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Does director-level reputation matter? Evidence from bank loan contracting☆

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ABSTRACT

This paper investigates whether the reputation of non-CEO inside director matters in bank loan contracting. We posit that reputable inside directors (RIDs) can improve the quality of borrowers' financial reporting and reduce agency risk in loan contracting. Based on a regression analysis of 5104 loan facilities during 1999–2007, we find that borrowers with RIDs enjoy lower loan interest rates and fewer restrictive covenants, and are less likely to have loans secured by collateral, than borrowers without RIDs. Our empirical results also show that RIDs help to obtain favorable loan terms mainly through alleviating *ex-ante* information asymmetry between borrowers and lenders. Further categorizing RIDs into CFO directors and other inside directors, we find that the effects of RIDs on loan spread and collateral requirements are significant for both CFO directors and other inside directors, while other inside directors have a more significant impact on financial covenants than CFO directors. Our findings are robust to controlling for RID characteristics and independent director reputation, and addressing the endogeneity concerns of RIDs, as well as the joint determination of various loan contracting terms.

1. Introduction

For decades, studies have generally shown that boards of directors play important roles in corporate governance (Weisbach, 1988; Rosenstein and Wyatt, 1990; Yermack, 1996; Raheja, 2005; Fich and Shivdasani, 2006). Although previous studies emphasize the importance of outside or independent directors (Weisbach, 1988; Rosenstein and Wyatt, 1990), little empirical evidence has been collected to support the role of inside directors with respect to governance-related decisions and consequences.[1] Our paper therefore aims to examine the potential impact of reputable inside directors (RIDs) on bank loan contracting. We are motivated to study this issue for the following reasons.

First, the literature reveals two conflicting views on non-CEO inside directors. Conventional agency theory (e.g., Mace, 1986; Warther, 1998; Malmendier and Tate, 2009) suggests that inside directors rely on the CEO for their continued employment and compensation, and thus are less likely to challenge any CEO's decision that obscures the information disclosed to outsiders and masks private benefit expropriation. Conversely, the efficient contracting theory (Fama and Jensen, 1983) suggests that inside directors possess valuable firm-specific information, and can help the board to alleviate agency problems between managers and shareholders by improving board knowledge, expertise, and oversight of the management. Given the above conflicting theoretical views, our study aims to illuminate the issue by investigating how lenders perceive the role of inside directors when contracting with borrowers.

Second, although the literature (e.g., Masulis and Mobbs, 2011) documents that inside directors have an impact on operating and stock market performance, few studies examine the role of inside directors in the context of the bank loan market. Inside directors mostly hold significant operating titles (e.g., President, Chief

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[1] In this paper, 'inside directors' refers to non-CEO inside directors. A non-CEO inside director is a member of a company's board of directors and the company's management team.

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Operating Officer [COO], or Chief Financial Officer [CFO]), possess strong financial and operating management skills, and have a significant impact on various corporate decisions. In this sense, inside directors should play a crucial role in communicating to lenders their specialized knowledge about the firm's operation and financial position, and in negotiating loan terms with the lenders. Given that bank loans are a dominant source of external financing (Graham et al., 2008),[2] we are interested in providing empirical evidence on how inside directors affect loan contracting terms.

Third, in addition to financial incentives (e.g., Armstrong et al., 2010; Kim et al., 2011a), reputation is a significant issue for board directors. Good reputation, usually indicated by outside directorships, not only expands directors' outside career opportunities, but also increases their influence within their own firms and even their chances of replacing the incumbent CEO (Mobbs, 2013). As firms borrow repeatedly in the bank loan market (e.g., Diamond, 1991; Gopalan et al., 2012), we expect that the inside directors' reputation have an effect on loan contracting. To the best of our knowledge, little research work has been conducted to investigate the effect of reputation on loan contracting at the board director level. Our study should help to fill the void.

To provide systematic evidence of the impact of RIDs on bank loan contracting, we construct a sample of 5104 loan facility-years from 1182 borrowing firms in the period 1999–2007. We use directors' outside directorships to proxy for inside director reputation. After controlling for borrower-specific, loan-specific, and economy-wide characteristics, we find that loans to borrowers with RIDs have lower interest rates, include fewer restrictive covenants, and are less likely to be secured by collateral, compared to loans to borrower without RIDs. These findings suggest that RIDs help borrowers to reduce agency and information risk, thus leading to more favorable loan contracting terms. In light of growing literature on the important role played by CFOs (e.g., Chava and Purnanandam, 2010; Jiang et al., 2010; Feng et al., 2011; Kim et al., 2011a; Mergenthaler et al., 2012), we separately examine the effect of reputable CFO directors (RCFOs) and other inside directors (ROTHERs) in bank loan contracting. Our results show that both RCFOs and ROTHERs have a favorable effect on loan spread and collateral requirements, while ROTHERs have a more significant effect on financial covenants than RCFOs.

To investigate the channels through which RIDs can affect loan terms, we further explore whether RIDs help to alleviate the information asymmetry between borrowers and lenders *ex ante*, or alleviate agency problems *ex post*. Our analysis shows that the favorable effect of RIDs on various loan terms is more significant for borrowers without prior lending relationships with the lenders than for those with such relationships, whereas the effect of RIDs does not vary with the level of borrower CEO entrenchment. Consistent with the information providing role of inside directors, these findings suggest that RIDs benefit loan financing mainly through alleviating the *ex-ante* information asymmetry between the borrowers and the lenders.

We perform additional analysis to address the endogeneity of inside director reputation and the joint determination of various loan terms. Our sensitivity tests show that our findings are robust to controlling for the reputation of independent (outside) directors, RIDs' tenure and industry expertise, shareholders' rights, and presence of bank directors.

Our study contributes to the literature in several ways. First, our paper provides new insight into the value of inside directors. Corporate governance reforms mandated by the Sarbanes–Oxley Act of 2002 (SOX) recommend greater outside representation on corporate boards. Consistent with recent theoretical and empirical studies (e.g., Adams and Ferreira, 2007; Drymiotes, 2007; Laux, 2008; Acharya et al., 2011), our findings support the efficient contracting view of inside directors, by documenting how RIDs can help firms to obtain loans with more favorable contracting terms.

Second, our study adds to a growing stream of literature examining the effect of director reputation (e.g., Fich and Shivdasani, 2007; Masulis and Mobbs, 2011; Mobbs, 2013). The literature suggests that a director's incentive to maintain their reputation in the managerial labor market can work as an effective governance mechanism, and RIDs help to improve their firms' performance. Our study extends the research work to the bank loan market, where reputation is regarded as an important factor. To the best of our knowledge, this study is the first to investigate the impact of inside director reputation on bank loan contracting terms.

Third, our study contributes to the bank loan literature as well. Previous studies (e.g., Ge et al., 2012; Lin et al., 2012) document how the ownership structure and other governance characteristics have an effect on the loan spread and various non-price loan terms. Our paper furthers this line of studies by showing that the reputation of non-CEO inside directors is also taken into account by lenders when negotiating and contracting with borrowers.

The rest of this paper is organized as follows. Section 2 outlines the relevant theoretical and empirical literature, as well as develops our hypotheses. Section 3 describes the data and research design. Section 4 reports the empirical results, and Section 5 concludes this study.

2. Literature review and hypothesis development

2.1. Theoretical background on inside director reputation

There are two lines of theory regarding the role of non-CEO inside directors in a corporate board. The conventional agency theory (e.g., Helmich, 1974; Hermalin and Weisbach, 2001) contends that inside directors depend on the CEO for their continued employment, future promotion, compensation, and private benefits. A CEO can exert pressure on inside directors with respect to the firm's operational and financial reporting decisions (Feng et al., 2011). Some insiders could be on the board simply due to their loyalty to the CEO (Mobbs, 2013). Therefore, under the conventional agency theory, inside directors surrender to the CEO and help the CEO to either manage or conceal information for private benefit.

By contrast, the efficient contracting theory (Fama, 1980; Fama and Jensen, 1983; Holmstrom, 1999) suggests that executive job markets efficiently provide board directors with implicit incentive contracts (e.g., remuneration, employment, and reputation). Inside directors have incentives to compete for better compensation and positions, and are good candidates for becoming a successive CEO (Raheja, 2005). In particular, inside directors can provide their private information to the board, reveal the CEO's expropriation behaviors, and distinguish themselves to the board by improving the firm's operations and financial reporting quality.[3] Recent theoretical research supports the efficient contracting theory and the desirability of inside directors on corporate boards (Raheja, 2005; Adams and Ferreira, 2007; Drymiotes, 2007; Laux, 2008;

[2] In 2013, the total volume of US loans is $2142 billion (Bloomberg Finance, 2014).

[3] Under the efficient contracting theory, the board retains the power to hire, fire, and set the remuneration of inside directors. Inside directors can be fired only with the board's consent, and are thus protected from reprisals from other managers (Fama and Jensen, 1983).

Masulis and Mobbs, 2011).[4] Inside directors who establish good reputations as being effective monitors of CEOs and advisors to the board can obtain board seats in other companies. Such appointments increase the directors' visibility and expand their career opportunities outside their own firms. As an external, unbiased assessment by the market, rather than an internal appraisal which may be influenced by the CEO (e.g., compensation, titles), outside directorships also increase inside directors' influence on their own board and the likelihood of their succession to the incumbent CEO (Mobbs, 2013). Previous studies show that directors lose their board seats in their own and other companies after their companies experience financial distress, perform poorly, restate financial reports, or become involved in financial fraud lawsuits (e.g., Yermack, 2004; Fich and Shivdasani, 2007; Ertimur et al., 2012), suggesting that reputation incentives are crucial to inside directors.[5]

2.2. Inside director reputation and bank loan contracting

Based on the theoretical framework of inside director reputation, we anticipate that RIDs can affect a firm's bank loan contracting in two ways. First, for the sake of maintaining their reputations, RIDs are less likely to take any action that may result in poor operating outcomes and low-quality information (Holmstrom, 1999), thus reducing the information risk that lenders face in loan contracting. Consistent with this theory, Masulis and Mobbs (2011) show that firms with certified (reputable) inside directors less frequently misreport earnings and make intentional misstatements, which indicates the unique role of RIDs in enhancing the quality of financial reporting. Previous bank loan studies (Bharath et al., 2008; Graham et al., 2008; Kim et al., 2011b; Chen et al., 2013; Lin et al., 2013) reveal that lenders take into account the borrower's information risk in general, and financial reporting quality in particular, when making loan decisions. We therefore anticipate that, to the extent that RIDs help to improve the borrower's financial reporting quality and reduce information risk, lenders are willing to offer more favorable terms for loans to borrowers with RIDs.

Second, RIDs can impact on a firm's loan contracting by mitigating agency risk. Debtholders face two facets of agency risk. The first is the conflict between management and debtholders. Self-interested managers have incentives to pursue personal wealth and expropriate at the expense of residual claimants, such as shareholders and creditors (Fama and Jensen, 1983; Jensen, 1986). As Mobbs (2013) documents, RIDs can strengthen board monitoring and constrain management's expropriating behaviors by serving as a readily available CEO replacement. Mobbs (2013) also finds a positive association between the presence of RIDs and forced CEO turnover sensitivity to accounting performance, and CEO compensation sensitivity to stock price. Therefore, RIDs can better monitor the management and reduce the agency conflicts between managers and debtholders, both of which help firms to obtain favorable loan terms.

Debtholders face a second type of agency risk: the conflict between shareholders and debtholders. This type of risk arises because shareholders may prefer to invest in risky projects (Jensen and Meckling, 1976) and/or to under-invest in certain positive-net present-value projects at the expense of debtholders' interests. Both actions result in lower present and/or future cash flows, and thus increase the risk of borrower default. Inside directors who are concerned about their reputations have an incentive to avoid risky actions and improve coordination between their firm and its capital suppliers with respect to capital investment decisions, by revealing their private information and avoiding misaligned capital investments that augment the firm's default risk (e.g., Holmstrom, 1999; Lambert et al., 2007). From this perspective, RIDs can mitigate the agency conflict between shareholders and debtholders.

