Executive Pay Disparity and Cost of Debt Financing

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Abstract

This paper documents that cost of debt financing is significantly higher for firms with larger executive pay disparity. This relationship holds after addressing endogeneity concerns and sample selection bias, and is robust to alternative measures of executive pay disparity and cost of debt financing. Further analysis shows that the positive association is stronger for borrowers with more severe agency problems and poorer creditworthiness. Overall, our results support the view that executive pay disparity provides risk-taking incentives to executives, which leads to higher credit risks that concern creditors and increases the cost of debt financing for borrowers.

Keywords: Executive pay disparity, cost of debt financing, credit risk

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1. Introduction

Finance literature has identified an important element of the executive compensation structure, namely the pay differential between CEOs and other executives, and started to examine the causes and consequences of this compensation structure.[2] Most studies focus on the economic consequences of this disparity in the compensation structure on firm valuation, yet their evidence is inconclusive based on different perspectives. In particular, the tournament incentive view suggests a positive relationship between executive pay dispersion and firm value (Kale, Reis and Venkateswaran, 2009), while the entrenchment view contends using contrary evidence that executive pay dispersion reduces firm accounting performance and firm value (Bebchuk, Cremers and Peyer, 2011). Meanwhile, following this strand of literature, an evolving paradigm investigates the mechanism through which executive pay disparity works in business organizations, and argues that pay inequality can increase risk-taking behaviors of senior executives who compete for promotion (Goel and Thakor, 2008; Kini and Williams, 2012) which may lead to fraud (Hab, Muller and Vergauwe, 2015). This problem also elevates the CEO succession risks, which in turn increases firms' cost of equity (Chen, Huang and Wei, 2013).

Despite the widespread examination of the executive pay disparity that has resulted in inconclusive evidence, the existing studies almost exclusively apply the same theoretical framework, and explicitly link the executive pay disparity to the agency problem between managers and shareholders. Little focus has been devoted to an equally important agency issue between managers and creditors, as the behaviours of the managers, such as the risk-taking, also have financial implications to creditors. Moreover, the extant studies examine the financial implications of the executive pay disparity by typically taking on the perspective of equity

[2] See for example, Lazear and Rosen (1981), Conyon, Peck and Sadler (2001), Rajgopal and Srinivasan (2006), Kale, Reis and Venkateswaran (2009), Bebchuk, Cremers and Peyer (2011), Kini and Williams (2012), Chen, Huang and Wei (2013), Hab, Muller and Vergauwe (2015), and Burns, Minnick and Starks (2017).

holders, and little is known about how outside creditors view the executive pay disparity structure. In this paper, we explicitly and empirically investigate how executive pay disparity affects firms' costs of debt financing.

The importance of this issue has been recognized by Moody's (2006) who argues that a large pay gap between CEOs and other executives is directly connected to credit quality and credit risk, which in turn affects the agency cost of debt. Existing theories also propose a straightforward connection between executive pay disparity and cost of debt financing, which varies according to different perspectives. On the one hand, under the tournament hypothesis, pay dispersion provides tournament incentives for executives to exert their efforts, and can improve firm value and accounting performance (Kale et al., 2009). Creditors then feel reliable about their expected returns and may require lower costs. On the other hand, according to the entrenchment view, pay dispersion indicates more powerful and entrenched CEOs which is associated with lower firm value (Bebchuk et al., 2011). Thus a firm has a higher probability of financial distress and credit risk, and creditors may require a higher premium to cover their investment in the case of default. Moreover, if executive pay disparity provides extra risk-taking incentives to executives, a firm thus has a higher level of risk and creditors have to face a more severe agency problem (Jensen and Meckling, 1976; Klock, Mensi and Maxwell, 2005; Boubakri and Ghouma, 2010; Lin, Ma, Malatesta and Xuan, 2011). This agency conflict reduces the expected value of cash flows to the creditors, and the creditors may require higher return to protect their interests.

To empirically examine the relationship between executive pay disparity and firms' cost of debt financing, we use a sample of syndicated loans granted to U.S. listed firms from 1992 to 2014. We collect the loan information from the Securities Data Company (SDC) Syndicated

Loan database and match those data to top executive compensation derived from the ExecuComp database. The final sample contains 1,429 U.S. listed firms and 4,966 firm-year observations from 1992 to 2014. In the empirical analysis, we use the loan yield spread as the main proxy for cost of debt financing. This is because the private credit market is the largest source of corporate financing (Ivashina, 2009), and in the U.S., roughly 80% of listed firms have private credit agreements while only about 15% of them have public debt (Nini, Smith and Sufi, 2009). However, to check the robustness of our results, we further collect bond issuance information from the SDC Global New Issues database to calculate the cost of debt financing for firms which issued new bonds.

Our main results show that executive pay disparity is positively associated with cost of debt financing, which supports the entrenchment view that the compensation gap between CEOs and other top executives substantially increases firm risk level and in turn negatively affects creditors' claims, and thereby creditors require a higher rate of interest as compensation. The positive relationship is robust to different proxies for executive pay disparity and cost of debt financing and remains economically and statistically significant after controlling for endogeneity of executive pay disparity and sample selection bias. We conduct further analysis to examine how the higher cost of debt financing induced by executives' risk-taking incentives can be mitigated or exacerbated. Specifically, we find evidence that the positive relationship between executive pay disparity and cost of debt financing is stronger for firms with more severe agency problems of free cash flow and poorer creditworthiness. In addition, we show that executive pay disparity measured based on short-term compensation has a more significant effect on the cost of debt financing compared to that measured based on long-term compensation. It is also consistent with

the entrenchment view as executives' short-termism behaviors are more likely to result in high level of firm risk that concerns creditors.

Our study contributes substantially to the literature with regard to the financial implications of executive pay disparity. Focusing on the agency framework between managers and creditors, we provide the first evidence that executive pay disparity affects creditors' interests, and therefore impacts on firms' cost of debt financing. We find that creditors view executive pay disparity as risky, and thus require higher cost for debt capital investment. Extant literature on the consequences of executive pay disparity typically takes on the perspective of equity holders (Chen et al., 2013), and our study is among the first to focus on the creditors' perspective and to examine their evaluation of executive pay disparity. Moreover, our study also adds to the bank loan literature by documenting that executive compensation structure is another important determinant of loan pricing.

The rest of the paper is structured as follows. Section 2 reviews the literature and develops the hypotheses. Section 3 describes the sample construction and empirical design. Section 4 presents the empirical results and discussions. Section 5 concludes the paper.

2. Literature review and hypothesis development

Executive pay dispersion (disparity), defined as the pay differential between CEOs and other executives, is an important element of executive compensation. There exist an increasing number of studies examining the causes and consequences of this compensation structure, albeit with mixed results due to different perspectives focused. In this section, we aim to establish a direct connection between executive pay disparity and cost of debt financing, and propose competing hypotheses to be empirically tested in this paper.

