1.46	1.21	0.6839	0.3161
OneTierBoard	1.53	1.24	0.6520	0.3480
GDP	1.24	1.11	0.8057	0.1943
Supervision	1.32	1.15	0.7562	0.2438
CreditorRights	1.29	1.14	0.7725	0.2275

This table shows the correlation matrix and the variance inflation factors (VIF). All variables are as defined in Table A.2 in the online appendix. *, **, and *** denote significance at 10%, 5% and 1% levels, respectively. Since two measurements of relatedness of bondholder representatives (*BondRepIndex* and *BondRepProp*) are alternatively used as the variable of interest in regressions, for brevity, we only report in Panel B the test using *BondRepIndex* as the variable of interest; similar results are obtained using *BondRepProp*.

Table A.6. Bondholder representatives with competing interest, using the proportion of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Bondholder representatives affiliated with shareholders					
BondRepProp (β_1)	0.0745***	0.114***	-1.760***	-0.0395***	-0.0134
	(4.33)	(3.88)	(-3.91)	(-4.03)	(-1.45)
BondRepProp * DCompeting1 (β_2)	-0.0202	-0.0271	0.654	0.00968	0.0204*
	(-1.38)	(-1.09)	(1.60)	(1.16)	(1.80)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.054**	0.086**	-1.106*	-0.029**	0.007
	(6.112)	(5.363)	(3.463)	(5.704)	(0.296)
Panel B: Non-independent bondholder representatives					
BondRepProp (β_1)	0.0612***	0.114***	-0.00776***	-0.692***	-0.00902
	(3.63)	(4.91)	(-2.59)	(-3.03)	(-0.99)
BondRepProp * DCompeting2 (β_2)	0.0295	0.0162	-0.00322	-0.0238	0.00373
	(0.79)	(0.32)	(-0.50)	(-0.11)	(0.13)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.091***	0.129**	-0.011*	-0.715**	-0.0053
	(5.698)	(6.514)	(2.794)	(6.602)	(0.032)
Panel C: Banks with representatives on the board of debtholders					
BondRepProp (β_1)	0.0587***	0.106***	-0.0371***	-0.697***	-0.0200
	(3.84)	(3.76)	(-3.94)	(-3.10)	(-1.51)
BondRepProp * DCompeting3 (β_2)	0.00225	-0.0233*	0.00489	-0.0203	0.0115
	(0.11)	(-1.73)	(1.08)	(-0.19)	(0.67)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.061**	0.082***	-0.032***	-0.717***	-0.0085
	(6.187)	(6.904)	(9.418)	(8.214)	(0.167)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one when bondholder representatives are related with shareholders (*DCompeting1*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of if, for a given bank, all bondholder representatives are considered as non-independent directors using the list of independent directors provided by banks (*DCompeting2*), and control variables. Panel C of this table reports second stage 2SLS estimations of risk measures and performance on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of if a bank has at least one representative in the board of one of its bondholders who have representatives on its board (*DCompeting3*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the proportion of bondholder representatives (*BondRepProp*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.7. Reputation of bondholder representatives in the market for directorships, using the proportion of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
BondRepProp (β_1)	0.0503***	0.109***	-0.0335***	-0.694***	-0.0102
	(2.80)	(3.62)	(-3.24)	(-2.91)	(-0.73)
BondRepProp *DReputation (β_2)	0.00848	0.0134	-0.00284	-0.239	-0.00765
	(0.56)	(0.52)	(-0.32)	(-1.18)	(-0.65)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.058***	0.122***	-0.036***	-0.932***	-0.017
	(8.824)	(13.69)	(10.17)	(12.66)	(1.364)