Based on these arguments, we predict that lenders will charge lower interest rates to borrowers with RIDs, because such firms present lower information and agency risks. However, under the conventional agency theory, inside directors are less likely to monitor management and may even exacerbate CEO expropriation, as they rely heavily on the CEO for their continued employment and to maintain their personal benefits. Reputable inside directors may depend overwhelmingly on the CEO to maintain their directorships and reputation (Mace, 1986). Reputation concerns could also pressure directors to show the managerial labor market that they are management-friendly by helping to conceal management irregularities. Moreover, too many outside directorships could distract inside directors from their responsibilities to their own firms and result in poor governance (Fich and Shivdasani, 2006). All of the above situations may weaken the favorable impact of RIDs on loan terms. Thus, whether RIDs are associated with a lower cost of loans is an empirical question. For the sake of brevity, we state our hypothesis in favor of efficient contracting theory as follows:

H1. Bank loan interest rates are lower for borrowers with RIDs than for those without RIDs, all else being equal.

Bank loan contracts include not only price terms (i.e., interest rates), but also non-price terms, such as collateral requirements and restrictive covenants (Li et al., 2011). Commercial banks and other private lenders use these non-price terms to monitor post-contract credit quality changes, mitigate information problems and agency conflicts, and control lenders' risk exposure. Previous studies show that lenders are more likely to require collateral for loans and impose more restrictive covenants on loans to risky borrowers, to facilitate post-contract monitoring and renegotiation (e.g., Berger and Udell, 1990; Rajan and Winston, 1995; Jimenez et al., 2006; Bharath et al., 2008; Graham et al., 2008; Demiroglu and James, 2010; Kim et al., 2011b). If RIDs reduce a firm's information and agency risks as argued above, we expect that loans to borrowers with RIDs should include fewer restrictive covenants and be less likely to be secured by collateral. To provide systematic evidence on the impact of RIDs on non-price loan terms, we test our second hypothesis in the alternative form.

H2. The likelihood of loans being secured by collateral is lower, and the number of covenants in loan contracts is smaller, for borrowers with RIDs than for those without RIDs, all else being equal.

2.3. Role of reputable CFOs (RCFOs) and reputable other non-CEO inside directors (ROTHERs)

Among non-CEO inside directors, CFOs are in charge of financial planning and financial reporting, while other inside directors (like

[4] Raheja (2005) is the first to explicitly model the role of inside and outside board members, and proposes that insiders possess private information and can help outsiders evaluate the firm's investment opportunities when they have CEO succession incentives. Drymiotes (2007) shows that making insiders part of the corporate governance mechanism may benefit organizations and maximize the expected net payoff to shareholders by facilitating the functioning of the corporate monitoring process, because the mix of inside and outside directors determines the degree of congruence between shareholder and manager interests. Adams and Ferreira (2007) point out that, unless corporate boards are given better access to information, simply increasing the outside independence of boards is not sufficient to improve governance.

[5] Karpoff et al. (2008) examine the penalties imposed on firms targeted by SEC enforcement action for financial misrepresentation, and find that the reputational penalty is 7.5 times the sum of all of the penalties imposed by the legal and regulatory systems.

COOs, Presidents, Vice Presidents, etc.) are responsible for a firm's day-to-day operations. Prior literature (e.g., Geiger and North, 2006; Chava and Purnanandam, 2010; Jiang et al., 2010; Kim et al., 2011a) suggests that CFOs play a dominant role in earnings management decisions. Chava and Purnanandam (2010) find that CFOs' incentives are the key determinants of corporate decisions involving more specialized judgment such as debt maturity and accrual management. More relevant to our study, Bedard et al. (2014) suggest that a board seat can enable a CFO's specialized knowledge to be brought to the attention of other board members, which improves the company's financial reporting quality. To the extent that CFO directors and other inside directors have different sets of expertise and skills, and thus play different roles in loan contracting, there can be some difference in the impact of reputable CFOs (RCFOs) and other non-CFO RIDs (ROTHERs) on loan contract terms. In other words, lenders may differentiate the reputation of CFO directors and other inside directors when contracting with borrowers. Based on the above arguments, we also test the following hypothesis:

H3. Loan interest rates, the likelihood of collateral requirements, and the number of covenants are significantly different for borrowers with RCFOs and borrowers with ROTHERs, all else being equal.

3. Research design and data collection

3.1. Measuring inside director reputation

An inside director's reputation is essentially the assessment of their talent or ability by the external labor market. Shivdasani and Yermack (2002) argue that a director's talent or reputation correlates with the number of directorships they have held. Fama and Jensen (1983) emphasize that a directorship signals the recognition of valuable and highly regarded individuals by both internal and external executive markets. Masulis and Mobbs (2011) find a positive stock market reaction to the appointment of inside directors to unaffiliated corporate boards, and a negative stock market reaction to the departure of inside directors, suggesting that outside directorships are an important source of director incentives. They argue that the use of outside directorships for a director's talent or reputation reduces the potential endogeneity concern, as the appointment to an unaffiliated board is determined by the external labor market for directorships. Therefore, following the previous studies, we use inside directors' outside directorships on unaffiliated boards to proxy for the reputation of a firm's inside directors. In more detail, we examine (1) an indicator variable (*DRID*) that equals one if the firm has at least one non-CEO inside director who holds at least one outside directorship, and zero otherwise; (2) the number of RIDs divided by the number of all of the directors on the board (*RID%*).[6]

3.2. Bank loan contracting features

Bank loan contract features include both a price term (e.g., interest rate) and non-price terms (e.g., collateral requirements, covenant restrictions, etc.). The price term of a loan contract is measured by the drawn all-in spread (*Spread*), which is the interest rate that a borrower pays (plus the annual fee and upfront or maturity fee relating to the loan amount) in basis points over LIBOR for each dollar drawn down.[7] Lenders also use non-price terms when designing loan contracts in an attempt to mitigate: (1) the agency costs of debt arising from agency conflicts between shareholders and debtholders (Smith and Warner, 1979); (2) the information risk that lenders face (Graham et al., 2008); and (3) any potential conflicts between lenders and borrowers (Lin et al., 2012). Stringent non-price contract terms can lead to higher transaction costs for borrowers, given more frequent refinancing and the relinquishing of profitable investment opportunities to comply with more restrictive debt covenants and other requirements (Graham et al., 2008). Our study includes the following non-price terms: the presence of collateral (*DSECU*) and the number of restrictive covenants (*NCOV*). *DSECU* equals one if a facility is secured with collateral, and zero otherwise. *NCOV* refers to the number of restrictive covenants included in a loan contract. Loan covenants are either financial covenants, which are typically linked to accounting ratios, or general covenants, which include all other non-financial covenants, such as restrictions on prepayment, dividend payment, and voting rights. Therefore, we also examine general covenants (*GenCov*) and financial covenants (*FinCov*) separately in our main test.

3.3. Empirical model

The primary empirical model is specified as follows:

$$\begin{aligned} Loan\ Feature_{ikt} = {} & \alpha_0 + \alpha_1 DRID_{it-1} \\ & + \alpha_2 Borrower\text{-}specific\ Control_{it-1} \\ & + \alpha_3 Loan\text{-}specific\ Control_{ikt} \\ & + \alpha_4 Economy\text{-}wide\ Control_t \\ & + (Year\ Indicators_{it}) \\ & + (Industry\ Indicators_{it-1}) + error_{ikt}, \end{aligned} \tag{1}$$

In the model, the dependent variable *LoanFeature* represents one of the loan contracting features described in Section 3.2. The test variable *DRID* equals one if the firm has at least one RID on the board, and zero otherwise; the alternative test variable *RID%* is the percentage of RIDs on the board. As *H1* predicts lower loan spreads for borrowers with RIDs, we expect α_1 to be negative. Similarly, *H2* suggests $\alpha_1 < 0$ when the dependent variable is *DSECU* or *NCOV*.

Borrower-specific control variables include *Size*, *Leverage*, *MB*, *Profitability*, *Tangibility*, *CashVol*, *Loss*, *DA*, *Inde_Director*, and *CEO_CH*. *Size*, *Leverage*, *MB*, and *Profitability* are included to control for borrower credit quality. *Size* is the natural log of the total assets in millions of dollars. *Profitability* is defined as the EBIDTA divided by the year-end total assets. More profitable and larger firms have less information asymmetry and easier access to external financing. *Leverage* is the long-term debt divided by total assets. Firms with higher leverage ratios have higher default risk, and thus a higher cost of bank borrowing. *MB* is the market-to-book ratio measured as the market value of equity plus the book value of debt divided by total assets. Although growth firms have more development opportunities, they often face high operating risk and financial leverage. In such a case, *MB* is likely to be inversely associated with the firm's credit quality. *Tangibility* is defined as the ratio of tangible assets to total assets. Because lenders may take over tangible assets should the borrower default, we expect firms with more tangible assets to have lower borrowing costs. *CashVol* refers to the standard deviation of quarterly cash flows from operations (scaled by the year-end total assets) over the past five fiscal years.

[6] Following Milbourn (2003), we use inside directors' tenure and age as alternative proxies for director reputation. Though not tabulated for brevity, the results for director tenure and age are consistent with our main findings.

[7] Commercial banks and other private lenders typically assess the risk of a loan based on information of the business nature and performance of the borrowing firm, and then set a markup over a benchmark rate, such as LIBOR, to compensate for potential credit risk.

CashVol is used to proxy for a firm's earnings risk, and is thus expected to be positively correlated with the cost of debt. Firms suffering from operating losses have greater information risk, and are predicted to be positively associated with the cost of private debt. *DA* refers to a firm's discretionary accruals derived from the Modified Jones Model (Dechow et al., 1995),[8] and has been shown to be positively associated with loan spreads (Bharath et al., 2008). *Inde_Director* refers to the ratio of the number of independent directors to the number of all directors. *CEO_CH* equals one when the positions of CEO and board chairman are separated, and zero otherwise. We include *Inde_Director* and *CEO_CH* to control for the effect of CEO entrenchment. Prior research shows that inside director incentives are influenced by CEO entrenchment (Raheja, 2005; Helmich, 1974). CEO entrenchment may therefore be an important confounding factor when examining the relationship between RIDs and loan contracting. All of the borrower characteristic variables are measured as of the year prior to the loan initiation date.[9]

Loan-specific control variables include *Log_Loan_Size*, *Log_Loan_Maturity*, *Log_NLenders*, *Prior_Lead*, *LoanType*, and *LoanPurpose*. *Log_Loan_Size* is the natural log of the amount of the loan facility in millions of dollars. *Log_Loan_Maturity* is the natural log of the maturity of the loan in months. Research shows that lenders charge lower interest rates for shorter-maturity loans and larger loan facilities (Graham et al., 2008). *Log_NLenders* is the natural log of the number of banks in the loan deal. Bank loan research predicts that the more lenders involved in a loan exacerbates the information asymmetry between the lead bank and the participating banks, which demands a higher interest rate (Ivashina, 2009). Previous studies show that banks tend to provide more favorable loan terms to borrowers with whom they have had prior banking relationships (Bharath et al., 2011). *Prior_Lead* is used to control for a prior lending relationship between the lead banks and the borrowers. It equals one if at least one of the lead arrangers for the current loan deal has been a lead arranger of previous deals for the same borrower in the past five years, and zero otherwise. Loans are arranged with different types, including 364-day loans, term loans, and revolving loans. Loans can also be declared for different usages, such as corporate purposes, debt repayment, takeovers, working capital, and so on. We included the loan type and the loan purpose indicators in the model to control for their potential effect on various loan contract terms.