2.1 Tournament perspective

The tournament perspective argues that the large pay differential between CEOs and other executives provides promotion-based incentives for other executives to compete for the position of CEO. In their seminal work, Lazear and Rosen (1981) consider the pay differential between CEOs and other executives as the tournament prize and argue that other executives thus have strong incentives to compete for promotion to the higher level and win the tournament prize. In a typical rank-order tournament, promotion to the CEO position can bring with it more power, better reputation and higher compensation, so that this rank-order tournament encourages the competition, and motivates other executives to input their specific human capital/private information and exert more effort, which in turn leads to improved outputs and firm value (Main, O'Reilly and Wade, 1993; Eriksson, 1999; Lee, Lev and Yeo, 2008; Kale et al., 2009). The improved firm value indicates a higher level of expected cash flows and lower probability of financial distress, which can also mitigate the agency problem faced by creditors and alleviate the credit risks that concern them. Thus, the tournament incentive view predicts a negative association between executive pay disparity and the cost of debt financing.

2.2 Entrenchment perspective

The entrenchment perspective contends that compensation level reflects the power of executives, so that a larger pay disparity between CEOs and other executives indicates more powerful and entrenched CEOs (Lambert, Larcker and Weigelt, 1993; Bebchuk and Fried, 2003). More powerful and entrenched CEOs are less likely to be replaced due to bad performance, and are usually associated with more severe agency problems and severe expropriations from outside

investors. Moreover, entrenched CEOs also have incentives to obstruct succession planning to further entrench themselves, which leads to high succession risk (Rajan and Wulf, 2006; Masulis and Mobbs, 2011). Thus, executive pay disparity leads to higher cost of equity and lower firm value (Adams et al., 2005; Landier et al., 2012; Bebchuk et al., 2011; Chen et al., 2013).

The higher risks associated with larger executive pay disparity also derive from the argument that executive pay dispersion provides extra risk-taking incentives to other executives in the rank-order tournament, because taking on riskier projects can increase their outputs which in turn can maximize their probability of winning the tournament prize (Goel and Thakor, 2008). Existing empirical evidence shows that senior managers usually adopt riskier policies in order to increase their chance of promotion (Kini and Williams, 2012), which may well increase firm risk level and lead firms to engage in fraudulent behaviors (Hab et al., 2015). This also happens because boards of directors can only observe the outputs of these executives, but cannot discern their inputs or the risk levels of the projects they undertake. Thus, other executives in the tournament have strong incentives to develop observable outputs by making an unobservable investment, such as taking on riskier projects.

Overall, the entrenchment view argues that larger executive pay disparity encourages the opportunistic behaviors of both CEOs and other executives, and increases the firm risk level, which may well increase the credit risks and probability of financial distress and aggravate the agency problem experienced by creditors. This is also consistent with the managers' objective by undertaking positive NPV projects even if they are risky, because managers can deliver the upside gains as private benefits while leaving the cost of financial distress to creditors (Jensen and Meckling, 1976; Shaw, 2012). It is also noted that creditors are likely to have different views on the executive pay disparity due to their different risk appetites and financial claims. When

creditors can anticipate these risk-taking activities which may destroy their investment returns and incorporate these expectations into their lending decisions, they are likely to charge a higher premium to cover the potential anticipated loss on their investments, and a negative outcome is likely which will result in a higher cost of debt financing. Therefore, the entrenchment view predicts a positive association between executive pay disparity and the cost of debt financing.

Based on these arguments, we form the following competing hypotheses to be empirically tested in the following sections:

H1a: Under the tournament view, executive pay disparity is negatively associated with the cost of debt financing.

H1b: Under the entrenchment view, executive pay disparity is positively associated with the cost of debt financing.

3. Data and methodology

3.1 Sample selection

The initial sample of this paper consists of syndicated loans granted to U.S. listed firms from 1992 to 2014 obtained from the SDC Syndicated Loan database. We collect the initial all-in drawn spread over LIBOR, the signing date, the maturity, the lenders and borrowers and the loan size from SDC. We eliminate the syndicated loans offered to utility and financial firms (one-digit SIC code 4 and 6, respectively) from the original sample because those firms have different accounting measurements and regulatory requirements. We then match the loan data from SDC to Standard and Poor's (S&P) ExecuComp database with top executive compensation information. ExecuComp database reports top executive compensation data of firms trading in the S&P 500, S&P Mid-Cap 400 and S&P Small-Cap 600. We gather CEO and other top

executives' total compensation to measure the pay disparity proxies. Consistent with Kini and Williams (2012), we drop the observations if the pay disparity proxy is negative, i.e., the CEO's compensation is less than the average or median compensation of other executives.[3] We further drop the observations with missing accounting and stock information. The final sample comprises 1,429 firms and 4,966 loan observations.[4] Firms' financial characteristics are collected from Compustat, and the stock return information is obtained from the Centre for Research in Security Prices (CRSP).

3.2 Variable measurement

3.2.1 Measuring cost of debt financing

To measure the cost of loan, we use the initial all-in drawn spread over the London Interbank Offered Rate (LIBOR) in percentage points, denoted as *Spread*.[5] It is the borrower's total cost of borrowing assuming that the loan is fully drawn and incorporating ongoing and commitment fees, which has been used widely as a measure of cost of debt financing in recent studies, see for example, Chava et al. (2009) and Borisova et al. (2015). If the firm gets more than one syndicated loans in a certain fiscal year, we compute the weighted average initial all-in drawn spread with the weight being the loan size.[6]

[3] To check the robustness our findings, we follow Kini and Williams (2012) by adding those firms with a negative pay gap in the sample, but replacing the CEO's compensation by the industry median CEO compensation, by CEO compensation with matching an industry- and size-matched firm or by adding a constant number that makes the pay gap positive, respectively. For all these alternatives, we obtain results qualitatively similar to the reported ones. For brevity, these results are not reported in the paper but are available upon request.

[4] The sample size may change when we use different methods to measure cost of debt and pay disparity.

[5] In section 4.3.3 and 4.3.4, we measure cost of debt financing based on the weighted average initial yield spread of bonds issued by U.S. listed firms from 1992 to 2014 and consider alternative measurements of cost of loan and cost of bond to check the robustness of our findings.

[6] The average initial all-in drawn spread weighted by loan size is widely used for the measurement of cost of debt financing, see for example, Graham et al. (2008), Roberts and Yuan (2010), and Li, Xie and Zhou (2010).

3.2.2 Measuring executive pay disparity

Following Kale et al. (2009) and Kini and Williams (2012), we measure the executive pay disparity as the logarithm of difference between CEO pay and the median pay of all other executives in the top management team (pay gap). Specifically:

Gap 1= Ln (CEO pay – Median pay of all other executives) (1)

The compensation for CEOs and top executives – consisting of the salary components of base salary, bonus, other annual salary, restricted stock grants, long-term incentive plan (LTIP) payouts, all other compensations and value of option grants – is collected from data item "TDC1" in ExecuComp database. We also use other benchmarks to calculate the proxies for executive pay disparity in an analogous manner. In particular, we create Gap 2, Gap 3, Gap 4, and Gap 5 which is calculated as the logarithm of the difference between CEO compensation and the mean compensation for all other executives, the median compensation for top four other executives, the mean compensation for top four other executives, and the highest other executive compensation, respectively. When we use the top four other executives' mean or median compensation to calculate the executive pay disparity, we drop the observations if the firm does not provide the compensation information for at least four other executives in the fiscal year, which is consistent with Bebchuk et al. (2011). In the empirical analysis, we use these five proxies for executive pay disparity separately when examining its effect on cost of debt financing.