This table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one when at least one of the bondholder representatives has at least one new board position in other firms during the two years after we identified him as bondholder representative (*DReputation*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the proportion of bondholder representatives (*BondRepProp*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.8. Debt amount held by bondholders with representatives, using the proportion of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Bondholders with high amount of debt (amount of debt held normalized by total long-term market funding larger than the mean, 5.08%)					
BondRepProp (β_1)	0.0529***	0.0537**	-0.0372***	-0.662***	-0.0199
	(3.11)	(2.10)	(-3.73)	(-2.86)	(-1.49)
BondRepProp * DHighDebtHeld1 (β_2)	-0.0137	0.00196	0.00637	-0.0739	0.0276**
	(-1.55)	(0.15)	(1.27)	(-0.62)	(2.50)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:	0.039**	0.056**	-0.030***	-0.735***	0.008
$\beta_1 + \beta_2 = 0$	(5.308)	(4.734)	(9.596)	(9.958)	(0.268)
Panel B: Bondholders with high amount of debt (amount of debt held normalized by total long-term market funding larger than the ninth decile, 9.39%)					
BondRepProp (β_1)	0.0543***	0.0505**	-0.0354***	-0.674***	-0.0143
	(3.19)	(2.44)	(-3.62)	(-2.96)	(-1.09)
BondRepProp * DHighDebtHeld2 (β_2)	-0.00389	-0.00340	0.00596	-0.0969	0.0187**
	(-0.33)	(-0.24)	(0.88)	(-0.60)	(1.96)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:	0.050***	0.047**	-0.029***	-0.771***	0.0044
$\beta_1 + \beta_2 = 0$	(7.005)	(4.085)	(7.220)	(9.087)	(0.091)
Panel C: Bondholders with low amount of debt (amount of debt held normalized by total long-term market funding lower than the first decile, 0.023%)					
BondRepProp (β_1)	0.0520***	0.0414**	-0.0196***	-0.737***	0.0128
	(3.05)	(1.97)	(-3.04)	(-3.21)	(1.49)
BondRepProp * DLowDebtHeld (β_2)	0.00354	0.00268	0.00146	0.0905	-0.0152***
	(0.42)	(0.27)	(0.45)	(0.81)	(-2.80)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:	0.055***	0.044**	-0.018***	-0.646***	-0.0023
$\beta_1 + \beta_2 = 0$	(10.02)	(4.334)	(7.246)	(7.725)	(0.077)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding larger than sample mean (5.08%) (*DHighDebtHeld1*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding larger than ninth decile (9.39%) (*DHighDebtHeld2*), and control variables. Panel C of this table reports second stage 2SLS estimations of risk measures and performance on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one if debtholders with representatives hold a debt amount normalized by total long-term market funding lower than the first decile (0.023%) (*DLowDebtHeld*), and control variables. All variables are as defined in Table 1. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the proportion of bondholder representatives (*BondRepProp*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.9. Time dimension of the relationship between bondholders and their representatives, using the proportion of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Current relationship (at least one bondholder representative with a current affiliation)					
BondRepProp (β_1)	0.0436***	0.0997***	-0.00900*	-0.643***	-0.0202
	(2.99)	(3.57)	(-1.88)	(-2.88)	(-1.53)
BondRepProp * dCurrent (β_2)	0.0224**	0.0725***	-0.00335*	-0.411**	-0.00611
	(1.98)	(3.26)	(-1.76)	(-2.31)	(-0.57)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.066***	0.172***	-0.012**	-1.053***	-0.026
	(13.37)	(25.31)	(6.049)	(14.76)	(2.583)
Panel B: Long relationship (all bondholder representatives with a relationship of more than five years)					
BondRepProp (β_1)	0.0654***	0.106***	-0.00895***	-0.751***	-0.0191
	(4.81)	(4.79)	(-2.67)	(-3.36)	(-1.45)
BondRepProp * dHighLength (β_2)	0.0214**	0.0365**	-0.00472*	-0.278*	-0.00594
	(2.17)	(2.37)	(-1.94)	(-1.70)	(-0.62)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:	0.086***	0.142***	-0.013***	-1.029***	-0.025
$\beta_1 + \beta_2 = 0$	(27.62)	(29.34)	(11.00)	(14.47)	(2.407)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one if at least one bondholder representative is currently affiliated to a bondholder (*dCurrent*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one if all bondholder representatives have a relationship of more than five years with the bondholder (*dHighLength*), and control variables. All variables are as defined in Table A2. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the proportion of bondholder representatives (*BondRepProp*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.10. Bondholder representatives in weakly capitalized banks, using the proportion of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
BondRepProp (β_1)	0.0752***	0.101***	-0.0489***	-0.748***	-0.000533
	(5.16)	(3.72)	(-5.23)	(-3.46)	(-0.09)
BondRepProp *DLowEquity (β_2)	-0.0138*	-0.0276*	0.0231**	0.209*	-0.00353
	(-1.71)	(-1.90)	(2.24)	(1.75)	(-0.51)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.061***	0.073**	-0.025*	-0.538**	-0.00406
	(15.72)	(6.632)	(3.187)	(5.611)	(0.180)

This table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one for banks with a ratio of total equity over total assets lower than 5% (*DLowEquity*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the proportion of bondholder representatives (*BondRepProp*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.11. Role of bondholder representatives with financial expertise and regulatory experience, using the proportion of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
Panel A: Bondholder representatives with financial expertise					
BondRepProp (β_1)	0.0444**	0.113***	-0.0334***	-0.720***	-0.0114
	(2.41)	(3.63)	(-3.14)	(-2.92)	(-0.79)
BondRepProp * DFinancialExp (β_2)	0.00783	0.00506	-0.000719	-0.161	-0.00689
	(0.53)	(0.20)	(-0.08)	(-0.80)	(-0.59)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.052***	0.117***	-0.034***	-0.881***	-0.018
	(6.859)	(12.36)	8.781)	(10.96)	(1.382)
Panel B: Bondholder representatives with regulatory experience					
BondRepProp (β_1)	0.0441***	0.0811***	-0.0114**	-0.523**	-0.0185
	(2.58)	(2.86)	(-2.31)	(-2.29)	(-1.37)
BondRepProp * DRegulatoryExp (β_2)	0.0339**	0.0787***	-0.00686*	-0.552***	-0.00443
	(2.53)	(3.52)	(-1.80)	(-3.07)	(-0.41)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:					
$\beta_1 + \beta_2 = 0$	0.077***	0.159***	-0.018***	-1.074***	-0.022
	(16.44)	(25.74)	(10.63)	(17.97)	(2.252)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one when at least one bondholder representative has financial experience (*DFinancialExp*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one when at least one bondholder representative has regulatory experience (*DRegulatoryExp*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the proportion of bondholder representatives (*BondRepProp*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.12. Role of bank complexity, using the proportion of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA	MES	DCoVar
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Global systemically important banks							
BondRepProp (β_1)	0.0517***	0.0363*	-0.0330***	-0.685***	-0.0190	-0.000272**	-0.0000593**
	(3.09)	(1.75)	(-3.44)	(-3.43)	(-1.44)	(-2.35)	(-2.20)
BondRepProp *DGSIB (β_2)	0.0422	0.0194**	-0.0401**	-0.158*	-0.0229	-0.000102**	-0.0000945*
	(1.30)	(2.35)	(-2.15)	(-1.86)	(-0.88)	(-2.14)	(-1.77)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315	315	315
Wald test:	0.093***	0.055**	-0.073***	-0.842***	-0.041	-0.00037***	-0.00015***
$\beta_1 + \beta_2 = 0$	(6.895)	(6.432)	(12.73)	(15.68)	(2.164)	(9.155)	(7.009)
Panel B. High degrees of opacity							
BondRepProp (β_1)	0.0430***	0.0643**	-0.00592*	-0.389*	-0.00798	-0.000305**	-0.0000525**
	(2.93)	(2.23)	(-1.79)	(-1.75)	(-0.61)	(-2.55)	(-2.16)
BondRepProp *DHighOpacity (β_2)	0.0214***	0.0332**	-0.00340*	-0.212*	-0.00862*	-0.000159**	-0.0000758***
	(2.58)	(2.00)	(-1.81)	(-1.66)	(-1.70)	(-2.29)	(-5.32)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315	315	315
Wald test:	0.064***	0.097***	-0.0093***	-0.601***	-0.016	-0.00046***	-0.00012***
$\beta_1 + \beta_2 = 0$	(18.74)	(10.69)	(7.742)	(6.827)	(1.444)	(13.95)	(25.93)