Finally, we include two economy-wide variables, *Credit_Spread* and *Term_Spread*, to control for the potential impact of macroeconomic conditions on loan contracting. *Credit_Spread* is the difference in yield between BAA- and AAA-rated corporate bonds, whereas *Term_Spread* is the difference in yield between ten-year and two-year U.S. Treasury bonds. Prior literature (Chen et al., 1986; Graham et al., 2008) suggests that credit spread and term spread are good proxies of macroeconomic conditions and help to explain stock and bond returns.

3.4. Data

We extract director information from the RiskMetrics database, which includes director information for approximately 1500 firms each year, including other directorships held by business executives.[10] Bank loan data come from DealScan, a database compiled by the Loan Pricing Corporation that contains detailed loan information for US and foreign commercial loans made to corporations since 1986. The basic unit of our empirical analysis is a loan facility in DealScan, because loan characteristics vary across the different facilities in a loan deal. Financial statement information is collected from the Compustat database.

We first match DealScan and Compustat using the linking table originally created by Chava and Roberts (2008),[11] and then merge the RiskMetrics sample with the bank loan and financial statement data. We require that all of the loan facilities in our sample be senior debts.[12] Regarding the types of loans, our sample includes term loans, revolvers, and 364-day facilities, but excludes bridge loans and non-fund–based facilities (e.g., leases and standby letters of credit). For the test variable, we exclude appointments to affiliated boards and directors with family connections,[13] and count only independent outside directorships.[14] We also exclude highly regulated financial and utilities firms, because they have substantially different governance and performance systems. Firms are removed if they lack loan information in DealScan or have missing Compustat information. Our final sample includes 5104 facility-years for 1182 firms over the period 1999–2007.[15] Table 1 presents the sample distribution by year and loan type. During the period, about 58.40% of loan facilities are revolvers, while 24.10% and 17.50% are 364-day facilities and term loans, respectively.

3.5. Descriptive statistics

Table 2 presents descriptive statistics for all of the variables about the loan facility and the borrowing firms' characteristics. The main variables are winsorized at the extremes of 1% and 99% to mitigate the possible effect of outliers. As shown in Table 2, the average drawn all-in spread over LIBOR (i.e., *AIS*) is approximately 129 bps, with a standard deviation of approximately 116 bps. The mean facility size is about $537 million, while the mean maturity is approximately 42 months. In addition, 34% of the loan facilities in our sample are secured with collateral, and the mean number of restrictive covenants included in each loan contract is approximately 4.75. On average, a loan facility in our sample involves 12 lenders, and 52.1% of the loan facilities involve prior lending relationships between the lead banks and the borrowers.

In addition, 15.4% of the borrowing firms in our sample have at least one RID measured by their outside directorships, while the average percentage of RIDs on the board is 1.7%. As reported in the online appendix, we further partition the full sample into two subsamples (i.e., borrowers with RIDs, and borrowers without RIDs) and compare the summary statistics between subsamples. The results show that lenders charge lower loan interest rates and provide loans that are larger, with shorter maturity, without collateral requirement, and with fewer restrictive covenants to

[8] We also estimate an accrual measure using the model of Dechow and Dichev (2002). Our results are robust to this alternative accrual measure.

[9] We examine the lagged relation between a loan feature in year t and borrower characteristics in year $t-1$ to alleviate the concern on potential reverse causation between inside director reputation and the loan contracting terms.

[10] RiskMetrics identifies each director as a firm employee, an affiliated outsider, or an independent outsider, and has a flag that indicates whether an inside director is the CEO.

[11] We are grateful to Michael Roberts for providing the DealScan–Compustat link file.

[12] Most loans covered by the LPC DealScan are senior debt. During our sample period 1999–2007, senior debt accounts for 99.39% of the loans on DealScan.

[13] Such outside directorships are likely for suppliers and customers, or they are likely to have other business or family relationships with the home firm or the executives. Outside directorships in affiliated firms are likely to occur for strategic or operational reasons, and do not lead to greater independence nor to incentives for inside directors to work harder.

[14] Following Masulis and Mobbs (2011), we account for a missing CEO in the following way. If the firm has an inside director listed as president or chairman, or if there is only one inside director listed, then we assign that insider as the CEO. We thereafter exclude 24 firm-years with no CEO identification, and 62 firm-years with multiple CEOs.

[15] As borrower information is measured as of the year prior to the loan initiation date, the borrower information ranges from 1998 to 2006. Before 1998, no data exist in the RiskMetrics database for inside directors' outside directorships and tenure. After 2007, RiskMetrics uses a different method for data collection.

Table 1
Sample distribution by year and loan type.

Year	364-day facilities	Revolvers	Term loans	All facilities
1999	139	196	72	407
2000	217	276	92	585
2001	244	317	104	665
2002	238	322	86	646
2003	188	292	101	581
2004	100	406	108	614
2005	44	441	132	617
2006	24	381	97	502
2007	36	350	101	487
Total	1230	2981	893	5104
Percent (%)	24.10	58.40	17.50	100

This table presents the distribution of loan facilities in our sample by year and loan type.

borrowers with RIDs. Borrowers with RIDs also attract more lenders, and are more likely to have prior lending relationships with the lead banks than borrowers without RIDs. All of the mean differences for the price and non-price loan features are significant at the 1% level. Compared to borrowers without RIDs, borrowers with RIDs tend to be larger, have greater growth potential, profitability, and tangibility, and are less likely to be loss firms.[16]

4. Empirical results

4.1. Main results

4.1.1. RID and loan spread: test of H1

Columns (1) and (2) in Table 3 report the regression results for the impact of inside director reputation on the loan spreads based on Eq. (1). Column (1) uses *DRID* as the test variable, while Column (2) uses *RID%*. All reported *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering (Petersen, 2009). As reported in Column (1) of Table 3, the coefficient on *DRID* is significantly negative at the 1% level, which corroborates the prediction in *H1*. Moreover, the effect of *DRID* on the loan spread is economically significant. The coefficient of -0.098 indicates that, on average, borrowers with RIDs enjoy an interest rate of 9.34% lower than those without RIDs.[17] Table 2 shows that the mean value of *AIS* is 129.391 basis points, and that the average loan size is $536.548 million. On average, an annual interest cost of $0.65 million ($536.548 \times 129.391 \times 9.34\%/10{,}000$) can thus be saved for borrowers with RIDs. Results in Column (2) of Table 3 further validate *H1*, and show negative relations between *RID%* and the loan spreads at the significance level of 1%. This result supports our argument that banks consider a borrower's director-level reputation when setting the specific price terms of a loan contract. Inside director reputation affects a firm's information and agency risks, and thus plays an important role in private debt contracting. This confirms the desirability of certain types of inside directors in debt contracting.

Turning to the control variables, we find that loan spread is negatively associated with *Log_Loan_Size*, *Log_Maturity*, *Prior_Lead*, *Size*, *MB*, *Profitability*, and *Inde_director*, whereas it is positively associated with *Log_NLender*, *Leverage*, and *Loss*. These results on the control variables are broadly consistent with those contained in the previous bank loan literature. However, the coefficients on *Tangibility*, *CashVol*, *DA,* and *CEO_CH* are insignificant.[18]

Table 2
Descriptive statistics.

Variable	Obs	Mean	Median	Std. dev.
Loan facility characteristics				
AIS (bps)	5104	129.391	100.000	115.910
Loan_size (million)	5104	536.548	267.875	942.411
Maturity	5104	42.108	48.000	22.812
DSECU	5104	0.340	0.000	0.474
NCOV	5104	4.750	5.000	3.991
NLenders	5104	12.193	9.000	11.134
Prior_Lead	5104	0.521	1.000	0.500
Borrowing firm characteristics				
DRID	5104	0.154	0.000	0.361
RID%	5104	0.017	0.000	0.043
Size	5104	7.833	7.715	1.459
Leverage	5104	0.271	0.262	0.171
MB	5104	1.904	1.549	1.217
Profitability	5104	0.148	0.141	0.093
Tangibility	5104	0.306	0.256	0.212
CashVol	5104	0.068	0.062	0.033
Loss	5104	0.069	0.000	0.253
DA	5104	0.081	0.082	0.076
Inde_Director	5104	0.670	0.700	0.182
CEO_CH	5104	0.693	1.000	0.461

This table presents the description of variables for the entire sample of 5104 loan facilities. *AIS* is the drawn all-in spread charged by the bank over the LIBOR for the drawn portion of the loan facility. *Loan_size* is the amount of the loan facility in millions of dollars. *Maturity* is the maturity of the loan in months. *DSECU* equals 1 if the loan facility is secured with collateral, and 0 otherwise. *NCOV* refers to the number of restrictive covenants included in a loan contract. *NLenders* refers to the number of banks in the loan deal. *Prior_Lead* equals 1 if at least one of the lead arrangers for the current deal has been a lead arranger of previous deals for the same borrower during the past five years, and 0 otherwise. *DRID* equals 1 if the firm has at least one non-CEO operating officer-director who holds at least one outside directorship, and 0 otherwise. *RID%* is measured by the number of RIDs divided by the number of all directors. *Size* is the natural log of total assets in millions of dollars. *Leverage* is the long-term debt divided by the total assets. *MB* is measured as the market value of equity plus the book value of debt divided by total assets. *Profitability* is EBIDTA divided by total assets. *Tangibility* is net PP&E (property, plant, and equipment) divided by total assets. *CashVol* is defined as the standard deviation of quarterly cash flows from operations scaled by total assets over the past five fiscal years. *Loss* equals 1 if the firm has negative aggregate earnings before extraordinary items in the last and current fiscal years, and 0 otherwise. *DA* refers to the discretionary accruals obtained from the Modified Jones Model. *Inde_Director* is the ratio of the number of independent directors to the number of all directors. *CEO_CH* equals 1 when the positions of the CEO and the board chairman are separated, and 0 otherwise.

4.1.2. RID and non-price terms: tests of H2

To assess the impact of RIDs on the likelihood of a loan being secured by collateral, we estimate Eq. (1) with *DSECU* as the dependent variable, using the probit regression procedure. Following Bharath et al. (2011), we use loan concentration (*LOAN_CONC*) in lieu of loan size (*Log_Loan_Size*), because collateral is imposed at the loan deal level rather than at the facility level. *LOAN_CONC* refers to *Deal_Size* divided by the sum of *Deal_Size* and the borrower's total liabilities. A larger proportion of the current loan to be borrowed relative to the size of total debt increases the likelihood that lenders require collateral (Berger and Udell, 1990).

Column (3) of Table 3 shows that the coefficient on *DRID* is significantly negative at the 1% level. The *DRID* coefficient of −0.359 translates into a −10.6% marginal effect in the probit model, which

[16] The Pearson correlation coefficients among the loan- and borrower-specific variables are reported in the online appendix. The correlations between loan terms (*AIS, DSECU, NCOV*) and *DRID* are significantly negative at the 1% level, which indicates that banks provide more favorable loan terms for firms with RIDs. Consistent with the literature (Graham et al., 2008; Ge et al., 2012), the variable *AIS* is negatively correlated with *Log_Loan_Size*, *Prior_Lead*, *Size*, *MB*, *Profitability*, *Inde_director*, and *CEO_CH*, whereas it is positively correlated with *DSECU*, *NCOV*, *Leverage*, and *Loss*.

[17] The calculations are as follows: $LGAIS_{DRID=1} - LGAIS_{DRID=0} = -0.098$. Thus $AIS_{DRID=1}/AIS_{DRID=0} = e^{-0.098} = 0.9066$. This ratio reflects a 9.34% decrease in *AIS* for borrowers with RIDs.

[18] The mean variance inflation factor (VIF) in our model is 1.56. As the "rule of thumb" is that multicollinearity is a concern if VIF is higher than 10, this test result indicates that there is no significant multicollinearity problem among the independent variables in our model.

Table 3
Inside director reputation and loan contracting.