3.3 Baseline regression specification

To examine how executive pay disparity affects cost of debt financing, we estimate the following regression specification:

$$Spread_{i,t} = \alpha + \beta_1 Gap_{i,t-1} + \gamma_1 Size_{i,t-1} + \gamma_2 LEV_{i,t-1} + \gamma_3 Volatility_{i,t-1} + \gamma_4 Tangibility_{i,t-1} + \gamma_5 Growth_{i,t-1} + \gamma_6 Age_{i,t-1} + \gamma_7 CR_{i,t-1} + \gamma_8 MB_{i,t-1}$$

$$+ \gamma_9 ROA_{i,t-1} + \gamma_{10} Shield_{i,t-1} + \varepsilon_{i,t}, \quad (2)$$

where $Spread_{i,t}$ measures the cost of debt financing of firm i in fiscal year t and $Gap_{i,t}$ is a proxy for executive pay disparity. To account for the potential reverse causality, we use the one-year lagged values of explanatory variables. We control for firm characteristics including firm size (*Size*), leverage (*LEV*), risk level (*Volatility*), asset tangibility (*Tangibility*), sales growth (*Growth*), firm age (*Age*), current ratio (*CR*), market-to-book ratio (*MB*), return on assets (*ROA*), and non-debt tax shield (*Shield*), which have been documented as the determinants of the cost of debt financing in the literature. Larger and older firms have longer track records and suffer less from information asymmetries in the credit markets, firms with more tangible assets can provide more valuable collaterals, and firms with a higher liquidity ratio are more easily to meet the current payment obligations, so that these firms command lower loan spreads (Ortiz-Molina, 2006; Lin et al., 2011; Bliss and Gul, 2012). Profitable and low-risk firms usually have a lower probability of default and are thus expected to have lower loan spreads (Ahmed et al., 2002; Campbell and Taksler, 2003; Jiang, 2008). Firms using a higher non-debt tax shield have a lower likelihood of using debt financing and are expected to have higher cost of debt (Graham and Rogers, 2002). In particular, we use sales growth, market-to-book ratio and return on assets as the proxies for firm profitability, leverage level and stock return volatility as the proxies for firm risk level, and current ratio as a measure of liquidity ratio. We also include industry (two-digit SIC) dummies and control heteroscedastic standard error clustered by years. To mitigate the effect of outliers, we winsorize all control variables at both the 1st and 99th percentiles. Detailed definitions of the variables are provided in Table 1.

[Insert Table 1 here]

4. Results and discussions

4.1. Sample descriptive statistics

Table 2 illustrates the descriptive statistics for the sample. For the executive pay disparity, the average (median) difference between the CEO compensation and all other executive median compensation is around $3.780 million ($2.176 million). The median compensation gap is smaller than the average compensation gap, which indicates that certain companies may have a very large compensation gap between their CEOs and other executives. The mean and median compensation gap when applying other benchmarks (i.e., compensation difference between CEOs and top four other executives) are similar to the measure of Gap 1, in that the mean (median) compensation gap between CEOs and other executives is around $3.7 million ($2.1 million). Gap 5 shows that the average (median) compensation gap between CEOs and the other executives with the highest compensation is $3.061 million ($1.656 million), which is lower than the other proxies since the highest compensation of other executives serves as the benchmark here. The sample size of Gap 5 is the smallest among the five proxies of pay disparity gap because more observations have a negative compensation gap value. Our compensation gap results are similar to those reported by Kini and Williams (2012).

[Insert Table 2 here]

For the cost of debt financing, the average loan spread is 1.519% (151.9 basis points), while the median loan spread is 1.375% (137.5 basis points). Roberts and Yuan (2010) and Li et al. (2010) provide a similar spread number in their sample. In our sample, on average the firms have market capitalization of $7,776 million, but the median size of firms is $1,823 million, implying there are certain firms with very large market capitalization. Other control variables indicate that the sample firms on average have the following characteristics: around 25.8% of debt in their

capital structure; return volatility is 10.8%; about 59.1% of their assets are tangible; growth ratio is 11.1%; their fundamentals have been reported in Compustat for approximately 29 years; current ratio is 1.936; market-to-book ratio is 3.119; return on assets is 15.0%; and non-debt tax shield is 4.6%.

4.2. Effect of executive pay disparity on cost of debt financing

We estimate baseline regression model (2) using an ordinary least squares (OLS) method, and report the regression results in Table 3. The dependent variable is the average initial all-in drawn spread over LIBOR as the proxy for the cost of debt financing, while the main explanatory variable is the proxy for executive pay disparity, that is, the compensation gap between CEOs and other executives. In Models 1 to 5, we separately test different proxies for executive pay disparity (from Gap 1 to Gap 5, respectively) as those proxies are highly correlated with each other. As shown in Table 3, no matter which executive pay disparity proxy is used, the compensation gap between CEOs and other executives is significantly and positively associated with the average initial all-in drawn spread over LIBOR at the 1% level, after controlling for firm characteristics. The impact of executive pay disparity on loan spread is also economically significant. For example, a one-standard-deviation increase in Gap 1 increases the average initial all-in drawn spread over LIBOR by 11.67 basis points.[7] These results indicate that creditors require higher costs of debt financing if the compensation gap between CEOs and other executives is larger, which is consistent with the entrenchment hypothesis. Under this hypothesis, larger pay disparity increases the overall risk levels for firms and, therefore, leads to the higher credit risks that concern the creditors, due to the stronger incentives for risk-taking behaviors by

[7] Because the sample standard deviation of Gap 1 is 1.203 and the regression coefficient of Gap 1 is 0.097, we have $0.097 \times 1.203 = 0.1167\%$.

entrenched CEOs as well as other executives competing for promotion. However, our results do not support the tournament hypothesis that larger executive pay disparity is associated with a higher firm value which can mitigate creditors' credit concerns.

[Insert Table 3 here]

The control variables in Table 3 show expected signs similar to those reported in prior studies (e.g., Ortiz-Molina, 2006; Jiang, 2008; Bliss and Gul, 2012). In particular, the firm size is significantly negatively related to the average spread of the loans at the 1% level. This implies that the smaller firms usually face a higher interest demanded by creditors. For the measures of firm performance, both sales growth and ROA are significantly negatively related to the loan spread at the 1% level across five models, while the effect of the market-to-book ratio is significantly negative at the 5% level. These results illustrate that improved firm performance can mitigate credit concerns and result in less expensive debt financing. Regarding the measurement of firm risk, leverage ratio and return volatility are positively and significantly associated with the loan spread at the 1% level, respectively. It implies that greater risks undertaken by the firm increase the cost of debt required by creditors. Current ratio is significantly and positively related to the loan spread at the 1% level, indicating that it is easier for firms with a higher current ratio to meet the current payment requirements. Other variables, namely tangible assets ratio, firm age and non-debt tax shield do not have a significant impact on the loan spread.