Panel A of this table reports second stage 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, return on assets *ROA*, systemic risk measures *MES* and *DCoVar*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one for banks classified as Global Systemically Important (*DGSIB*), and control variables. Panel B of this table reports second stage 2SLS estimations of risk measures and performance (Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, return on assets *ROA*, systemic risk measures *MES* and *DCoVar*) on the proportion of bondholder representatives (*BondRepProp*), its interaction with a dummy variable taking the value of one for banks with an index of opacity higher than the sample median (*DHighOpacity*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (7) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the proportion of bondholder representatives (*BondRepProp*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.13. Robustness check (1): fixed effects using Lewbel (2012) method

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
BondRepIndex	1.825***	1.230**	-0.741**	-12.68*	0.299
	(3.16)	(2.03)	(-2.28)	(-1.94)	(1.19)
Size	-0.229***	-0.166**	0.0748	1.835**	-0.01015
	(-2.69)	(-2.01)	(1.37)	(2.22)	(-0.30)
GrowthTA	0.0083	0.0109	0.00109	-0.189*	0.0122***
	(0.98)	(1.27)	(0.13)	(-1.88)	(3.01)
Equity	0.00194	0.0205	0.0376*	0.0291	0.0577***
	(0.09)	(0.72)	(1.75)	(0.10)	(5.22)
Loan	0.0135***	0.00689	0.000513	-0.04049	-0.00105
	(3.42)	(1.45)	(0.17)	(-0.87)	(-0.69)
Deposit	0.00480	0.0117*	0.00131	-0.04507	0.00559**
	(0.75)	(1.80)	(0.41)	(-0.69)	(2.31)
Operating	0.01132	0.007013	-0.0034	-0.0759	0.000861
	(0.86)	(0.56)	(-0.30)	(-0.44)	(0.22)
Opacity	-0.2703***	-0.3627**	0.0627	3.873**	-0.1351**
	(-3.22)	(-2.32)	(1.17)	(2.35)	(-2.15)
BoardSize	0.4829	0.6951**	-0.7045***	-3.746	-0.2243**
	(1.90)	(2.48)	(-2.81)	(-1.32)	(-2.11)
OneTierBoard	0.5741***	0.1282	-0.2706*	-0.1349	-0.1157
	(-2.81)	(0.79)	(-1.91)	(-0.07)	(-1.34)
FinancialExpert	-0.00887**	-0.00722**	0.00281	0.0828**	0.00126
	(-2.28)	(-2.00)	(0.95)	(2.26)	(0.99)
GDP	0.5094***	0.2341	-0.0812	-3.429*	-0.01501
	(3.30)	(1.59)	(-1.08)	(-1.71)	(-0.27)
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Hansen J statistic (overidentification test of all instruments):	10.671	6.821	8.784	4.325	13.544
P-val	(0.4713)	(0.8133)	(0.6418)	(0.9594)	(0.2593)
C statistic (exogeneity/orthogonality of suspect instrument "DirectFlightsHeadQ"):	0.747	0.007	2.757	0.549	2.801
P-val	(0.3875)	(0.9315)	(0.0968)	(0.4585)	(0.0942)

This table reports 2SLS fixed effects estimations, using the Lewbel (2012) method with both generated and external instruments, of risk measures and performance (logarithm of the Z-score *LnZscore*. distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates obtained when the bondholder relatedness index (*BondRepIndex*) is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index, as well as the set of "internal" instruments generated under the Lewbel (2012) method. The T-statistics are in parentheses, with *. **. and *** denoting significance at 10%. 5% and 1% levels. Two identification test statistics are used. The Hansen J statistic tests overidentifying restrictions, with (joint) null hypothesis that the instruments are valid and that excluded instruments are correctly excluded from the estimated equation. The C statistic tests the exogeneity of one (or more) instruments, with null hypothesis that both the smaller set of instruments and the additional, suspect instrument(s) are valid.