Variables	*LGAIS*		*DSECU*		*NCOV*		*GenCov*		*FinCov*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Test variables										
DRID	−0.098***		−0.359***		−0.090**		−0.074		−0.118**	
	(−2.58)		(−3.71)		(−2.01)		(−1.60)		(−2.23)	
RID%		−0.793***		−2.650***		−0.700**		−0.567		−0.921**
		(−2.67)		(−2.94)		(−1.99)		(−1.53)		(−2.27)
Loan-specific characteristics										
Log_Loan_Size	−0.089***	−0.089***								
	(−4.56)	(−4.55)								
LOAN_CONC			0.459	0.449						
			(1.47)	(1.44)						
Log_Deal_Size					0.170***	0.170***	0.246***	0.246***	0.030	0.029
					(5.90)	(5.88)	(8.07)	(8.05)	(0.95)	(0.95)
Log_Maturity	−0.080***	−0.080***	0.098*	0.097*	0.042	0.042*	0.033	0.033	0.070***	0.070***
	(−3.81)	(−3.81)	(1.88)	(1.87)	(1.64)	(1.65)	(1.14)	(1.15)	(2.58)	(2.59)
Log_Nlender	0.049***	0.049***	0.111**	0.111**	0.182***	0.183***	0.158***	0.158***	0.234***	0.234***
	(3.02)	(3.02)	(2.28)	(2.27)	(6.83)	(6.83)	(5.44)	(5.44)	(7.97)	(7.97)
Prior_Lead	−0.047**	−0.048**	−0.104*	−0.105*	−0.074***	−0.074***	−0.081***	−0.081***	−0.063**	−0.063**
	(−2.27)	(−2.27)	(−1.86)	(−1.88)	(−2.74)	(−2.74)	(−2.72)	(−2.72)	(−2.14)	(−2.14)
Borrower-specific characteristics										
Size	−0.194***	−0.195***	−0.299***	−0.304***	−0.320***	−0.321***	−0.347***	−0.348***	−0.273***	−0.274***
	(−9.60)	(−9.72)	(−6.76)	(−6.86)	(−14.20)	(−14.26)	(−14.28)	(−14.31)	(−11.57)	(−11.70)
Leverage	0.869***	0.872***	1.210***	1.220***	0.356***	0.358***	0.370***	0.371***	0.343***	0.345***
	(8.90)	(8.92)	(5.48)	(5.51)	(3.99)	(4.01)	(3.89)	(3.91)	(3.28)	(3.30)
MB	−0.115***	−0.116***	−0.140***	−0.140***	−0.079***	−0.079***	−0.102***	−0.103***	−0.044*	−0.044*
	(−4.31)	(−4.32)	(−2.75)	(−2.76)	(−3.64)	(−3.64)	(−4.42)	(−4.43)	(−1.86)	(−1.87)
Profitability	−1.202***	−1.201***	−1.569**	−1.571**	0.054	0.055	−0.034	−0.033	0.211	0.212
	(−4.37)	(−4.37)	(−2.35)	(−2.35)	(0.26)	(0.27)	(−0.15)	(−0.14)	(0.93)	(0.93)
Tangibility	0.079	0.078	0.020	0.023	−0.072	−0.073	0.009	0.008	−0.223***	−0.223***
	(1.03)	(1.03)	(0.13)	(0.14)	(−0.99)	(−1.00)	(0.10)	(0.10)	(−2.75)	(−2.75)
CashVol	−0.036	−0.019	−0.406	−0.368	−1.453***	−1.441***	−1.127**	−1.118**	−1.979***	−1.962***
	(−0.08)	(−0.04)	(−0.40)	(−0.36)	(−2.81)	(−2.78)	(−2.03)	(−2.02)	(−3.26)	(−3.23)
Loss	0.335***	0.334***	0.654***	0.647***	0.093	0.092	0.136*	0.135*	0.020	0.019
	(5.04)	(5.02)	(4.76)	(4.70)	(1.52)	(1.51)	(1.94)	(1.93)	(0.33)	(0.31)
DA	0.132	0.131	−0.380	−0.381	−0.044	−0.046	0.008	0.006	−0.151	−0.153
	(0.86)	(0.85)	(−0.96)	(−0.97)	(−0.27)	(−0.28)	(0.04)	(0.03)	(−0.83)	(−0.84)
Inde_director	−0.163*	−0.168*	−0.373**	−0.386**	−0.067	−0.071	0.014	0.012	−0.194**	−0.198**
	(−1.80)	(−1.85)	(−2.03)	(−2.09)	(−0.86)	(−0.90)	(0.16)	(0.13)	(−2.18)	(−2.22)
CEO_CH	−0.014	−0.014	0.051	0.056	0.039	0.039	0.034	0.034	0.045	0.046
	(−0.49)	(−0.48)	(0.78)	(0.85)	(1.35)	(1.36)	(1.01)	(1.02)	(1.47)	(1.49)
Macroeconomic factors										
CreditS	0.037	0.037	0.179	0.178	0.035	0.035	0.022	0.022	0.050	0.051
	(0.79)	(0.79)	(1.21)	(1.20)	(0.51)	(0.52)	(0.30)	(0.30)	(0.71)	(0.72)
TermS	0.065***	0.065	−0.010	−0.010	0.038**	0.038**	0.041**	0.041**	0.035**	0.035**
	(5.60)	(5.59)	(−0.29)	(−0.31)	(2.30)	(2.29)	(2.30)	(2.30)	(2.05)	(2.05)
Intercept and indicators										
Intercept	53.707***	53.405***	−51.380*	−52.469*	−5.015	−5.154	−32.917**	−33.065**	43.647***	43.503***
	(4.82)	(4.80)	(−1.82)	(−1.85)	(−0.39)	(−0.41)	(−2.25)	(−2.26)	(3.23)	(3.22)
Loan type indicators	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Loan purpose indicators	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year indicators	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Industry indicators	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
N	5104	5104	4937	4937	5104	5104	5104	5104	5104	5104
Adj./Pseudo R^2	0.605	0.605	0.301	0.301	0.214	0.214	0.202	0.202	0.131	0.131

This table reports the regression results for the impact of inside director reputation on the price and non-price loan terms based on Eq. (1). The dependent variable in Columns (1) and (2) is the natural log of *AIS*. The dependent variable in Columns (3) and (4) is *DSECU*, which equals one if the loan facility is secured with collateral, and zero otherwise. The dependent variable in Columns (5) and (6) is *NCOV*, which refers to the number of restrictive covenants included in a loan contract. The dependent variable in Columns (7) and (8) is *GenCov*, which refers to the number of general covenants included in a loan contract. The dependent variable in Columns (9) and (10) is *FinCov*, which refers to the number of financial covenants included in a loan contract. Columns (1), (3), (5), (7), and (9) use *DRID* as the test variable, while Columns (2), (4), (6), (8), and (10) use *RID%* as the test variable. *CreditS* is defined as the difference in yield between BAA- and AAA-rated corporate bonds. *TermS* is defined as the difference in yield between 10-year and 2-year US Treasury bonds. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

indicates that the probability of a loan's being secured by collateral decreases by 10.6% for borrowers with RIDs. The coefficient on *RID%* in Column (4) is also significantly negative at the 1% level. This finding suggests that lenders are less likely to require collateral for borrowers with RIDs than for those without such directors. Together, these results support *H2*: the likelihood that loans are secured by collateral is lower for borrowers with RIDs.

To assess the impact of RIDs on the intensity or prevalence of restrictive covenants, we use the number of restrictive covenants in each loan deal as the dependent variable by adopting the Poisson regression procedure. As loan covenants are imposed at the deal level rather than at the facility level, we use the size of the loan deal instead of the loan facility in the regressions. Columns (5) and (6) in Table 3 reports the regression results. The coefficients

on *DRID* and *RID%* are both significantly negative at the 5% level. The marginal effect of the Poisson regression shows a 0.352 decrease in the number of restrictive covenants for borrowers with RIDs. These results support *H3:* lenders impose fewer restrictive covenants for borrowers with RIDs. In addition, we also examine the effect of RIDs on financial covenants and non-financial (general) covenants separately. As shown in Columns (7)–(10) of Table 3, the estimated coefficients on our test variables are significantly negative when the number of financial covenants (*FinCov*) works as the dependent variable, whereas they are negative but insignificant when the number of general covenants (*GenCov*) works as the dependent variable. The results suggest that the effect of RIDs on loan covenants is mainly driven by financial covenants.[19]

4.1.3. Role of RCFOs and ROTHERs on bank loan contracting: test of H3

We further compare the relative importance of RCFOs and ROTHERs on bank loan contracting, and the regression results are reported in Table 4.[20] Columns (1)–(3) show the results by using *LGAIS, DSECU*, and *NCOV* as dependent variables, respectively. *DRCFO* equals one if the firm has a CFO with at least one outside directorship, and zero otherwise. *DROTHER* equals one if the firm has a non-CEO inside director other than CFO with at least one outside directorship, and zero otherwise. As shown in Column (1) of Table 4, the coefficients on *DRCFO* and *DROTHER* are negative and significant at the 5% level, suggesting that both RCFOs and ROTHERs are associated with lower loan spread. Although the coefficient on *DRCFO* (−0.155) is larger than that on *DROTHER* (−0.086), the *t*-test shows that the difference is not significant at the conventional level. Inconsistent with our *H3*, the results indicate that the two groups of RIDs—i.e., CFO directors and other inside directors—have no significantly different impact on loan pricing. When the dependent variable is *DSECU*, we find that the coefficients on *DRCFO* and *DROTHER* are −0.441 and −0.342, respectively, and significant at the 10% and 1% levels. These findings suggest that both RCFOs and ROTHERs can help to reduce the likelihood of loans being secured by collateral, although to a varied extent. The *t*-tests indicate again that the coefficients on *DRCFO* and *DROTHER* are not statistically significant in Column (2), thereby not supporting the prediction of *H3*.

In Column (3), when *NCOV* is the dependent variable, the coefficient on *DROTHER* (−0.093) is significantly negative at the 10% level, whereas the coefficient on *DRCFO* (−0.075) is insignificant. In addition, we also examined the effect of *DRCFO* and *DROTHER* on the number of financial covenants (*FinCov*) and general covenants (*GenCov*) separately, and report the results in Columns (4) and (5) of Table 4. We find that *DRCFO* has no significant effect on the number of general or financial covenants, whereas *DROTHER* has a significant effect on the number of financial covenants, but not the number of general covenants. The results reveal that ROTHERs have a more significant effect on financial covenants than do RCFOs. We posit the following explanation for this finding. Compared to RCFOs, who focus on financial planning and reporting, other reputable insiders (e.g., COOs, Presidents, and Vice Presidents) are in charge of daily operating activities, such as product market competition, supply chain management, and mergers and acquisitions. Therefore, ROTHERs may prefer a high degree of operational flexibility. Since financial covenants restrict the operational flexibility of borrowers (e.g., Rajan and Winston, 1995; Denis and Wang, 2014), borrowers with ROTHERs are willing to obtain loans with fewer financial covenants. Moreover, lenders may consider ROTHERs as having more comprehensive understanding of their companies' operations and accordingly firms with ROTHERs as having a lower operational risk, thus imposing fewer restrictive financial covenants on loans to these borrowers.

Table 4
CFO versus other inside director reputation and loan contracting.

Variables	*LGAIS* (1)	*DSECU* (2)	*NCOV* (3)	*GenCov* (4)	*FinCov* (5)
Test variables					
DRCFO	−0.155**	−0.441*	−0.075	−0.085	−0.057
	(−2.57)	(−1.93)	(−0.84)	(−0.88)	(−0.62)
DROTHER	−0.086**	−0.342***	−0.093*	−0.072	−0.131**
	(−2.08)	(−3.35)	(−1.93)	(−1.45)	(−2.23)
Other controls	Included	Included	Included	Included	Included
N	5104	4937	5104	5104	5104
Adj./Pseudo R^2	0.605	0.301	0.214	0.202	0.131

This table reports the regression results for the impact of CFO reputation on bank loan contracting. *DRCFO* equals 1 if the firm has a CFO who holds at least one outside directorship, and 0 otherwise. *DROTHER* equals 1 if the firm has a non-CEO inside director other than CFO who holds at least one outside directorship, and 0 otherwise. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

In sum, the results in Table 4 show that ROTHERs have a more significant effect on the number of financial covenants than do RCFOs. However, the responsibility titles of RIDs seem not significantly affect loan spread and collateral requirement.