4.3 Robustness tests

4.3.1 Endogeneity of executive pay disparity

Endogeneity of executive pay disparity is a possible concern in our analysis. On the one hand, firms with certain patterns of executive pay disparity may have other unobserved firm-specific characteristics that affect both the executive pay disparity and the cost of debt financing. The existence of these unobserved factors could potentially bias our results. On the other hand, the status of the debt financing access could potentially shape the executive pay disparity which introduces the reverse causality issue. Although it is extremely difficult to completely eliminate the endogeneity problem, we attempt to address it by using the two-stage least squares (2SLS) method with instrumental variables for each borrower's executive pay disparity. To implement the 2SLS, we first regress executive pay disparity against the instrumental variable, and then the predicted value obtained from the first stage is entered into the second stage. In the spirit of Laeven and Levine (2009) and Lin et al. (2011), we use industry median executive pay gap as the instrument for each borrower's executive pay gap. We also use industry average executive pay gap as the alternative instrument to check the robustness of the main results. The industry average and median are industry-specific and are correlated with a borrower's executive pay gap, but is unlikely to directly influence the loan spreads of the particular firms. We also control for the industry fixed effects which can alleviate the concern that some industry-level factors might affect the cost of debt financing.

Model 1 and Model 2 in Table 4 report the regression results of the second stage of the 2SLS by using industry median executive pay gap and industry average executive pay gap as the instrumental variables, with loan spread as the dependent variable, respectively. [8] The Chi-square of the second stage are reported (the regression results of the first stage are not reported but available upon request), indicating that the instrumental variables are valid and the estimated

[8] In these two columns, we use Gap 1 as the proxy for the executive pay disparity. The regression results are qualitatively similar when other proxies for the executive pay disparity are used. For brevity, these results are not reported but are available upon request.

coefficients of the instruments are significantly different from 0 at the 1% level. The estimated results in Table 4 reveal that the coefficients of executive pay gap in the instrumental variable regressions are significantly and positively related to the average all-in drawn spread over LIBOR at the 1% level. The coefficients of executive pay gap in Model 1 and Model 2 are even larger than the coefficients estimated from the OLS regressions that we test in the previous section, after controlling for potential endogeneity issue.

[Insert Table 4 here]

4.3.2 Sample selection bias

Our main sample includes firms that obtain debt financing rather than equity financing. Thus, it is possible that the observed relationship between executive pay disparity and cost of debt financing is subject to sample selection bias, as our sample is not random and only particular firms that access debt financing are included in our sample. To address this issue, we use the Heckman (1979) two-stage model to correct the sample selection problem. Similar to Hovakimian, Opler and Titman (2001) and Ortiz-Molina (2006), we first estimate a Probit model of debt-equity choice using all firms in the S&P 1500, then we control the selection bias by adding the inverse Mills ratio (Lambda) from this Probit model in the second stage regression model of testing the cost of debt financing. The Probit model estimates the determinants of the debt financing of firms, and includes firms' leverage ratio, ROA and market-to-book ratio from baseline regression specification (2) as control variables. To meet the exclusion restrictions, we also include two additional variables that we do not include in the second-stage regression. The first one is firm target leverage, measured by the two-digit SIC industry median leverage, and the second one is firm bankruptcy probability measured by Alman's Z score. We also include year dummies in the first stage. The inclusion of these control variables in the first stage is consistent

with Ortiz-Molina (2006). The results of the main equation using the Heckman two-stage model are shown in Model 3 in Table 4. As can be seen from the results, the coefficient of the inverse Mills ratio is significantly negative, indicating that selection bias might exist in the previous analysis. However, after correcting for this self-selection issue, executive pay disparity is still positively and significantly associated with the cost of debt financing, which is consistent with the results reported in Table 3. Therefore our main results are robust to correct for the sample selection bias issue.

Overall, these results are consistent with our previous findings and support the view that the executive pay disparity provides executives with extra risk-taking incentives and then aggravate credit risks, which lead to higher cost of debt financing. Moreover, the effect of executive pay disparity on cost of debt financing is strengthened after addressing the endogeneity issue.

4.3.3 Alternative sample of evaluating cost of debt

Companies can negotiate syndicated loans and/or issue corporate bonds to finance their investments. Previous analysis shows that executive pay disparity affects the cost of loan financing, and in this section we further test whether executive pay disparity concerns public bond investors in order to provide additional evidence and to confirm the robustness of our findings. In particular, we collect nonconvertible, fixed rate bonds issued by U.S. firms between 1992 and 2014 from SDC's Global New Issues database. For each issue, we obtain the issuer, the issue date, the yield spread to benchmark treasury, and the principal amount from SDC. Similar to Ortiz-Molina (2006), we consider the initial yield spread as a proxy for the cost of debt financing. If there are multiple bonds issued in a certain fiscal year for a certain firm, we calculate the weighted average yield spread based on the bond size. This data is matched with the

compensation gap data from ExecuComp database. After we delete financial firms, utility firms, and the firms with missing accounting or stock information, the final sample consists of 468 firms and 1,608 observations. Comparing to the sample of 1,429 firms that have syndicated bank loans, we find that the S&P 1500 companies usually prefer borrowing money from banks via the private market, rather than issuing bonds through the public market.

We re-estimate the baseline regression (2) by replacing the loan all-in drawn spread with the bond yield spread as the proxy for cost of debt financing. The results are shown in Table 5. We find that the bond yield spread is significantly positively related to the different compensation gap measures at the 1% level. This confirmed the previous finding that the cost of debt financing is higher for firms with larger executive pay disparity, which is consistent with the entrenchment hypothesis.[9] The impact of executive pay disparity is also economically significant. For example, a one-standard-deviation increase in Gap 1 increases the bond yield by 19.97 basis points.[10]

[Insert Table 5 here]

The effects of control variables are similar to the previous results shown in Table 3. Firm size and ROA are significantly and negatively associated with the bond yield spared at the 5% level and 1% level, respectively, while the effects of leverage level and stock return volatility are significantly positive. This suggests that better performing firms and firms with lower risk and larger size have lower cost of bond financing. Current ratio is significantly and positively related to the bond yield spread, at least at the 10% level. The effects of other variables, such as market-to-book ratio, tangible assets ratio, growth rate, firm age, current ratio and tax shield, are not significant.

[9] In robustness checks, we address endogeneity of executive pay disparity and sample selection bias following the methods in Section 4.3.1 and 4.3.2. The positive relationship between executive pay disparity and bond yield spread remains significant. For brevity, these results are not reported but are available upon request.

[10] Because the sample standard deviation of Gap 1 is 1.203 and the regression coefficient of Gap 1 is 0.166, we have $0.166 \times 1.203 = 0.1997\%$.