Table A.14. Robustness check (2): Using the period from 2015 to 2017

Panel A. 2SLS estimations, with country random effects

	BondRepIndex	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	1st Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage
BondRepIndex		1.648**	2.456**	-1.131**	-11.08*	-0.0213
		(2.09)	(2.06)	(-2.41)	(-1.77)	(-0.06)
DirectFlightsHeadQ	-0.00851***					
	(-5.19)					
Size	0.0802***	-0.185***	-0.375***	0.0758*	1.939***	-0.0442
	(7.71)	(-2.89)	(-3.54)	(1.79)	(3.44)	(-1.46)
GrowthTA	-0.00248	0.00853	-0.00504	-0.00331	0.0115	0.00536*
	(-1.50)	(1.21)	(-0.51)	(-0.84)	(0.22)	(1.88)
Equity	-0.0213***	0.0385	0.0508	0.0156	-0.0209	0.0297***
	(-4.60)	(1.32)	(1.32)	(1.01)	(-0.10)	(2.77)
Loan	0.000482	0.00414	0.00970*	0.00248	-0.0250	-0.00118
	(0.54)	(1.07)	(1.77)	(1.12)	(-0.85)	(-0.73)
Deposit	-0.00114	-0.00303	0.00707	0.00334	-0.00503	-0.00186
	(-1.19)	(-0.74)	(1.15)	(1.36)	(-0.15)	(-1.01)
Operating	-0.00188	0.311**	0.00429	-0.00669	-0.0665	0.0621
	(-1.02)	(2.23)	(0.37)	(-1.42)	(-1.06)	(0.98)
Opacity	-0.0109	-0.266***	-0.987***	0.000384	4.474***	-0.188***
	(-0.79)	(-4.99)	(-11.15)	(0.01)	(9.53)	(-3.06)
BoardSize	0.00149	-0.0185	0.0396	0.0202	-0.117	-0.0108
	(0.29)	(-0.89)	(1.26)	(1.60)	(-0.69)	(-1.20)
OneTierBoard	-0.0559*	0.186	0.112	-0.00734	-0.364	-0.000755
	(-1.71)	(1.36)	(0.52)	(-0.09)	(-0.32)	(-0.01)
FinancialExpert	0.00542***	-0.0142***	-0.0167***	0.00645***	0.0833**	-0.00359**
	(7.33)	(-3.41)	(-2.68)	(2.62)	(2.54)	(-2.10)
GDP	0.0464*	0.334***	0.464***	-0.210***	-2.552***	0.169***
	(1.88)	(3.47)	(2.96)	(-3.36)	(-3.05)	(3.79)
Supervision	0.00682	-0.0265	0.00167	-0.0279	0.359	-0.00456
	(0.85)	(-0.84)	(0.03)	(-1.40)	(1.35)	(-0.32)
CreditorRights	-0.00234	-0.180***	-0.00582	0.130***	0.159	0.0508*
	(-0.14)	(-2.71)	(-0.06)	(3.29)	(0.30)	(1.76)
Country Random Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	305	305	301	305	304	314
IV F-stat	-	22.34	27.95	22.34	28.83	29.14
Anderson LM statistic p-val	-	<0.01	<0.01	<0.01	<0.01	<0.01

This table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables for the period 2015-2017. All variables are as defined in Table A.2 in the online appendix. Column (1) reports 1st stage IV regression for LnZscore as dependent variable in the second stage. Columns (2) to (6) report 2nd stage IV regression estimates obtained when the bondholder relatedness index (*BondRepIndex*) is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels. Two identification test statistics are used. The first-stage F-statistic (IV F-statistic) tests if instruments are weak; if the IV F-statistic is smaller than 10, the instrument is weak. The Anderson canonical correlation LM statistic tests for underidentification, under the null hypothesis that excluded instruments are irrelevant.

Table A.14. Robustness check (2): Using the period from 2015 to 2017

Panel B. Non-instrumented estimations, with country random effects

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
BondRepIndex	0.502**	0.635**	-0.290**	-7.086*	-0.292
	(2.15)	(1.98)	(-2.21)	(-1.83)	(-1.43)
Size	-0.121***	-0.265***	0.0147	1.911**	-0.0837**
	(-2.67)	(-4.31)	(0.57)	(2.51)	(-2.10)
GrowthTA	0.0103	-0.0168**	-0.000643	-0.136	0.00360
	(1.48)	(-2.07)	(-0.19)	(-1.31)	(0.67)
Equity	0.00904	0.0450	0.0334***	0.317	0.0876***
	(0.46)	(1.50)	(2.95)	(0.95)	(5.01)
Loan	0.00431	0.0104**	0.00175	-0.0571	-0.000597
	(1.17)	(2.13)	(0.86)	(-0.95)	(-0.19)
Deposit	-0.00255	0.00731	0.00439**	0.0193	-0.000181
	(-0.64)	(1.37)	(1.96)	(0.29)	(-0.05)
Operating	0.0139*	0.0156	-0.00520	-0.0236	-0.00727
	(1.80)	(0.08)	(-1.20)	(-0.18)	(-1.07)
Opacity	-0.283***	-1.058***	0.0143	14.56***	-0.156***
	(-4.96)	(-14.10)	(0.44)	(6.08)	(-3.10)
BoardSize	-0.000702	0.0317	0.0181	-0.172	-0.0144
	(-0.03)	(1.16)	(1.53)	(-0.49)	(-0.78)
OneTierBoard	0.0538	0.0318	0.0360	-2.381	0.0231
	(0.39)	(0.17)	(0.47)	(-1.05)	(0.19)
FinancialExpert	-0.00588*	-0.0102**	0.00325*	0.133***	0.000510
	(-1.91)	(-2.56)	(1.94)	(2.70)	(0.20)
GDP	0.374***	0.502***	-0.236***	-10.07***	0.107
	(3.69)	(3.61)	(-4.12)	(-5.92)	(1.20)
Supervision	-0.0355	0.0214	-0.0326*	-0.672	-0.0473*
	(-1.07)	(0.50)	(-1.76)	(-1.22)	(-1.65)
CreditorRights	-0.186***	0.0486	0.131***	-1.021	0.173***
	(-2.72)	(0.55)	(3.52)	(-0.90)	(3.00)
Country Random Effect	Yes	Yes	Yes	Yes	Yes
Observations	305	305	301	305	304