4.2. Additional test: alleviate information asymmetry ex ante, or alleviate agency problems ex post?

In this section, we further explore whether RIDs affect the loan terms through alleviating the information asymmetry between the borrowers and lenders *ex ante*, any agency problems *ex post*, or both. To investigate whether RIDs help reduce the *ex-ante* information asymmetry, we split our full sample into two subsamples: loans for borrowers who have prior relationships with the lead lenders; and loans for borrowers who do not have prior relationships with the lead lenders. Prior bank loan literature (e.g., Bharath et al., 2011) suggests that prior borrower–lender relationship mitigates the information asymmetry between borrowers and lenders, and leads to more favorable loan terms. If RIDs help borrowers to obtain favorable loan terms through reducing the *ex-ante* information asymmetry, we expect the effect of RIDs on various loan terms to be more significant for the subsample of loans without a prior borrower–lender relationship than for the subsample with a prior relationship. The results of this test are reported in Panel A of Table 5. As shown, the relationships between RIDs and the three loan terms are more pronounced for borrowers without a prior borrower–lender relationship, and the differences in the estimated coefficients between the two subsamples are statistically significant. The results suggest that RIDs can effectively alleviate the *ex-ante* information asymmetry between borrowers and lenders so that their firms can obtain more favorable loan terms.

To investigate whether RIDs can help reduce the *ex-post* agency problems, we divided our full sample into high versus low CEO entrenchment subsamples. CEOs can entrench themselves by strategically exacerbating a project's complexity, which increases *ex-post* agency problems between borrowers and lenders. If RIDs help borrowers to obtain favorable loan terms through reducing these *ex-post* agency problems, we expect there to be a more pronounced relationship between RIDs and the loan terms for borrowers with higher CEO entrenchment. CEO entrenchment is measured by the number of years the CEO has served on the board (*CEO_Tenure*).[21]

[19] The results on the control variables are generally consistent with the literature.
[20] Here, for the sake of brevity, we use only the presence of a RCFO and a ROTHER to proxy for their reputations.
[21] We also use other measurements to proxy for CEO entrenchment (e.g., CEO ownership, CEO equity incentives, CEO duality, percentage of independent directors) and find similar results.

Table 5
Role of RIDs in loan contracting: alleviating *ex-ante* information asymmetry or *ex-post* agency problems.

	LGAIS (1)	*LGAIS* (2)	*DSECU* (3)	*DSECU* (4)	*NCOV* (5)	*NCOV* (6)
Panel A: Ex-ante information asymmetry between borrowers and lenders						
Prior lending relationship	No	Yes	No	Yes	No	Yes
Test variables						
DRID	−0.156***	−0.051	−0.463***	−0.274**	−0.119**	−0.064
	(−3.30)	(−1.05)	(−3.49)	(−2.05)	(−2.23)	(−0.99)
Control variables	Included	Included	Included	Included	Included	Included
N	2446	2658	2366	2571	2446	2658
Adj./Pseudo R^2	0.573	0.626	0.275	0.327	0.185	0.236
Test on the difference of DRID coefficients						
t-statistic	1.83		1.66		2.26	
p-value	0.068		0.097		0.024	
Panel B: Ex-post agency problems between borrowers and lenders						
CEO_Tenure	Short	Long	Short	Long	Short	Long
Test variables						
DRID	−0.098**	−0.077**	−0.438***	−0.294**	−0.062**	−0.112***
	(−2.00)	(−2.49)	(−2.78)	(−2.45)	(−1.96)	(−3.84)
Control variables	Included	Included	Included	Included	Included	Included
N	2484	2610	2400	2527	2484	2610
Adj./Pseudo R^2	0.615	0.607	0.348	0.274	0.230	0.203
Test on the difference of DRID coefficients						
t-statistic	−0.86		0.98		−0.74	
p-value	0.388		0.326		0.458	

This table reports the regression results for the role of RIDs in alleviating *ex-ante* information asymmetry or *ex-post* agency problems between borrowers and lenders. In Panel A, subgroups are divided based on whether there were prior lending relationships between borrowers and lenders. Prior lending relationships refer to lower *ex-ante* information asymmetry between borrowers and lenders. In Panel B, subgroups are divided based on CEO tenure. Longer CEO tenure indicates higher CEO entrenchment and thus higher *ex-post* agency problems between borrowers and lenders. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

Longer CEO tenure compared to the annual median indicates higher CEO entrenchment. As shown in Panel B of Table 5, the coefficients on *DRID* are significantly and negatively associated with the three loan terms for both the long and the short CEO tenure subgroups. More importantly, our further tests show that the coefficients on *DRID* are not significantly different between the two partitioned subgroups for all three loan terms. This indicates that the effect of RIDs on various loan terms does not vary with the level of CEO entrenchment, and RIDs do not affect loan terms through reducing CEO entrenchment.

The empirical evidence reported in Table 5 suggest that the main role of RIDs in bank loan contracting is to serve as signaling devices and alleviate the *ex-ante* information asymmetry between borrowers and lenders, rather than to provide the *ex-post* monitoring. This finding can be interpreted from the following two perspectives. First, inside directors play a crucial role in communicating information to internal and external users (Fama and Jensen, 1983; Raheja, 2005). To maintain their reputation and directorships, RIDs take actions to enhance the quality of information demanded by outside stakeholders such as lenders (Holmstrom, 1999; Masulis and Mobbs, 2011). Prior bank loan literature (e.g., Bharath et al., 2008; Graham et al., 2008; Kim et al., 2011b; Chen et al., 2013; Lin et al., 2013) reveals that lenders take into account a borrower's information risk when making loan decisions. Therefore, lenders perceive RIDs as devices signaling high-quality information. Second, although RIDs have incentives to monitor the CEO and maintain strong firm performance (Masulis and Mobbs, 2011; Mobbs, 2013), their monitoring activities cannot completely address lenders' concerns and reduce lenders' monitoring efforts *ex post*. For example, lenders must closely monitor the value of the collateral, enforce covenants, and take over control rights when necessary (Sufi, 2007). In contrast, RIDs may pay little attention to the decrease in collateral value or covenant violations, if the events have no significant impact on firm performance. In this sense, the monitoring role of RIDs may not be very valuable to lenders.

4.3. Additional analysis: comparison of inside director reputation and independent director reputation

Previous director reputation literature emphasizes the reputation benefits of independent directors (Fich and Shivdasani, 2007; Yermack, 2004). In this section, we further examine the relative importance of the reputation of inside directors and independent directors in bank loan contracting. We follow Hoitash et al. (2009) and use the average number of outside board seats held by the independent directors to proxy for the reputation of the independent directors (*IndepRepu*).[22] Panel A of Table 6 reports the regression results, comparing the relative importance of inside director reputation and independent director reputation.

We find that the coefficients on *DRID* are significantly negative when *LGAIS*, *DSECU*, or *NCOV* is used as the dependent variable, respectively, suggesting that the favorable effect of RIDs on bank loan contracting still holds after controlling for independent director reputation. However, Panel A shows that the coefficients on *IndepRepu* are negative, but insignificant at the conventional level, suggesting that an independent director's reputation does not significantly affect the loan terms.

We believe that the insignificant result on independent director reputation can be attributed to the following two reasons. First, although providing more independent views on a firm's business strategies and performance, independent directors are not part of the management term, and thus do not have private or firm-specific information on the firm's daily operation and financial position. This kind of firm-specific information is valuable in the loan contracting process, and is usually communicated privately

[22] Unlike inside directors, who seldom hold outside directorships, a fairly large number of independent directors hold outside directorships. In our sample, 91.7% of borrowers have at least one independent director holding outside directorships. Thus, we use the average number of the outside board seats of the independent directors rather than the presence of outside board seats to proxy for independent director reputation.

Table 6
Regression results for comparison between the impact of inside director reputation and the impact of independent director reputation on bank loan contracting.

Variables	*LGAIS* (1)	*DSECU* (2)	*NCOV* (3)
Panel A: Comparison between inside director reputation and independent director reputation on bank loan contracting			
Test variables			
DRID	−0.095**	−0.358***	−0.088**
	(−2.50)	(−3.71)	(−1.97)
IndepRepu	−0.025	−0.010	−0.013
	(−1.11)	(−0.20)	(−0.56)
Control variables	Included	Included	Included
N	5104	4937	5104
Adj./Pseudo R^2	0.606	0.301	0.214
Panel B: Controlling for busy independent director			
Test variables			
DRID	−0.097**	−0.361***	−0.090**
	(−2.56)	(−3.72)	(−2.01)
Busy_Board	0.250**	0.412	0.286***
	(2.14)	(1.53)	(2.71)
Control variables	Included	Included	Included
N	5104	4937	5104
Adj./Pseudo R^2	0.606	0.302	0.215

This table reports the regression results for the comparison between the impact of inside director reputation and the impact of independent director reputation on bank loan contracting. Panel A shows the comparison between inside director reputation and independent director reputation on bank loan contracting, while Panel B shows the regression results after controlling for the effect of busy independent directors. *IndepRepu* is the average number of outside board seats held by the independent directors. *Busy_Board* equals one if over 50% of the independent directors on a borrower's board are busy directors, and zero otherwise. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

to lenders by the borrower's management. Obviously, inside directors play a more crucial role in this aspect than independent directors. Thus, their reputation may have a greater weight on the lenders' risk assessment and loan contracting decisions. Second, "busy" independent directors, who concurrently hold many directorships at different companies, may be perceived by lenders as providing weak corporate governance, especially for large firms (e.g., Beasley, 1996; Core et al., 1999; Fich and Shivdasani, 2006; Field et al., 2013). Fich and Shivdasani (2006) document that firms with busy boards (in which a majority of the independent directors hold three or more directorships) have a lower market-to-book ratio, lower profitability, and a lower sensitivity of CEO turnover to firm performance. In our sample, which is somewhat biased toward large companies, we find that only 79 RIDs hold three or more outside directorships, whereas 3615 reputable independent directors hold three or more outside directorships. In this sense, the insignificant association between an independent director's reputation and the loan terms may be driven by the "busy director effect".

To further investigate the busy independent director effect, we included in the model an indicator variable *Busy_Board* that equals one if over 50% of the independent directors on a borrower's board are busy directors, and zero otherwise (Fich and Shivdasani, 2006). Then we re-estimate our model, and report the summarized results in Panel B of Table 6. The results show that the estimated coefficients on our test variable *DRID* are still negative and significant, consistent with our main results. The coefficient on *Busy_Board* is significantly positive when the dependent variable is *LGAIS* or *NCOV*, whereas it is positive but insignificant at the conventional level when the dependent variable is *DSECU*. The positive coefficients on *Busy_Board* suggest that lenders perceive busy independent directors as being related to weak corporate governance, and thus charge higher interest rates and impose more covenants on loans to borrowers with busy boards. This "busy director effect" further explains why independent director reputation does not significantly reduce the cost of bank loans in Panel A.

4.4. Additional analysis: controlling for characteristics of RIDs

It is possible that the favorable loan terms are not attributable to the inside directors' high reputation but to their other characteristics (e.g., expertise, tenure). Therefore, in this section, we test whether the relationship between an inside director's reputation and the loan terms still holds after controlling for other characteristics of RIDs. Specifically, we control for RID tenure (*RID_Tenure*) and for the borrower's RIDs holding outside appointments with firms in the same industry (*Same_Industry*). *RID_Tenure* is the natural logarithm of the average number of years that the RIDs have served on the board. *Same_Industry* equals one if the borrower has RIDs and one of the RIDs has an outside appointment with a firm in the same industry, and zero otherwise. As shown in Table 7, a longer tenure of RIDs helps to reduce the loan spread and the number of covenants. More importantly, the coefficients on *DRID* are still significantly negative after controlling for *RID_Tenure* and *Same_Industry*, suggesting that the relationships between inside director reputation and loan terms are not confounded by other characteristics of RIDs.