4.3.4 Different proxies for cost of debt financing

In our previous analysis, we use the weighted average initial all-in drawn spread (yield spread) of loans (bonds) based on the loan (bond) size to proxy for the cost of debt financing, if a firm has multiple issues during a fiscal year. In this section, we further check the robustness of our findings by calculating the cost of loans (bonds) using different criteria. Following Chen and King (2014), we calculate the loan (bond) spread by choosing the loan (bond) with the largest size in that year, and choosing the first loan (bond) signed (issued) in that year, respectively. Then, we re-estimate the baseline regression (2) by using these two alternative proxies for the cost of debt financing and report the results in Table 6. It shows that Gap 1 is significantly and positively correlated to alternative proxies of bond or loan spread at the 1% level. This supports the entrenchment hypothesis that executive pay disparity increases firms' risk level, and therefore debtholders (both bondholders and creditors) require higher risk premium. We also use different proxies for executive pay disparity, i.e., Gap 2 to Gap 5, and obtain similar results.[11]

[Insert Table 6 here]

4.4 Additional analyses

4.4.1 Borrowing firms' agency problems of free cash flow

The previous analysis shows that executive pay disparity actually provides extra risk-taking incentives for executives to invest in high risk projects, so that creditors will require a higher premium on their investments. The free cash flow hypothesis argues that when firms generate cash flows in excess of that required to finance all positive net present value (NPV) projects, executives will make suboptimal investments for empire-building or supporting the pretense of

[11] For brevity, these results are not reported but are available upon request.

strong investment opportunities rather than for increasing firm profitability, which aggravates the agency cost of debt (Jensen and Meckling, 1976; Jensen, 1986). According to this hypothesis, we predict that creditor concern becomes more severe when firms retain a higher level of free cash flow, so that the positive effect of executive pay disparity on cost of debt financing is more pronounced for firms with a higher level of free cash flow. To test this prediction empirically, we use the residual operating cash flow to measure the severity of agency problems of free cash flow. Following Chen et al. (2013), we regress operating cash flow on executive pay disparity, and use the residual value of operating cash flow from the regression to indicate the excessive cash flow. A definition of operating cash flow is presented in Table 1.

According to the free cash flow hypothesis, companies with high residual cash flow are more likely to have agency problems that concern creditors. In other words, companies with low residual cash flow are less likely to have agency problems. To empirically test this hypothesis, we include the interaction term between the proxies of executive pay disparity and the residual operating cash flow respectively as an additional explanatory variable in the baseline regression specification (2). Table 7 reports the regression results. While executive pay disparity remains significantly positively related to the loan spread at the conventional levels, the interaction term between executive pay disparity and residual operating cash flow has a significantly positive effect in almost all specifications (except column 5 where the effect is positive but not significant). It indicates that the positive relationship between executive pay disparity and cost of debt becomes more pronounced for firms with more severe agency problems faced by creditors, resulting from a higher level of residual cash flows. This finding also validates our argument that executive pay disparity influences cost of debt by providing extra risk incentives to senior executives which in turn affects the firms' credit risk level.

[Insert Table 7 here]

4.4.2 Borrowing firms' credit rating

The creditworthiness of the borrowing firms might moderate the concerns of creditors and the positive relationship between executive pay disparity and cost of debt financing. For firms with a higher credit rating, the executive pay disparity and associated risk-taking incentives is less of a concern to creditors when making lending decisions because financial distress is less likely to occur. Therefore, the borrowing firms' creditworthiness should weaken the effect of executive pay disparity on cost of debt financing.

To test this prediction empirically, we add an interaction term between creditworthiness proxy and executive pay disparity as an explanatory variable to the baseline regression specification (2). To proxy for firms' creditworthiness, we obtain S&P domestic long-term issuer credit rating from Compustat S&P Rating database, and, following Lin et al. (2011), create a dummy variable, *Investment grade*, which is equal to 1 if the credit rating is BBB or above and 0 otherwise. The regression results are reported in Table 8. As can be seen, the estimated coefficients of the interaction terms are negative and significant at the conventional levels in most specifications (columns 2, 4 and 5), indicating that the positive relationship between the executive pay disparity and the loan spread is significantly lower for firms with investment grade credit rating. These results are consistent with our prediction that the effect of executive pay disparity on the cost of debt financing is weaker for firms with better creditworthiness, due to the fact that firms' creditworthiness can alleviate creditors' concerns about potential defaults.

[Insert Table 8 here]

4.4.3 Short-term vs long-term components of executive pay disparity

As summarized and discussed by Core, Holthausen and Larcker (1999) and Kale et al. (2009), executive compensation can be further divided into both short-term and long-term components which provide executives with different incentive horizons. Kim, Li and Zhang (2011) argue that executives' short-termist behaviors are more likely to result in high level business risk, which might in turn affect the cost of debt financing. Therefore, we conjecture that executive pay disparity based on short-term components has a more significant effect on the cost of debt than that of executive pay disparity based on long-term components. To empirically test it, we split executive pay disparity based on total compensation that we use in the previous analysis into executive pay disparity based on short-term compensation (*Short Gap*) and long-term compensation (*Long Gap*), and re-estimate our baseline regression model (2).[12] The results are reported in Table 9. As can be seen, the estimated coefficients of our five proxies for the *Short Gap* are positive and statistically significant at the conventional levels, while the estimated coefficients of the *Long Gap* are positive but insignificant. This is consistent with our conjecture that short-term incentives provide executives with extra risk-taking motivation to increase firm risk level, which is also consistent with our entrenchment hypothesis that executive pay disparity affects the cost of debt financing by affecting firm risk level.

[Insert Table 9 here]

[12] The ExecuComp database provides the components of total compensation (tdc1). However, some changes have been made since 2006. Before 2006, the total compensation comprised the following components: salary, bonus, other annual, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts and all other total. Following Kale et al. (2009), we classify the first three items (i.e. salary, bonus and other annual) as short-term compensation, and all other items are long-term compensation. After 2006, the new reporting format changed certain items, so the total amount consisted of salary, bonus, non-equity incentive plan compensation, grant-date fair value of option awards, grant-date fair value of stock awards, deferred compensation earnings reported as compensation and other compensation. Therefore after 2006, short-term compensation consisted of the first three items: salary, bonus and non-equity incentive plan compensation, and all others are regarded as representing long-term compensation.

5. Conclusion

In this study, we apply the agency framework between managers and creditors to examine how creditors evaluate the compensation structure within the executive team. In particular, we examine the association between executive pay disparity and cost of debt financing. Using syndicated bank loans granted to U.S. listed firms from 1992 to 2014, we find a positive association between the executive pay disparity and the cost of debt financing measured by the initial all-in drawn spread of bank loans. When the bond yield spread is adopted as an alternative proxy for the cost of debt financing, we also find a significant and positive association based on a sample of bonds issued by U.S. listed firms from 1992 to 2014.