This table reports non-instrumented estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables. All variables are as defined in Table A.2 in the online appendix. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.15. Robustness check (3): Using the period from 2017 to 2019

Panel A. 2SLS estimations, with country random effects

	BondRepIndex	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	1st Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage
BondRepIndex		2.245***	2.962**	-0.978**	-23.77***	-0.166
		(2.95)	(2.52)	(-2.46)	(-2.84)	(-0.50)
DirectFlightsHeadQ	-0.00995***					
	(-6.58)					
Size	0.118***	-0.210**	-0.284**	0.0316	1.387	0.00245
	(11.03)	(-2.25)	(-2.02)	(0.64)	(1.36)	(0.06)
GrowthTA	-0.000951	0.0236**	0.0356**	0.00569	-0.493***	0.0257***
	(-0.43)	(2.14)	(2.13)	(0.98)	(-4.05)	(5.27)
Equity	-0.0254***	0.00819	0.127***	0.0258	-0.103	0.0842***
	(-4.72)	(0.27)	(2.70)	(1.62)	(-0.31)	(6.28)
Loan	-0.0000229	0.0135**	0.00997	-0.00192	-0.163***	-0.0000105
	(-0.02)	(2.46)	(1.18)	(-0.66)	(-2.68)	(-0.00)
Deposit	-0.00119	0.000160	0.00738	-0.00624*	0.0252	-0.0000873
	(-0.97)	(0.03)	(0.76)	(-1.89)	(0.36)	(-0.03)
Operating	-0.0160***	-0.0272	0.0528	0.00919	-1.370***	-0.0279**
	(-3.13)	(-0.93)	(1.25)	(0.61)	(-4.39)	(-2.20)
Opacity	0.0305***	-0.205***	-0.531***	0.0671**	4.027***	-0.0982***
	(2.92)	(-3.64)	(-6.14)	(2.25)	(6.49)	(-3.92)
BoardSize	0.0132***	-0.0885***	-0.230***	0.0348**	1.741***	-0.0178
	(2.62)	(-3.28)	(-5.49)	(2.45)	(5.88)	(-1.49)
OneTierBoard	-0.245***	0.128	0.214	-0.00439	0.626	-0.301***
	(-7.29)	(0.53)	(0.58)	(-0.03)	(0.24)	(-2.83)
FinancialExpert	0.00477***	-0.0119***	-0.0237***	0.00557***	0.180***	0.00171
	(7.44)	(-2.93)	(-3.96)	(2.65)	(4.12)	(0.97)
GDP	0.0327	0.348***	0.308	-0.183**	-1.013	-0.0380
	(1.22)	(2.58)	(1.51)	(-2.56)	(-0.68)	(-0.63)
Supervision	-0.00381	-0.000730	-0.00667	-0.0141	0.468	-0.0465***
	(-0.57)	(-0.02)	(-0.13)	(-0.79)	(1.26)	(-3.10)
CreditorRights	-0.0267*	-0.367***	-0.236**	0.132***	1.254	-0.0151
	(-1.84)	(-4.94)	(-2.12)	(3.38)	(1.54)	(-0.46)
Country Random Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	311	311	305	311	313	314
IV F-stat	-	43.35	37.77	43.35	40.28	44.63
Anderson LM statistic p-val	-	<0.01	<0.01	<0.01	<0.01	<0.01

This table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables, for the period 2017-2019. All variables are as defined in Table A.2 in the online appendix. Column (1) reports 1st stage IV regression for *LnZscore* as dependent variable in the second stage. Columns (2) to (6) report 2nd stage IV regression estimates obtained when the bondholder relatedness index (*BondRepIndex*) is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels. Two identification test statistics are used. The first-stage F-statistic (IV F-statistic) tests if instruments are weak; if the IV F-statistic is smaller than 10, the instrument is weak. The Anderson canonical correlation LM statistic tests for underidentification, under the null hypothesis that excluded instruments are irrelevant.