4.5. Additional analysis: does the appointment of RIDs contain new information for lenders?

Our cross-sectional tests show that loans to borrowers with RIDs have lower interest rates, fewer restrictive covenants, and are less likely to be secured by collateral. In this section, we conducted a within-firm analysis to investigate whether the appointment of RIDs leads to changes in borrowers' loan terms. To examine this issue, we conduct regression analysis to investigate the effect on bank loan terms of the appointment of an inside director to an outside board. If the appointment of RIDs contains new information about borrowers' information and agency risks, we expect to observe significant differences in the loan terms for the same firm before and after the RID appointment. To perform this analysis, we construct a sample of companies that have loans that borrow within two years both before and after the appointment of an inside director to an outside board. This sample includes 106 companies and 212 loan facilities. The test variable for this analysis is an indicator variable *AfterAppt* which equals

Table 7
Other RID characteristics and loan contracting.

	LGAIS (1)	*DSECU* (2)	*NCOV* (3)
Test variables			
DRID	−0.087***	−0.347***	−0.091***
	(−3.39)	(−4.35)	(−3.89)
Same_Industry	0.014	0.134	0.095*
	(0.25)	(0.70)	(1.72)
RID_Tenure	−0.017*	−0.042	−0.018**
	(−1.65)	(−1.45)	(−2.06)
Control variables	Included	Included	Included
N	5104	4937	5104
Adj./Pseudo R^2	0.605	0.302	0.214

This table reports the regression results for the impact of inside director reputation on bank loan contracting after controlling for other characteristics of reputable inside directors. *Same_Industry* equals one if the borrower has RIDs and one of the RIDs has an outside appointment with a firm in the same industry, and zero otherwise. *RID_Tenure* is the natural logarithm of the average number of years the RIDs have served on the board. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

one if the loan facility is initiated after the appointment of an inside director, and zero otherwise. The regression results are reported in Table 8. We find that the estimated coefficients on *AfterAppt* are significantly negative, suggesting that the loan interest rate, the likelihood of collateral requirement, and the number of covenants decrease after the appointment of an inside director to an outside board.[23] Together, consistent with the results of our cross-sectional tests, the within-firm analysis suggests that the appointment of RIDs contains favorable information about the borrower's credit quality, and thus helps to reduce the interest rate and the number of restrictive covenants on loans.

Table 8
Within-firm analysis: impact of the appointment of RIDs.

Variables	*LGAIS* (1)	*DSECU* (2)	*NCOV* (3)
Test variables			
AfterAppt	−0.249***	−0.791***	−0.219**
	(−2.85)	(−2.61)	(−2.51)
Control variables	Included	Included	Included
N	212	208	212
Adj./Pseudo R^2	0.584	0.288	0.193

This table reports the regression results for the effect of the appointment of RIDs on bank loan contracting. The sample in this table includes companies that have loan borrowing within two years both before and after the appointment of an inside director to an outside board. *AfterAppt* equals one if the loan facility is initiated after the appointment of an inside director, and zero otherwise. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

4.6. Robustness tests

4.6.1. Joint determination of loan terms: IV framework estimation

Various terms in loan contracts can be jointly determined (Bharath et al., 2011). To verify that the potential simultaneity among loan terms does not confound our findings, we adopt an IV framework[24] to estimate a system of three equations where loan spread, collateral requirement, and covenants are jointly determined. As the loan literature indicates that non-price terms are normally determined before setting the loan interest rate (Bharath et al., 2011; Dennis and Mullineaux, 2000; Ivashina, 2009), we assume a unidirectional relationship between the price and the non-price terms. Specifically, we assume that the loan spread is affected by the collateral requirements and covenants, but not *vice versa*, and that the collateral requirements and covenants are simultaneously determined. The three-equation structural models[25] can be described as follows:

$$LGAIS = \gamma_A DRID + \gamma_{AS} DSecured + \gamma_{AC} LG(1 + NCOV) + \beta_A X_A + \varepsilon_A$$

$$DSecured = \gamma_S DRID + \gamma_{SC} LG(1 + NCOV) + \beta_S X_S + \varepsilon_S$$

$$LG(1 + NCOV) = \gamma_C DRID + \gamma_{CS} DSecured + \beta_C X_C + \varepsilon_C$$

where γ_{ij} are the coefficients of the interdependence effects of loan terms, and X_k are the exogenous variables that affect the *k*th dependent variable. As *DSECU* is a discrete choice variable in the *LGAIS* and *LG(1 + NCOV)* equations, we follow Wooldridge (2002) and use the fitted value from a logit model as an instrument for *DSECU* in the IV estimations.[26] We employed the two-stage least squares (2SLS) method to derive instruments for our endogenous variables.[27] To instrument *LGAIS*, we follow Bharath et al. (2011) by using a default spread, which is the difference between the yields on Moody's seasoned corporate bonds with a BAA rating and 10-year US government bonds.[28] Following Berger and Udell (1990), we apply *LOAN_CONC* as an instrument variable for *DSECU*.[29] As *DSECU* is a binary variable, we estimate an IV probit model in the *DSECU* equation. Finally, to instrument *LG(1 + NCOV)*, we follow Costello and Wittenberg-Moerman (2011) and use the lead bank's reputation (*Lead_Reputation*). Reputable lead arrangers mitigate information asymmetry between the lead arrangers and participating banks, and improve *ex-post* monitoring, which reduces the need of including restrictive covenants in the loan contracts.

Table 9 presents the results of the IV estimation. Columns (1)–(3) report IV estimation results of the effect of RIDs on loan features after controlling for the joint determinations of loan spread, collateral, and covenants, respectively. The results show that after we control for the joint determination of various loan contract terms, the effect of RIDs on loan features is still negative and significant in all three models. Moreover, in the *LGAIS* equation, the coefficients on our two endogenous variables (*DSECU* and *LG(1 + NCOV)*) are both significantly positive at the 1% level, which is consistent with our contention that the loan price is affected by the collateral requirements and covenants in the syndication process.[30]

To verify that our instruments are relevant (i.e., correlated with endogenous variables) and valid (i.e., not correlated with the error term in the explanatory equations), we perform a variety of econometric tests, as shown in at the bottom of Table 9. For our *LGAIS* regression, we employed three kinds of tests: an endogeneity test, an under-identification test, and an instrument exogeneity test. We estimate the Durbin–Wu–Hausman (DWH) chi-square for the test of endogeneity. The null hypothesis of the DWH chi-square test is that *DSECU* and *LG(1 + NCOV)* are indeed exogenous. We obtain a DWH chi-square statistic of 6.866 ($p = 0.032$), which rejects the null hypothesis and indicates that *DSECU* and *LG(1 + NCOV)* are actually endogenous. To assess whether our instruments are relevant, we estimate the Anderson canonical correlation LM test, the null hypothesis of which is that correlations between the instruments and the endogenous variables are zero. We obtain a test statistic of 34.098 ($p = 0.000$), which strongly rejects the null hypothesis and suggests that the excluded instruments are correlated with the endogenous variables. Finally, since we have two endogenous variables but four instruments for the loan spread equation, we can directly test the validity (i.e., exogeneity) of instruments. We use the Sargan test to assess

[23] We admit that this test may suffer from causality problem. Banks may affect the turnover of directors (Ozelge and Saunders, 2012). Ozelge and Saunders (2012) point out that lending banks are as influential as independent directors in inducing CEO replacement. If a borrower listens to the banks and appoint certain new directors, banks may give favorable loan terms to the borrower. The link between director appointments and favorable loan terms may not come from the reputation of new directors. Thus, the results of this analysis need to be interpreted with caution because of the causality problem, small sample size, and low statistical power.

[24] We also use the seemingly unrelated regression (SUR) procedure to address the possible joint determination of price and non-price terms. Unreported results show that the SUR results are very similar to our primary results.

[25] In all three equations, we use the log transformation of *NCOV* (*LG[1+NCOV]*) instead of *NCOV*.

[26] Wooldridge (2002) shows that this is an effective approach to exploit the binary nature of the endogenous explanatory variable, and will lead to consistent estimates of the coefficients.

[27] We test the relevance and validity of our instruments in the bottom panel of Table 9.

[28] Bharath et al. (2011) argue that contemporaneous default spreads should affect contracted loan spreads at the time of pricing, regardless of the non-price loan terms, because at this point the other contract terms would have already been finalized before setting the price term.

[29] Berger and Udell (1990) suggest that the larger the current loan borrowing relative to the size of total debt, the greater the likelihood that a lender will ask for collateral.

[30] However, while the coefficient on LG(1+NCOV) is significantly positive at the 1% level in the DSECU equation, the coefficient on DSECU is insignificant in the LG(1+NCOV) equation.

Table 9
IV estimation of joint determination of loan terms.

Variables	*LGAIS* (1)	*DSECU* (2)	*LG(1 + NCOV)* (3)
Test variables			
DRID	−0.045*	−0.265**	−0.077**
	(−1.74)	(−2.20)	(−2.45)
DSECU	0.432***		0.015
	(5.00)		(0.13)
LG(1 + NCOV)	0.411***	2.498***	
	(3.09)	(2.58)	
Default_Spread	0.107***		
	(3.96)		
LOAN_CONC		−0.805	
		(−1.32)	
Lead_Reputation			−0.079***
			(−2.90)
Control variables	As in column (1) of Table 3	As in column (3) of Table 3	As in column (5) of Table 3
Test of endogeneity			
Durbin–Wu–Hausman chi-sq. test	6.866		47.464
p-value	0.032		0.000
Wald's chi-square		3.84	
p-value		0.0501	
Underidentification test			
First-stage *F*-statistic			153.64
Prob > F			0.000
Partial *R*-square			0.0589
Anderson canon. Corr. LM statistic LM statistic	34.098		290.661
p-value	0.000		0.000
Instrument exogeneity test			
Sargan statistic	0.004		0.461
p-value	0.9484		0.4972

This table presents the results for IV estimation of joint determination of loan terms. Columns (1), (2), and (3) report the IV estimation results of the effect of RIDs on loan features after allowing for the joint determination of loan spread, collateral, and covenant. We employ the two-stage least-squares (2SLS) method using varied instruments for our endogenous variables, i.e., *Default_Spread* as our instrument for *LGAIS*, *LOAN_CONC* as our instrument for *DSECU*, and *Lead_Reputation* as our instrument for *LG(1 + NCOV)*, respectively. The main variables are as defined in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

over-identifying restrictions. The joint null hypothesis is that the instruments are valid (i.e., uncorrelated with the error terms). We obtain a Sargan statistic of 0.004 ($p = 0.9484$), which fails to reject the null hypothesis and implies that our instruments are valid. For our *DSECU* regression, because the IV probit model is used, we can report only the endogeneity test results. We perform the Wald test with the null hypothesis that *LG(1 + NCOV)* is exogenous. We obtain a Wald chi-square statistic of 3.84 ($p = 0.0501$), which rejects the null hypothesis and implies that *LG(1 + NCOV)* is indeed endogenous. For our *LG(1 + NCOV)* regression, the DWH chi-square statistic of 47.464 ($p = 0.000$) indicates that *DSECU* is indeed endogenous. As only one endogenous variable exists in the *LG(1 + NCOV)* regression, we report the first-stage *F*-statistic and partial R^2, which demonstrate that *LOAN_CONC* is a proper instrument for *DSECU*. We obtained a first-stage *F*-statistic of 153.64 (Prob > *F* is 0.000) and a high partial R^2 of 5.89%. In addition, the Anderson canonical correlations LM test statistic of 290.661 ($p = 0.000$) suggests that the excluded instruments are heavily correlated with the endogenous variables. For our instrument exogeneity test, the Sargan statistic of 0.461 ($p = 0.4972$) suggests that our instruments are uncorrelated with the error term.