Further analysis shows that this positive link remains after we address the endogeneity of executive pay disparity and the sample selection bias, and is robust to alternative measures of executive pay disparity and cost of debt financing. When borrowers have more severe agency problems of free cash flow or poorer creditworthiness, the positive association becomes stronger. In addition, executive pay disparity measured based on short-term compensation has a more significant effect on cost of debt financing, compared to that measured based on long-term compensation. These results are consistent with the entrenchment view that large executive pay disparity provides both CEOs and other executives with extra risk-taking incentives, which increases the credit risk and amplifies the agency problems faced by creditors. Our findings demonstrate that creditors view executive pay disparity as risky and provide important implications for the design of executive compensation structure.

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Table 1. Definitions of variables

Variable	Definition/Measurement
Cost of debt (*Spread*)	The weighted average initial all-in drawn spread over LIBOR of syndicated bank loans in percentage points, with the weight being the loan size
Executive pay disparity	
Gap 1	Ln (CEO pay – Median pay of all other executives)
Gap 2	Ln (CEO pay – Mean pay of all other executives)
Gap 3	Ln (CEO pay – Median pay of top four other executives)
Gap 4	Ln (CEO pay – Mean pay of top four other executives)
Gap 5	Ln (CEO pay – The highest pay of other executives)
Firm characteristics	
Firm size (*Size*)	Natural log of a firm's market capitalization
Leverage (*LEV*)	(Short-term debt + long-term debt) / Total assets
Return volatility (*Volatility*)	The standard deviation of monthly buy-and-hold return in a year
Asset tangibility (*Tangibility*)	Gross property, plant, and equipment dividend by total assets
Sales growth (*Growth*)	Annual growth rate of firm sales level
Firm age (*Age*)	Natural log of the years since the firm was reported in Compustat database
Current ratio (*CR*)	Current assets divided by current liability
Market-to-book ratio (*MB*)	The market value of equity (total outstanding shares times fiscal year end share price) divided by the book equity value.
Return on assets (*ROA*)	Earnings before interest, tax, depreciation and amortization divided by total assets
Non-debt tax shield (*Shield*)	Depreciation expenses divided by total assets
Altman's Z score	1.2 (working capital/ total assets) + 1.4 (retained earnings / total assets) + 3.3 (earnings before interest and tax / total assets) + 0.6 (market value of equity / total liabilities) + 1 (sales / total assets)
Operating cash flow	Income before ordinary items plus depreciation and amortization divided by book value of total assets
Investment grade	A dummy variable equal to 1 if the S&P rating is BBB or better and 0 otherwise

Table 2. Descriptive statistics

This table reports the summary statistics for variables defined in Table 1 based on the sample of syndicated bank loans granted to U.S. listed firms between 1992 and 2014. Measures of executive pay disparity and firm size are reported in millions before taking logarithm.

Variable	Obs.	Mean	Std. Dev.	25%	Median	75%
Cost of debt						
Spread (%)	4966	1.519	1.056	0.75	1.375	2.000
Executive pay disparity						
Gap 1 ($ Million)	5029	3.780	6.604	0.925	2.176	4.437
Gap 2 ($ Million)	4949	3.667	6.418	0.896	2.097	4.332
Gap 3 ($ Million)	4730	3.787	6.581	0.947	2.199	4.455
Gap 4 ($ Million)	4649	3.675	6.346	0.909	2.132	4.368
Gap 5 ($ Million)	4428	3.061	5.457	0.643	1.656	3.621
Firm characteristics						
Firm size ($ Million)	4966	7776.2	23376.6	682.6	1823.4	5294.8
Leverage	4966	0.258	0.166	0.142	0.246	0.348
Return volatility	4966	0.108	0.060	0.069	0.095	0.131
Tangibility	4966	0.591	0.376	0.291	0.522	0.831
Sales growth	4966	0.111	0.246	-0.0004	0.073	0.167
Firm age	4966	29.43	17	14	27	45
Current ratio	4966	1.936	1.085	1.256	1.714	2.360
Market-to-book ratio	4966	3.119	4.203	1.457	2.277	3.579
ROA	4966	0.150	0.078	0.103	0.142	0.188
Non-debt tax shield	4966	0.046	0.025	0.029	0.041	0.057

Table 3
The effect of executive pay disparity on loan spread
This table presents the baseline regression results for the effect of executive pay disparity on loan spread. The dependent variable is the weighted average initial all-in drawn spread over LIBOR, with the weight being the loan size, which is calculated based on syndicated bank loans issued to the firm within the fiscal year, while the explanatory variables are measured in the lagged fiscal year. Definitions of variables are provided in Table 1. All models include industry (two-digit SIC) dummies. Robust standard errors clustered by years are reported in parentheses. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

Dependent variable: loan spread (%)					
	Model 1	Model 2	Model 3	Model 4	Model 5
Gap 1	0.097				
	(0.019)***				
Gap 2		0.089			
		(0.019)***			
Gap 3			0.093		
			(0.020)***		
Gap 4				0.081	
				(0.020)***	
Gap 5					0.058
					(0.011)***
Firm size	-0.217	-0.215	-0.209	-0.203	-0.192
	(0.017)***	(0.017)***	(0.017)***	(0.016)***	(0.019)***
Leverage	1.233	1.229	1.240	1.241	1.195
	(0.155)***	(0.151)***	(0.149)***	(0.146)***	(0.155)***
Volatility	4.300	4.305	4.342	4.402	4.506
	(1.044)***	(1.038)***	(1.067)***	(1.072)***	(1.071)***
Tangibility	-0.081	-0.094	-0.077	-0.084	-0.065
	(0.063)	(0.065)	(0.068)	(0.066)	(0.073)
Growth	-0.349	-0.365	-0.402	-0.414	-0.336
	(0.119)***	(0.116)***	(0.130)***	(0.127)***	(0.118)***
Firm age	-0.003	0.003	-0.006	-0.002	0.005
	(0.029)	(0.030)	(0.030)	(0.031)	(0.032)
Current ratio	0.081	0.082	0.090	0.094	0.087
	(0.012)***	(0.012)***	(0.014)***	(0.015)***	(0.013)***
Market-to-book ratio	-0.018	-0.018	-0.017	-0.017	-0.016
	(0.007)**	(0.008)**	(0.007)**	(0.007)**	(0.007)**
ROA	-3.061	-3.107	-3.070	-3.006	-3.051
	(0.324)***	(0.321)***	(0.350)***	(0.340)***	(0.320)***
Tax Shield	0.599	0.843	0.871	0.778	-0.0627
	(1.126)	(1.166)	(1.242)	(1.216)	(1.208)
Constant	2.518	2.554	2.408	2.470	2.631
	(0.483)***	(0.474)***	(0.505)***	(0.505)***	(0.460)***
F statistics	28.51***	28.85***	27.06***	26.90***	33.97***
Adj. R^2	0.3242	0.3258	0.3225	0.3243	0.3255
Observations	4,955	4,886	4,663	4,594	4,374