Table A.15. Robustness check (3): Using the period from 2017 to 2019

Panel B. Non-instrumented estimations, with country random effects

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	OLS
BondRepIndex	0.717***	1.099**	-0.0938**	-9.015***	-0.179
	(2.79)	(2.21)	(-2.13)	(-3.14)	(-1.48)
Size	-0.0543	-0.0777	-0.00424	-0.110	0.00382
	(-0.97)	(-0.71)	(-0.44)	(-0.18)	(0.15)
GrowthTA	0.0201*	0.0312	-0.00487***	-0.455***	0.0256***
	(1.95)	(1.55)	(-2.71)	(-3.95)	(5.32)
Equity	-0.0201	0.0990**	0.0181***	0.195	0.0839***
	(-0.79)	(1.99)	(4.13)	(0.69)	(7.04)
Loan	0.0145***	0.0123	-0.00152*	-0.173***	-0.00000153
	(2.79)	(1.19)	(-1.71)	(-2.99)	(-0.00)
Deposit	-0.00251	0.0171	0.000413	0.0516	-0.000110
	(-0.43)	(1.50)	(0.41)	(0.80)	(-0.04)
Operating	-0.0560**	-0.0619	0.0131***	-1.128***	-0.0281**
	(-2.28)	(-0.22)	(3.05)	(-4.13)	(-2.46)
Opacity	-0.162***	-0.544***	0.0351***	3.622***	-0.0978***
	(-3.25)	(-5.49)	(4.07)	(6.49)	(-4.16)
BoardSize	-0.0697***	-0.283***	0.00781*	1.566***	-0.0177
	(-2.89)	(-5.86)	(1.88)	(5.81)	(-1.56)
OneTierBoard	-0.226	-0.566*	0.0678**	4.001**	-0.304***
	(-1.33)	(-1.71)	(2.30)	(2.12)	(-3.84)
FinancialExpert	-0.00652**	-0.0151***	0.00176***	0.130***	0.00175
	(-2.16)	(-2.61)	(3.41)	(3.90)	(1.24)
GDP	0.382***	0.380	-0.0418*	-1.335	-0.0376
	(3.02)	(1.52)	(-1.90)	(-0.94)	(-0.63)
Supervision	-0.00899	0.0235	0.0116**	0.544	-0.0466***
	(-0.28)	(0.38)	(2.11)	(1.53)	(-3.12)
CreditorRights	-0.398***	-0.245*	0.0314***	1.547**	-0.0154
	(-5.77)	(-1.84)	(2.62)	(2.02)	(-0.48)
Country Random Effect	Yes	Yes	Yes	Yes	Yes
Observations	311	305	311	313	314

This table reports non-instrumented estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables. All variables are as defined in Table A.2 in the online appendix. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.16. Robustness check (4): The presence of at least one bondholder representative

	DBondRep	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	1st Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage
DBondRep		1.850***	1.803**	-1.177***	-9.730**	-0.717
		(2.84)	(1.97)	(-2.98)	(-1.97)	(-1.61)
DirectFlightsHeadQ	-0.0119***					
	(-5.49)					
Size	0.120***	-0.218**	-0.475***	0.110**	2.054***	0.0953
	(7.16)	(-2.49)	(-3.87)	(2.07)	(3.14)	(1.58)
GrowthTA	-0.00174	0.00466	-0.0141	0.00444	-0.0331	0.0102*
	(-0.70)	(0.52)	(-1.15)	(0.81)	(-0.48)	(1.71)
Equity	-0.0301***	0.0291	0.0614	0.0171	-0.0569	0.124***
	(-4.32)	(0.96)	(1.33)	(0.93)	(-0.20)	(5.62)
Loan	0.000577	0.00625	0.00330	0.00341	-0.00512	-0.00358
	(0.50)	(1.49)	(0.54)	(1.34)	(-0.15)	(-1.21)
Deposit	0.00107	-0.00438	-0.00201	0.00370	0.0284	0.00320
	(0.78)	(-0.89)	(-0.28)	(1.23)	(0.71)	(0.90)
Operating	-0.00397	0.0273**	0.0244	-0.0105	-0.494***	-0.0310***
	(-1.07)	(2.00)	(1.28)	(-1.27)	(-4.18)	(-3.24)
Opacity	0.00162	-0.280***	-1.146***	0.0715*	6.212***	-0.345***
	(0.09)	(-4.30)	(-11.95)	(1.81)	(11.11)	(-2.99)
BoardSize	0.0307	-0.194	1.172***	-0.194	-2.827	-0.536***
	(0.46)	(-0.81)	(3.37)	(-1.34)	(-1.41)	(-3.12)
OneTierBoard	-0.321***	0.472*	0.0622	-0.214	-0.256	-0.407**
	(-6.46)	(1.77)	(0.17)	(-1.32)	(-0.13)	(-2.26)
FinancialExpert	0.00529***	-0.0117***	-0.0133**	0.00678***	0.0899***	0.00272
	(5.52)	(-2.84)	(-2.33)	(2.71)	(2.90)	(0.94)
GDP	0.0720**	0.406***	0.517***	-0.184**	-3.203***	0.0440
	(2.00)	(3.04)	(2.71)	(-2.26)	(-2.77)	(0.46)
Supervision	-0.00492	0.00318	-0.0122	-0.0248	0.576*	-0.0666**
	(-0.48)	(0.09)	(-0.23)	(-1.11)	(1.93)	(-2.53)
CreditorRights	-0.0612***	-0.207**	-0.0164	0.109**	0.0641	0.0710
	(-2.80)	(-2.46)	(-0.14)	(2.13)	(0.10)	(1.21)
Country Random Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	309	302	309	305	315
IV F-stat	-	30.15	31.15	30.15	34.51	33.71
Anderson LM statistic p-val	-	<0.01	<0.01	<0.01	<0.01	<0.01

This table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the dummy variable taking the value of one if at least one bondholder representative is present on the board of a bank (*DBondRep*) and control variables. All variables are as defined in Table A.2 in the online appendix. Column (1) reports 1st stage IV regression for *LnZscore* as dependent variable in the second stage. Columns (2) to (6) report 2nd stage IV regression estimates obtained when *DBondRep* is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels. Two identification test statistics are used. The first-stage F-statistic (IV F-statistic) tests if instruments are weak; if the IV F-statistic is smaller than 10, the instrument is weak. The Anderson canonical correlation LM statistic tests for underidentification, under the null hypothesis that excluded instruments are irrelevant.