Overall, the evidence presented in Table 9 demonstrates that our instruments are relevant and valid, and that our results with respect to the effects of RIDs on various loan features are robust for the joint determination of these contract terms.[31]

4.6.2. Endogeneity of inside director reputation

As explained in Section 3.1, we use outside directorship as an external mechanism to identify RIDs. Because the appointment of inside directors to outside directorships is determined by the external managerial labor market and firms cannot decide whether and when an inside director receives an outside directorship, the endogeneity concern about inside director reputation can be mitigated (Masulis and Mobbs, 2011). To further address the endogeneity issue, we use Heckman (1979) and propensity score matching (PSM) procedures to validate our results.

4.6.2.1. Heckman (1979) procedure. We use a Heckman (1979) two-step procedure to address the self-selection concern regarding inside directors. This also controls for a potential endogeneity problem due to an omitted variable bias. Specifically, if private information that leads to these inside director appointments is correlated with loan terms, then ignoring this information may bias our estimates. In the first stage, we estimate a probit model to explain a firm's decision to choose non-CEO inside directors, where the dependent variable is one if a firm has any non-CEO inside directors, and zero otherwise.[32] Conditional on this first-stage analysis, we examine in the second stage the relationship between RIDs and loan features by including other control variables. We construct an inverse Mill's ratio (*IMR*) based on the coefficient estimates from the first-step probit model, and include *IMR* as an additional explanatory variable in the second-step model. We jointly estimate the two equations and the selectivity effect using maximum likelihood estimation, with robust standard errors and adjusting for firm clustering.

Table 10 shows the results of the Heckman two-step procedure. Panel A reveals that firms with greater sale growth, lower stock volatility, fewer business segments, higher CEO and board ownership, and longer CEO tenure are more likely to have non-CEO inside directors. In the second-stage regression (Panel B), *IMR* (*Lambda*) has significantly positive coefficients,[33] and the coefficients on *DRID* are still significantly negative when the second-stage dependent variable is *LGAIS* or *DSECU*. Therefore, we conclude that our results are robust in correcting any potential self-selection bias that firms choose to have non-CEO inside directors.

4.6.2.2. Propensity score matching (PSM). In another attempt to address the endogeneity of insider director reputation, we constructed a matched sample with similar fundamental characteristics using the PSM procedure. We first estimate a probit model with *DRID* as the dependent variable, and use the estimated coefficients to compute the predicted probability (i.e., propensity score) that a borrower has a RID on its board.[34,35] We then match each

[31] In addition to using the lead bank's reputation as the IV for the number of covenants, we also use the borrower's reputation in the loan market (*Borrower_Repuation*) as an alternative IV for the number of covenants. *Borrower_Repuation* is an indicator variable that equals one if the number of loan deals borrowed before is above the median, and zero otherwise. We find that our inferences are not changed with the alternative IV. We exclude the table from this paper for brevity.

[32] Following Masulis and Mobbs (2011), we use the following control variables as the determinants of inside directors: R&D intensity, capital expenditure intensity, firm sale growth, stock return volatility, past firm performance, number of business and geographic segments, board ownership, and CEO ownership and tenure.

[33] The positive coefficient on *IMR* suggests that firms with inside directors have higher loan spreads relative to firms without inside directors. About 85% of these inside directors are non-RIDs.

[34] The probit regression results are similar to the first-stage probit regression results in Table 10. We exclude the table from this paper for brevity.

[35] The determinants of the propensity score model include R&D intensity, capital expenditure intensity, sale growth, stock return volatility, past firm performance, number of business and geographic segments, board ownership, and CEO ownership and tenure.

Table 10
Heckman (1979) Two-step procedure.

Panel A: first-stage probit regression		Panel B second-stage regression			
Intercept	−1.200***	Variables	LGAIS	DSECU	NCOV
	(−4.65)		(1)	(2)	(3)
RD_Intensity	−0.862	Test variables			
	(−1.17)	*DRID*	−0.079*	−0.049*	−0.008
CAP_Intensity	0.530		(−1.72)	(−1.74)	(−0.04)
	(0.56)	*Lambda*	0.218**	0.106*	0.606
Sale_Growth	0.133***		(2.39)	(1.90)	(1.37)
	(5.19)	Control variables	Included	Included	Included
Stock_Vol	−1.578**	*N*	1603	1603	1603
	(−2.49)				
Lag_CF	−0.655				
	(−1.60)				
LNBUSSEG	−0.184***				
	(−3.64)				
LNGEOSEG	0.065				
	(1.13)				
CEO_Own	3.793***				
	(3.75)				
Board_Own	0.646***				
	(3.19)				
LNCEO_TEN	0.284***				
	(7.29)				
N	1603				
Pseudo R^2	0.079				

This table reports the results for correcting the self-selection bias using the Heckman (1979) two-step procedure. Panel A presents the first-stage probit analysis of a firm's decision of whether or not to appoint a non-CEO inside director. The dependent variable equals to one if a firm has any non-CEO inside directors, and zero otherwise. *RD_Intensity* is the yearly R&D expense divided by the year-end total assets. *CAP_Intensity* is the yearly capital expenditure divided by the year-end total assets. *Sale_Growth* is the growth rate of yearly sales. *Stock_Vol* is the standard deviation of the most recent three years of monthly stock returns. *Lag_CF* is the annual cash flow from operation in year $t-1$ divided by total assets at the beginning of year $t-1$. *LNBUSSEG* is the natural log of the number of business segments. *LNGEOSEG* is the natural log of the number of geographic segments. *CEO_Own* is the percent of common shares outstanding held by the CEO at year-end. *Board_Own* is the percent of common shares outstanding held by all directors (excluding the CEO) on the board at year-end. *LNCEO_TEN* is the natural log of the number of years the CEO has served on the board. Panel B presents the results of the second-stage regression. *Lamda* is the inverse Mill's ratio constructed based on the coefficients of the probit model in Panel A. Other variables are as defined in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

treatment observation (i.e., a loan facility borrowed by a firm with RIDs) with a set of control observations that have propensity scores similar to those of the treatment loan. Following Bharath et al. (2011), we adopt the Gaussian matching method by using a weighted average of control observations, in which control loans with propensity scores closer to the treatment loan propensity scores receive more weight.[36] To check the validity of the above matching procedures, we examine the covariate balance between the treatment and control samples. As shown in Panel A of Table 11, covariate balance emerges because both the treatment and the control groups appear similar along their observable dimensions. Moreover, consistent with our primary test results, the loan spread of the treatment sample is significantly less than that of the control sample after the matching ($t=-5.47$). Compared to the control sample, the likelihood that loans are secured is significantly less and the number of restrictive covenants is significantly fewer for the treatment sample ($t=-4.14$ for *DSECU* and $t=-3.28$ for *NCOV*).

Finally, we use the propensity score matched sample to re-estimate Eq. (1) with the inclusion of the main controls used in our primary analyses. Panel B of Table 11 reports our results. Consistent with our primary findings, these results show that loans to firms with RIDs bear lower rates, and are less likely to be imposed with collateral requirements and restrictive covenants. These results help to alleviate the concerns that differences in observable firm and director characteristics drive the relationships between RIDs and loan contract terms.

[36] We also use different matching methods (e.g., the nearest neighbor, as in the Epanechnikov approach) and obtain similar results.

4.6.3. Tightness of restrictive covenants

Besides the number of loan covenants, we examine the effect of RIDs on the tightness of the covenants. When facing a risky loan borrower, lenders will impose tight covenants on loan deals to closely monitor the borrower. If RIDs can help reduce borrowers' information and agency risks, we expect the level of covenant tightness to be lower for loans to firms with RIDs. Specifically, we focus on the tightness of interest coverage covenant, which imposes a minimum interest coverage ratio on the borrower taking the loan. Tightness of interest coverage covenant (*Tightness*) is defined as the difference between the interest coverage threshold stipulated at the loan inception and the actual interest coverage measured at the end of the fiscal year immediately before the loan inception. Accordingly, a larger value of *Tightness* indicates a higher level of covenant tightness. Then we regress *Tightness* on our test variable *DRID* and the control variables used in the tests of the number of covenants. The regression results are reported in Panel A of Table 12. Consistent with our prediction, the coefficient on *DRID* is significantly negative at the 10% level, suggesting that RIDs help reduce the tightness of loan covenants.

4.6.4. Controlling for shareholder rights

The literature (e.g., Ashbaugh-Skaife et al., 2006; Chava et al., 2009; Qi et al., 2011) suggests that governance mechanisms that support shareholder rights increase the cost of debt financing. To assess whether shareholder rights impact on our findings, we include in our model a *G*-index (Gompers et al., 2003) and its interaction with our test variable *DRID*, and re-estimate the regressions. Based on the incidence of 24 governance rules, the *G*-index is constructed as a proxy for a firm's shareholder rights; a lower *G*-index

Table 11
Propensity score matching.

Variable	Treatment	Control	*t*	*p*-Value
Panel A: Differences in control variables and loan features				
RD_Intensity	0.033	0.033	0.22	0.829
CAP_Intensity	0.053	0.053	0.12	0.908
Lag_CF	0.114	0.110	0.53	0.599
Sale_Growth	0.091	0.083	0.42	0.675
Stock_Vol	0.116	0.119	−0.91	0.363
LNBUSSEG	1.175	1.152	0.40	0.690
LNGEOSEG	1.231	1.191	0.85	0.397
CEO_Own	0.017	0.020	−1.17	0.243
Board_Own	0.050	0.056	−0.46	0.644
LNCEO_TEN	2.036	1.953	1.16	0.246
LGAIS	3.982	4.394	−5.47	0.000
DSECU	0.146	0.280	−4.14	0.000
NCOV	3.104	4.113	−3.28	0.001

Variables	*LGAIS* (1)	*DSECU* (2)	*NCOV* (3)
Panel B: Regression results for propensity score-matched firms			
Test variables			
DRID	−0.133***	−0.442***	−0.134***
	(−3.39)	(−3.43)	(−3.62)
Control variables	Included	Included	Included
N	1603	1587	1603
Adj./Pseudo R^2	0.628	0.356	0.245

This table presents the results for propensity score matching. Panel A shows the differences in the control variables used to estimate the probit propensity score model and the difference in loan features between the control sample and the matched sample. Panel B shows the regression results using the propensity matched firms to re-estimate the relationship between RIDs and loan terms. *RD_Intensity* is the yearly R&D expense divided by the year-end total assets. *CAP_Intensity* is the yearly capital expenditure divided by the year-end total assets. *Lag_CF* is the operating cash flows in year $t-1$ divided by total assets at the beginning of year $t-1$. *Sale_Growth* is the growth rate in yearly sales. *Stock_Vol* is the standard deviation of the most recent three years of monthly stock returns. *LNBUSSEG* is the natural logarithm of the number of business segments. *LNGEOSEG* is the natural logarithm of the number of geographic segments. *CEO_Own* is the percent of common shares outstanding held by the CEO at year-end. *Board_Own* is the percent of common shares outstanding held by all directors (excluding the CEO) on the board at year-end. *LNCEO_TEN* is the natural logarithm of the number of years the CEO has served on the board. Other variables are as defined in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

refers to fewer takeover defenses and thus greater shareholder rights.[37] We divide the sample into four groups based on *G*-Index quartiles. *GQ1*, *GQ2*, and *GQ3* equal one if a borrower's G-index falls in the first, second, or third quartile of the *G*-Index in our sample, respectively. Then we include *G*-index, *DRID*∗*GQ1*, *DRID*∗*GQ2*, and *DRID*∗*GQ3* in the model and re-estimate the regressions. As shown in Panel B of Table 12, the *G*-index is significantly and negatively associated with *LGAIS*, *DSECU*, and *NCOV*, which is consistent with the evidence documented by Chava et al. (2009). More importantly, the coefficients on *DRID* are significantly negative after controlling for the *G*-index, suggesting an incremental effect of RIDs on loan contracting terms over shareholder rights. However, the coefficients on the interaction terms are generally insignificant, suggesting that the relationships between RIDs and loan terms are not affected by different levels of the *G*-Index.[38]

[37] The correlation analyses show that the *G*-index is positively correlated with both *Inde_Director* (coefficient = 0.29, significant at the 1% level) and *CEO_CH* (coefficient = 0.09, significant at the 1%).