Table 4

Two-stage least squares (2SLS) and Heckman estimation

This table addresses the endogeneity of executive pay disparity and the sample selection bias, which concerns the effect of executive pay disparity on loan spread. Models 1 and 2 illustrate the results of the second stage of the 2SLS by using industry median executive pay gap and industry average executive pay gap as the instrumental variable respectively, and with the weighted average all-in drawn spread over LIBOR as the dependent variable. Model 3 reports the second stage regression results for the Heckman (1979) model. Definitions of variables are reported in Table 1. All models include industry (two-digit SIC) dummies. Robust standard errors clustered by years are reported in parentheses. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

Dependent variable: loan spread (%)

	2SLS		Heckman
	Model 1	Model 2	Model 3
Gap 1	1.023	0.923	0.0954
	(0.066)***	(0.059)***	(0.018)***
Firm size	-0.721	-0.667	-0.226
	(0.039)***	(0.035)***	(0.017)***
Leverage	1.525	1.494	0.698
	(0.119)***	(0.113)***	(0.202)***
Volatility	4.147	4.164	4.560
	(0.323)***	(0.306)***	(1.176)***
Tangibility	0.122	0.100	-0.104
	(0.085)	(0.080)	(0.061)
Growth	-0.286	-0.292	-0.219
	(0.075)***	(0.071)***	(0.128)
Firm age	-0.032	-0.029	-0.025
	(0.029)	(0.027)	(0.031)
Current ratio	0.066	0.067	0.092
	(0.018)***	(0.017)***	(0.015)***
Market-to-book ratio	-0.032	-0.030	-0.009
	(0.004)***	(0.004)***	(0.008)
ROA	-4.141	-4.025	-3.775
	(0.270)***	(0.255)***	(0.478)***
Tax Shield	0.375	0.399	1.086
	(1.089)	(1.032)	(1.072)
Inverse Mills ratio			-0.807
			(0.320)**
Chi-square	1452.63***	1597.68***	
F statistics			38.22***
Adj. R^2			0.3412
Observations	4,955	4,955	4,672

Table 5
The effect of executive pay disparity on bond spread
This table presents the regression results for the effect of executive pay disparity on bond spread. The dependent variable is the weighted average yield spread with the weight being the bond size, which is calculated based on nonconvertible and fixed rate bonds issued by the firm within the fiscal year, while the explanatory variables are measured in the lagged fiscal year and defined in Table 1. All models include industry (two-digit SIC) dummies. Robust standard errors clustered by years are reported in parentheses. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

Dependent variable: bond spread (%)					
	Model 1	Model 2	Model 3	Model 4	Model 5
Gap 1	0.166				
	(0.054)***				
Gap 2		0.171			
		(0.056)***			
Gap 3			0.166		
			(0.049)***		
Gap 4				0.177	
				(0.047)***	
Gap 5					0.086
					(0.033)***
Firm size	-0.184	-0.195	-0.182	-0.197	-0.155
	(0.071)**	(0.073)**	(0.072)**	(0.072)**	(0.068)**
Leverage	1.897	1.894	1.841	1.804	1.909
	(0.289)***	(0.291)***	(0.282)***	(0.288)***	(0.344)***
Volatility	13.96	13.91	13.86	13.83	14.12
	(3.939)***	(3.966)***	(3.972)***	(3.993)***	(3.992)***
Tangibility	-0.009	0.039	0.039	0.071	0.009
	(0.158)	(0.157)	(0.159)	(0.151)	(0.170)
Growth	0.030	0.043	-0.025	-0.001	0.176
	(0.180)	(0.185)	(0.195)	(0.200)	(0.178)
Firm age	0.035	0.040	0.050	0.055	0.032
	(0.042)	(0.042)	(0.041)	(0.041)	(0.047)
Current ratio	0.109	0.104	0.119	0.115	0.098
	(0.045)**	(0.046)**	(0.051)**	(0.051)**	(0.052)*
Market-to-book ratio	-0.021	-0.021	-0.021	-0.021	-0.019
	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)
ROA	-2.924	-2.949	-2.843	-2.893	-2.513
	(1.023)***	(1.025)***	(1.001)***	(1.012)***	(1.036)**
Tax Shield	-2.315	-2.837	-2.566	-3.198	-3.818
	(3.588)	(3.604)	(3.540)	(3.625)	(3.580)
Constant	0.440	0.540	0.227	0.299	0.711
	(0.900)	(0.888)	(0.925)	(0.909)	(0.927)
F statistics	18.33***	18.36***	17.34***	17.34***	16.28***
Adj. R^2	0.3729	0.3753	0.3646	0.3675	0.3682
Observations	1,604	1,590	1,567	1,548	1,443

Table 6

The effect of executive pay disparity on alternative measures of cost of debt financing

This table presents the regression results for the effect of the executive pay disparity on alternatives measures of loan spread and bond spread respectively. Models 1 and 2 use the initial all-in drawn spread over LIBOR of the largest loan and that of the first loan offered within the fiscal year as dependent variable, respectively. The dependent variables for Model 3 and Model 4 are the yield spread of the bond with the largest size and that of the first bond issued within the fiscal year, respectively. Definitions of all the other variables are reported in Table 1 and measured in the lagged fiscal year. All models include industry (two-digit SIC) dummies. Robust standard errors clustered by years are reported in parentheses. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

Dependent variable: loan spread or bond spread (%)				
	Largest loan	First loan	Largest bond	First bond
	Model 1	Model 2	Model 3	Model 4
Gap 1	0.099	0.106	0.164	0.167
	(0.018)***	(0.019)***	(0.055)***	(0.047)***
Firm size	-0.220	-0.201	-0.175	-0.172
	(0.016)***	(0.018)***	(0.072)**	(0.076)**
Leverage	1.246	1.259	1.954	1.949
	(0.157)***	(0.147)***	(0.301)***	(0.343)***
Volatility	4.309	4.332	14.02	13.56
	(1.055)***	(1.050)***	(3.997)***	(4.248)***
Tangibility	-0.086	-0.091	0.045	-0.017
	(0.066)	(0.058)	(0.152)	(0.114)
Growth	-0.354	-0.346	0.042	0.148
	(0.120)***	(0.118)***	(0.185)	(0.193)
Firm age	0.002	-0.006	0.032	0.038
	(0.029)	(0.028)	(0.042)	(0.043)
Current ratio	0.082	0.085	0.113	0.116
	(0.013)***	(0.012)***	(0.046)**	(0.045)**
Market-to-book ratio	-0.018	-0.017	-0.021	-0.023
	(0.007)**	(0.007)**	(0.013)	(0.013)
ROA	-3.051	-3.008	-2.917	-2.934
	(0.347)***	(0.295)***	(0.998)***	(0.941)***
Tax Shield	0.454	0.290	-2.678	-1.011
	(1.158)	(1.033)	(3.539)	(3.579)
Constant	2.568	2.305	0.359	0.390
	(0.489)***	(0.465)***	(0.914)	(1.140)
F statistics	27.54***	30.00***	18.01***	19.04***
Adj. R^2	0.3165	0.3145	0.3686	0.3507
Observations	4,955	5,473	1,604	1,838

Table 7.