Table A.17. Robustness check (5): Critical mass effect of bondholder representatives

	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)
BondRepIndex (β_1)	2.596***	2.348**	-0.526***	-27.12***	-0.819
	(3.70)	(2.19)	(-3.53)	(-2.63)	(-1.39)
BondRepIndex *DCriticalMass (β_2)	1.461**	1.724*	-0.440***	-17.79*	0.568
	(2.13)	(1.68)	(-3.00)	(-1.77)	(0.96)
Control variables	Yes	Yes	Yes	Yes	Yes
Country random effects	Yes	Yes	Yes	Yes	Yes
Observations	309	302	309	305	315
Wald test:	4.057***	4.072***	-0.966***	-44.91***	-0.250
$\beta_1 + \beta_2 = 0$	(19.05)	(8.518)	(24.17)	(10.89)	(0.103)

This table reports the second stage of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*), its interaction with a dummy variable taking the value of one when there are at least three bondholder representatives on the board (*DCriticalMass*), and control variables. All variables are as defined in Table A.2 in the online appendix. Columns (1) to (5) report 2nd stage IV regression estimates where the model estimated values from the first stage are used in place of the actual value of the bondholder relatedness index (*BondRepIndex*) for both the non-interacted and the interacted term. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels.

Table A.18. Robustness check (6): Including other controlling variables for board characteristics and ownership

	BondRepIndex	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	1st Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage
BondRepIndex		2.504***	2.414**	-1.602***	-15.67*	-0.877
		(2.81)	(2.04)	(-2.96)	(-1.90)	(-1.35)
DirectFlightsHeadQ	-0.00844***					
	(-5.91)					
Size	0.0788***	-0.230***	-0.430***	0.150***	2.107***	0.121**
	(6.36)	(-2.80)	(-3.95)	(2.90)	(2.80)	(1.96)
GrowthTA	-0.00102	0.00577	-0.00605	0.00501	-0.0758	0.00858
	(-0.62)	(0.65)	(-0.60)	(0.94)	(-1.01)	(1.42)
Equity	-0.0178***	0.0157	0.0428	0.0293*	0.180	0.133***
	(-3.87)	(0.55)	(1.21)	(1.73)	(0.66)	(6.36)
Loan	0.000103	0.00794*	0.00528	0.00282	-0.0157	-0.00469
	(0.13)	(1.95)	(1.07)	(1.15)	(-0.42)	(-1.58)
Deposit	-0.000455	0.0000575	0.00426	0.00248	0.0179	0.00261
	(-0.49)	(0.01)	(0.73)	(0.84)	(0.41)	(0.72)
Operating	-0.00342	0.0269**	0.00836	-0.0104	-0.462***	-0.0325***
	(-1.40)	(1.97)	(0.55)	(-1.28)	(-3.64)	(-3.33)
Opacity	0.00503	-0.281***	-1.016***	0.0832**	6.531***	-0.354***
	(0.41)	(-4.37)	(-12.73)	(2.15)	(11.36)	(-3.11)
BoardSize	-0.0245	-0.165	0.855***	-0.323**	-2.476	-0.678***
	(-0.52)	(-0.67)	(2.84)	(-2.17)	(-1.12)	(-3.73)
OneTierBoard	-0.223***	0.419	0.140	-0.165	0.220	-0.362**
	(-6.79)	(1.61)	(0.48)	(-1.05)	(0.10)	(-1.98)
FinancialExpert	0.00404***	-0.0138***	-0.0153***	0.00808***	0.101***	0.00389
	(6.19)	(-3.24)	(-2.96)	(3.17)	(2.72)	(1.26)
DControllingSH	0.0659**	-0.210	-0.0432	0.358***	1.014	-0.0224
	(2.18)	(-1.17)	(-0.21)	(3.46)	(0.67)	(-0.18)
PropRegulatoryExp	0.0141***	-0.00928	-0.0128	0.0111	0.136	0.000215
	(7.12)	(-0.55)	(-0.63)	(1.09)	(0.90)	(0.02)
PropIndependent	0.000228	-0.00406	0.0000173	-0.000326	0.0244	-0.00306
	(0.42)	(-1.08)	(0.01)	(-0.19)	(0.95)	(-1.44)
GDP	0.0634***	0.405***	0.383**	-0.204**	-2.552**	0.0418
	(2.65)	(2.95)	(2.36)	(-2.50)	(-2.00)	(0.42)
Supervision	0.0127*	-0.0205	-0.0545	-0.0145	0.800**	-0.0617**
	(1.81)	(-0.52)	(-1.20)	(-0.62)	(2.31)	(-2.17)
CreditorRights	-0.0546***	-0.243***	-0.111	0.145***	0.0795	0.0830
	(-3.53)	(-2.60)	(-1.04)	(2.61)	(0.10)	(1.26)
Country random effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	309	302	309	305	315
IV F-stat	-	35.31	27.79	35.31	32.53	37.55
Anderson LM statistic p-val	-	<0.01	<0.01	<0.01	<0.01	<0.01