[38] In model (2), the significant coefficient on *DRID*∗*GQ1* indicates that the relationship between RIDs and *DSECU* is less pronounced for firms falling in the lowest quartile (highest shareholder rights). This result suggests that when a borrower's shareholder rights are stronger and thus there is a higher level of conflict between shareholders and debtholders, RIDs play a less significant role in reducing the likelihood of collateral requirement for loan borrowings.

Table 12
Robustness tests.

			Tightness
Panel A: Tightness of interest coverage covenant			
Test variables			
DRID			−18.133*
			(−1.81)
Control variables			Included
N			1064
Adj. R^2			0.051

Variables	*LGAIS* (1)	*DSECU* (2)	*NCOV* (3)
Panel B: Controlling for shareholder rights			
Test variables			
DRID	−0.165**	−0.610***	−0.078*
	(−2.56)	(−2.82)	(−1.82)
G-index	−0.020***	−0.052***	−0.018***
	(−2.63)	(−3.52)	(−6.12)
DRID∗*GQ1*	0.081	0.487*	−0.011
	(0.88)	(1.82)	(−0.20)
DRID∗*GQ2*	0.090	−0.028	−0.067
	(0.84)	(−0.08)	(−1.01)
DRID∗*GQ3*	0.087	0.135	−0.067
	(0.97)	(0.51)	(−1.16)
Control Variables	Included	Included	Included
N	4744	4581	4744
Adj./Pseudo R^2	0.610	0.311	0.211
Panel C: Controlling for the presence of bankers on corporate boards			
Test variables			
DRID	−0.130***	−0.437***	−0.054**
	(−2.84)	(−3.60)	(−2.02)
Banker	−0.123***	−0.155*	−0.040**
	(−3.65)	(−1.88)	(−2.19)
Banker∗*DRID*	0.087	0.238	−0.084**
	(1.28)	(1.20)	(−1.97)
Control variables	Included	Included	Included
N	5104	4937	5104
Adj./Pseudo R^2	0.608	0.303	0.214

This table reports the regression results for the robustness tests. Panel A shows the effect of RIDs on the tightness of restrictive covenants. The tightness of interest coverage covenant (*Tightness*) is defined as the difference between the interest coverage threshold stipulated at the loan inception and the actual interest coverage measured at the end of the fiscal year immediately before the loan inception. Panel B reports the regression results based on Eq. (1) after controlling for internal corporate governance and its interactions with *DRID*. Internal corporate governance is measured by firm-level *G*-Index developed by Gompers et al. (2003). *GQ1*, *GQ2*, and *GQ3* equal one if a borrower's *G*-index falls in the first, second, or third quartile of *G*-Index in our sample, respectively. Panel C reports the regression results based on Eq. (1) after controlling for the presence of bankers on borrowers' corporate boards and its interactions with *DRID*. *Banker* is an indicator variable that equals one if at least one of the borrower's independent directors is a banker, and zero otherwise. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

4.6.5. Controlling for the presence of bankers on corporate boards

It is possible that bankers act as independent directors on the corporate boards of borrowers. Guner et al. (2008) find that when commercial bankers join the board, a firm displays less investment-cash–flow sensitivity and obtains larger loans. In this section, we check whether the presence of bankers on borrowers' boards has an effect on loan contracting terms, and whether the effect of RIDs still holds after controlling for the presence of banker directors. The results of this test are reported in Panel C of Table 12. *Banker* is an indicator variable that equals one if at least one of the borrower's independent directors is a banker, and zero otherwise. We find that after including *Banker* and its interaction with *DRID* (*Banker*∗*DRID*) in the model, the coefficients on *DRID* are still negative and significant, consistent with our main results. The coefficients on *Banker* are significantly negative, suggesting that the presence of a banker on a borrower's board helps to obtain loans

Table 13
Robustness test: effect of loan size and maturity on the relationship between RIDs and bank loan contracting.

Variables	*LGAIS* (1)	*LGAIS* (2)	*DSECU* (3)	*DSECU* (4)	*NCOV* (5)	*NCOV* (6)
Panel A: Effect of loan size						
	Large Loan Size	Small Loan Size	Large Loan Size	Small Loan Size	Large Loan Size	Small Loan Size
Test variables						
DRID	−0.120**	−0.065*	−0.414***	−0.355***	−0.144***	−0.033
	(−2.52)	(−1.78)	(−3.01)	(−2.78)	(−2.61)	(−0.57)
Control variables	Included	Included	Included	Included	Included	Included
N	2552	2552	2474	2463	2552	2552
Adj./Pseudo R^2	0.590	0.508	0.355	0.239	0.242	0.178
Panel B: Effect of loan maturity						
	Long Loan Maturity	Short Loan Maturity	Long Loan Maturity	Short Loan Maturity	Long Loan Maturity	Short Loan Maturity
Test variables						
DRID	−0.117**	−0.072**	−0.450***	−0.232*	−0.087*	−0.106*
	(−2.28)	(−2.30)	(−3.53)	(−1.78)	(−1.71)	(−1.69)
Control variables	Included	Included	Included	Included	Included	Included
N	2658	2446	2554	2383	2658	2446
Adj./Pseudo R^2	0.598	0.640	0.269	0.367	0.188	0.213

This table reports the regression results for the effect of loan size and maturity on the relationship between RIDs and bank loan contracting. Subgroups are divided based on the median values of the loan size in Panel A and the loan maturity in Panel B. The definitions of other variables are specified in Table 2. The *t*-statistics (*z*-statistics) are based on standard errors corrected for heteroscedasticity and firm-level clustering. *, **, and *** indicate statistical significance at the 10% level, 5% level, and 1% level, respectively.

with more favorable terms. Besides, we find that the interaction term *DRID*∗*Banker* is significantly and negatively associated with the number of covenants (*NCOV*), suggesting that RIDs and independent banker directors play complementary roles in reducing the number of covenants in loan contracts.

4.6.6. Effect of dotcom bubble and housing bubble periods

During certain time periods, macroeconomic and general credit market conditions can dominate borrower-specific governance characteristics in determining loan contracting terms. Our sample period (1999–2007) covers the burst of the dotcom bubble and the building up of the housing bubble. To empirically examine the potential impact of the sample period on our findings, we estimate our model in three different periods: 2000–2002 (burst of dotcom bubble), 2006–2007 (build-up of housing bubble), and all other years. The untabulated results show that during the period 2000–2002, the coefficients on our test variable *DRID* are negative but insignificant; during the period 2006–2007, *DRID* is negatively and significantly associated with loan spread, but is insignificantly associated with the likelihood of collateral requirement and the number of covenants. In contrast, when estimating the regressions with loans initiated in all other years, we find that *DRID* is negatively and significantly associated with the three dependent variables, which is consistent with our main findings. Overall, the sub-period regression results show that the value of RIDs in the loan market is significant during the period with normal macroeconomic conditions, but is diluted during the periods of the dotcom bubble burst and the housing bubble build-up.

4.6.7. Effect of loan size and maturity

Our bank loan data come from LPC DealScan database. Most loans covered by DealScan are large-amount syndicated loans borrowed by large firms (Dichev and Skinner, 2002). Accordingly, our sample is biased to large firms and to loans of large amounts with a long maturity. To check whether our findings are conditioned upon loan amount and maturity, we divide our full sample into large-amount (long-maturity) and small-amount (short-maturity) subsamples based on the median loan size (maturity), and then re-estimate our empirical model using these subsamples. The results are reported in Table 13. As shown, the estimated coefficients on *DRID* are significantly negative for both the long-maturity and the short-maturity subsamples with the three dependent variables. We also find that *DRID* is significantly and negatively associated with *LGAIS* and *DSECU* for the large-amount and the small-amount subsamples. When the dependent variable is *NCOV*, the coefficient is significantly negative for the large-amount subsample, but insignificant for the small-amount subsample. The *t*-tests show that the difference in the estimated coefficients between the long-maturity (large-amount) and the short-maturity (small-amount) subsamples is not significant at the conventional level. In general, the above results suggest that the role of RIDs is not conditioned upon the size of the loan and the length of maturity.

4.6.8. Deal-level analyses

Thus far, we have conducted our empirical analyses at the loan facility level, treating each loan facility as an independent observation. However, the facility-level loan features in a deal may not be independent, as borrowers may have negotiated loan terms with lenders at the deal level. To address this possibility, we aggregate individual loans into 3922 deal-level observations by computing weighted average (by loan amount) loan terms (e.g., spread and maturity) and re-estimating the main regressions. Though not tabulated for brevity, the coefficients on *DRID* are significantly negative at the 5% level in all models, which is consistent with our facility-level regressions.

5. Conclusions

Despite the conflicting views on the value of inside directors, reputation concerns create strong incentives for inside directors to demonstrate their capabilities and maintain their directorships in the managerial labor market. As part of the management team holding firm-specific information, inside directors may play a significant role in a firm's loan financing. Thus, it is worthwhile investigating how inside director reputation incentives affect bank loan contracting.

Using a sample of 5104 loan facility-years for US borrowers during the period 1999–2007, we investigate the impact of reputable inside directors (RIDs) on the price and non-price terms of bank loan contracting, after controlling for borrower-specific characteristics, loan-specific characteristics, and macroeconomic factors. Our results reveal the following. First, banks charge lower interest rates for loans to borrowers with RIDs than for those to borrowers without RIDs. Second, bank loans to borrowers with RIDs are less likely to be secured by collateral and involve fewer restrictive covenants. Third, both reputable CFO directors and other inside

directors can help borrowers obtain loans with favorable loan spread and collateral requirement, but reputable other inside directors have a more significant effect on financial covenants than do reputable CFOs. Fourth, RIDs help obtain favorable loan terms mainly through alleviating any *ex-ante* information asymmetry between borrowers and lenders. Our results are robust to controlling for RID characteristics, the reputation of independent directors, the presence of banker directors, and shareholder rights. Further tests show that the value of reputable inside directors in the loan market is significant during the period with normal macroeconomic conditions, but is reduced during the periods of dotcom bubble burst (2000–2002) and housing bubble building-up (2006–2007). In addition, we address the joint determination of loan terms using an IV approach and the potential endogeneity of inside director reputation using the Heckman (1979) two-step procedure and the propensity score matching procedure.

Overall, our findings suggest that RIDs are perceived by lenders as a positive governance characteristic that alleviates borrowers' information asymmetries and agency risk. The evidence is consistent with efficient contracting theory, and with the findings of recent theoretical and empirical studies on the benefit of having non-CEO RIDs on corporate boards. To the best of our knowledge, this study is the first to examine the role of non-CEO inside directors in bank loan contracting, and thus enriches the bank loan literature. The paper also contributes to governance literature, and has policy implications for future corporate governance reform.

Our study has a limitation. The "small world" literature (e.g., Engelberg et al., 2012) shows that borrower-lender personal relationships lead to better information flow and better monitoring, thus helping reduce loan interest rates. Such personal relationships between borrowers and lenders may drive our results about the role of RIDs in bank loan contracting. We check our sample of borrowers and lenders and find the following: (1) on average each of the 1182 sample borrowers has nine directors; (2) on average each of the 5104 sample loans involve 12 lenders, and each lender has 13 directors. This big sample size makes it an overwhelming task to manually collect data on borrower-lender personal relationships (e.g., whether directors of borrowers and banks attended college or previously worked together). Future research is called for to shed more light on this issue.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.jbankfin.2016.04.021.

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