Executive pay disparity, free cash flow and cost of debt financing

This table reports the regression results for the effect of borrowing firms' free cash flow on the association between executive pay disparity and cost of debt financing. The dependent variable is the weighted average initial all-in drawn spread over LIBOR, with the weight being the loan size, which is calculated based on syndicated bank loans issued to the firm within the fiscal year. The explanatory variables are measured in the lagged fiscal year. RCF denotes the residual cash flow, which is the residual value from regressing operating cash flow on executive pay disparity. Definitions of all the other variables are reported in Table 1. All models include industry (two-digit SIC) dummies. Robust standard errors clustered by years are reported in parentheses. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

Dependent variable: loan spread (%)					
	Model 1	Model 2	Model 3	Model 4	Model 5
Gap 1	0.092				
	(0.019)***				
Gap 1 * RCF	0.400				
	(0.220)*				
Gap 2		0.086			
		(0.019)***			
Gap 2 * RCF		0.472			
		(0.194)**			
Gap 3			0.088		
			(0.020)***		
Gap 3 * RCF			0.415		
			(0.210)*		
Gap 4				0.078	
				(0.020)***	
Gap 4 * RCF				0.315	
				(0.146)**	
Gap 5					0.056
					(0.012)***
Gap 5 * RCF					0.086
					(0.171)
RCF	-3.653	-4.126	-3.768	-2.863	-0.809
	(1.795)*	(1.557)**	(1.685)**	(1.117)**	(1.447)
Controls	Yes	Yes	Yes	Yes	Yes
F Statistics	28.62***	28.59***	27.06***	26.69***	32.95***
Adj. R^2	0.3263	0.3288	0.3249	0.3264	0.3253
Observations	4,955	4,886	4,663	4,594	4,374

Table 8.

Executive pay disparity, creditworthiness and cost of debt financing

This table reports the regression results for the effect of borrowing firms' creditworthiness on the association between executive pay disparity and cost of debt financing. The dependent variable is the weighted average initial all-in drawn spread over LIBOR, with the weight being the loan size, which is calculated based on syndicated bank loans issued to the firm within the fiscal year. The explanatory variables are measured in the lagged fiscal year. To proxy for firms' creditworthiness, we obtain S&P domestic long-term issuer credit rating from Compustat S&P Rating database, and create a dummy variable, *Investment grade*, which is equal to 1 if the credit rating is BBB or above and 0 otherwise. Definitions of all the other variables are reported in Table 1. All models include industry (two-digit SIC) dummies. Robust standard errors clustered by years are reported in parentheses. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

Dependent variable: loan spread (%)					
	Model 1	Model 2	Model 3	Model 4	Model 5
Gap 1	0.111				
	(0.030)***				
Gap 1*Investment grade	-0.041				
	(0.031)				
Gap 2		0.122			
		(0.032)***			
Gap 2*Investment grade		-0.074			
		(0.031)**			
Gap 3			0.110		
			(0.032)***		
Gap 3*Investment grade			-0.050		
			(0.032)		
Gap 4				0.100	
				(0.032)***	
Gap 4*Investment grade				-0.053	
				(0.031)*	
Gap 5					0.078
					(0.019)***
Gap 5*Investment grade					-0.042
					(0.023)*
Investment grade	-0.286	-0.031	-0.240	-0.218	-0.302
	(0.249)	(0.244)	(0.257)	(0.245)	(0.171)*
Controls	Yes	Yes	Yes	Yes	Yes
F Statistics	41.92***	46.89***	45.12***	45.00***	42.31***
Adj. R^2	0.3813	0.3827	0.3844	0.3874	0.3841
Observations	4,955	4,886	4,663	4,594	4,374

Table 9.

Short-term and long-term components of executive pay disparity, and cost of debt financing

This table reports the regression results for the effect of both short-term and long-term components of executive pay disparity on cost of debt financing. The short-term component includes salary, bonus and other forms of annual fixed payment, while the long-term component includes stock and option grants and other long-term incentive payouts. The dependent variable is the weighted average initial all-in drawn spread over LIBOR, with the weight being the loan size, which is calculated based on syndicated bank loans issued to the firm within the fiscal year. Definitions of all the other variables are reported in Table 1. The explanatory variables are measured in the lagged fiscal year. All models include industry (two-digit SIC) dummies. Numbers in parentheses are robust standard errors clustered by years. Significance at the 10%, 5% and 1% levels is indicated by *, ** and ***, respectively.

Dependent variable: loan spread (%)					
	Model 1	Model 2	Model 3	Model 4	Model 5
Short Gap 1	0.163				
	(0.018)***				
Long Gap 1	0.012				
	(0.012)				
Short Gap 2		0.142			
		(0.018)***			
Long Gap 2		0.018			
		(0.012)			
Short Gap 3			0.139		
			(0.014)***		
Long Gap 3			0.015		
			(0.012)		
Short Gap 4				0.147	
				(0.018)***	
Long Gap 4				0.016	
				(0.011)	
Short Gap 5					0.108
					(0.019)***
Long Gap 5					0.032
					(0.016)**
Firm size	-0.237	-0.232	-0.232	-0.231	-0.221
	(0.019)***	(0.020)***	(0.018)***	(0.020)***	(0.020)***
Leverage	1.255	1.206	1.231	1.183	1.228
	(0.152)***	(0.145)***	(0.149)***	(0.143)***	(0.143)***
Volatility	4.375	4.481	4.440	4.597	4.705
	(1.064)***	(1.068)***	(1.073)***	(1.114)***	(1.072)***
Tangible	-0.071	-0.089	-0.080	-0.083	0.005
	(0.075)	(0.082)	(0.078)	(0.081)	(0.101)
Growth	-0.409	-0.414	-0.408	-0.389	-0.377
	(0.125)***	(0.124)***	(0.129)***	(0.130)***	(0.140)**
Firm age	-0.009	0.005	0.001	0.009	0.011
	(0.032)	(0.035)	(0.033)	(0.035)	(0.039)
Current ratio	0.098	0.098	0.096	0.096	0.095
	(0.014)***	(0.014)***	(0.014)***	(0.014)***	(0.017)***
Market-to-book ratio	-0.014	-0.015	-0.015	-0.015	-0.014
	(0.007)*	(0.008)*	(0.008)*	(0.008)*	(0.008)*
ROA	-3.410	-3.483	-3.407	-3.527	-3.445
	(0.285)***	(0.276)***	(0.290)***	(0.261)***	(0.341)***
Tax Shield	0.893	0.898	0.562	0.859	-0.386
	(1.212)	(1.233)	(1.206)	(1.265)	(1.332)
Constant	2.222	2.373	2.402	2.339	2.415
	(0.473)***	(0.487)***	(0.467)***	(0.481)***	(0.480)***
F Statistics	32.93***	35.42***	35.29***	34.20***	29.71***
Adj. R^2	0.3339	0.3374	0.3352	0.3356	0.3387

Observations	4,530	4,395	4,423	4,273	3,589