This table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables. Three additional controlling variables are included: (i) the proportion of directors having regulatory experience (*PropRegulatoryExp*); (ii) a dummy variable taking the value of one if at least one shareholder holds more than 20% of shares (*DControllingSH*); (iii) the proportion of independent directors on board (*PropIndependent*). All variables are as defined in Table A.2 in the online appendix. Column (1) reports 1st stage IV regression for *LnZscore* as dependent variable in the second stage. Columns (2) to (6) report 2nd stage IV regression estimates obtained when the bondholder relatedness index (*BondRepIndex*) is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels. Two identification test statistics are used. The first-stage F-statistic (IV F-statistic) tests if instruments are weak; if the IV F-statistic is smaller than 10, the instrument is weak. The Anderson canonical correlation LM statistic tests for underidentification, under the null hypothesis that excluded instruments are irrelevant.

Table A.19. Robustness check (7): Including another controlling variable for the bank size effect

	BondRepIndex	LnZscore	DD	SDROA	Volatility	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
	IV	IV	IV	IV	IV	IV
	1st Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage	2nd Stage
BondRepIndex		3.235***	3.497**	-1.896***	-19.58**	-1.226
		(2.72)	(1.97)	(-2.69)	(-1.98)	(-1.63)
DirectFlightsHeadQ	-0.00693***					
	(-4.27)					
DGSIB	0.309***	-0.806*	-1.214*	0.609**	4.963	0.382
	(5.65)	(-1.82)	(-1.86)	(2.32)	(1.36)	(1.33)
GrowthTA	-0.00462**	0.0167	0.0112	-0.00135	-0.217**	0.00469
	(-2.48)	(1.51)	(0.68)	(-0.21)	(-2.24)	(0.66)
Equity	-0.0344***	0.0855**	0.161**	-0.00681	-0.596	0.101***
	(-7.22)	(1.97)	(2.38)	(-0.27)	(-1.42)	(3.48)
Loan	0.00123	0.00390	0.00218	0.00486*	0.0464	-0.00265
	(1.39)	(0.79)	(0.31)	(1.68)	(1.06)	(-0.82)
Deposit	-0.00290***	0.00729	0.0178**	-0.00221	-0.0686	-0.00159
	(-2.90)	(1.21)	(1.96)	(-0.62)	(-1.28)	(-0.39)
Operating	-0.00482*	0.0352**	0.0323	-0.0148	-0.287**	-0.0337***
	(-1.70)	(2.24)	(1.45)	(-1.60)	(-2.18)	(-3.26)
Opacity	-0.0110	-0.236***	-1.029***	0.0540	6.401***	-0.363***
	(-0.80)	(-3.26)	(-9.55)	(1.26)	(10.32)	(-2.99)
BoardSize	0.143***	-0.614**	0.245	-0.0176	2.961	-0.365*
	(3.19)	(-2.19)	(0.58)	(-0.11)	(1.18)	(-1.93)
OneTierBoard	-0.156***	0.372	-0.0893	-0.155	0.773	-0.368**
	(-4.22)	(1.41)	(-0.23)	(-1.00)	(0.34)	(-2.17)
FinancialExpert	0.00588***	-0.0214***	-0.0272***	0.0112***	0.161***	0.00602
	(8.22)	(-3.19)	(-2.88)	(2.81)	(3.11)	(1.43)
GDP	0.0680**	0.319**	0.296	-0.144	-2.544*	0.0847
	(2.49)	(2.07)	(1.29)	(-1.57)	(-1.87)	(0.80)
Supervision	-0.00190	-0.00121	-0.0372	-0.0230	0.795**	-0.0628**
	(-0.24)	(-0.03)	(-0.63)	(-0.97)	(2.37)	(-2.32)
CreditorRights	-0.00832	-0.292***	-0.123	0.160***	0.714	0.0976*
	(-0.50)	(-3.49)	(-1.01)	(3.23)	(1.03)	(1.73)
Country random effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	309	302	309	305	315
IV F-stat	-	18.23	18.38	18.23	19.13	21.79
Anderson LM statistic p-val	-	<0.01	<0.01	<0.01	<0.01	<0.01

This table reports 2SLS estimations of risk measures and performance (logarithm of the Z-score *LnZscore*, distance to default *DD*, standard deviation of the ROA *SDROA*, bank stock return volatility *Volatility*, and return on assets *ROA*) on the bondholder relatedness index (*BondRepIndex*) and control variables. The variable *Size* is replaced with the dummy variable *DGSIB* taking the value of one for banks classified as Global Systemically Important (*DGSIB*). All variables are as defined in Table A.2 in the online appendix. Column (1) reports 1st stage IV regression for *LnZscore* as dependent variable in the second stage. Columns (2) to (6) report 2nd stage IV regression estimates obtained when the bondholder relatedness index (*BondRepIndex*) is instrumented with the number of direct flights from the bank headquarter to the headquarters of firms in the S&P Europe 350 index. The T-statistics are in parentheses, with *, **, and *** denoting significance at 10%, 5% and 1% levels. Two identification test statistics are used. The first-stage F-statistic (IV F-statistic) tests if instruments are weak; if the IV F-statistic is smaller than 10, the instrument is weak. The Anderson canonical correlation LM statistic tests for underidentification, under the null hypothesis that excluded instruments are irrelevant.