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ABSTRACT

We investigate how the recent change to incorporate accounting-based performance measures in compensation design influences corporate debt contracts. We find that firms granting long-term accounting-based incentive plans (LTAPs) to their CEOs are subsequently able to secure new bank loans with lower spreads and fewer restrictive covenants than other firms. Our findings are concentrated among firms with high leverage, high bankruptcy risk, and firms that lenders find difficult to monitor. Our results are robust when using alternative measures of borrowing costs (spreads for newly issued public bonds and changes in credit ratings and CDS spreads). Overall, our findings suggest that LTAPs help mitigate potential conflicts of interest between shareholders and debtholders.

JEL classification: M12; M41; J33; G30

Keywords: Accounting-based Compensation Plan, CEO Compensation, Debt Contracting

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1. Introduction

The nexus of contracts theory defines the firm as a collection of contracts between different parties (Jensen and Meckling, 1976). Among these contracts, executive compensation plans shape managerial behavior and decision-making, and consequently, have a substantial effect on firm value (e.g., Jensen and Murphy, 1990; Brander and Poitevin, 1992; Hall and Liebman, 1998; Murphy, 2012). Given their impact on firm value, compensation contracts affect the interests of all the firm's stakeholders and the contracts between them.

Recently, the design of executive compensation contracts has undergone a significant regime shift: firms are increasingly tying executive pay to accounting performance (e.g., De Angelis and Grinstein, 2014; Li and Wang, 2016). As shown in Figure 1, between 1998 and 2012, the percentage of large U.S. public firms using long-term (multi-year) accounting-based compensation plans (LTAPs) to reward CEOs increased from 15% to 41%.[1] Between 2006 and 2012, the only years for which data are available, the percentage of large U.S. public firms using short-term (single-year) accounting-based compensation plans (STAPs) to reward CEOs increased from 65% to 84%.[2] Several recent papers investigate the motives behind the compensation regime shift and its impact on executive incentives (e.g., Core and Packard, 2016; Li and Wang, 2016). In this paper, we examine whether this regime shift influences the firm's contracts with its creditors.

[1] An LTAP rewards a CEO when the firm meets the pre-determined long-term accounting performance hurdles. For example, in 2006, Boeing Co. granted its CEO, W. James McNerney, an LTAP based on the firm's three-year "Economic Profit" from 2006 to 2008. The CEO is expected to receive $5,687,500 if the goals are achieved at the end of the performance period. (http://sec.gov/Archives/edgar/data/12927/000119312507062748/ddef14a.htm)

[2] The SEC only mandates that firms disclose details of performance criteria used in annual incentive plans after December 2006 (Release No. 33-8732A).

Practitioners recognize that executive compensation design is important to the assessment of a firm's credit risk.[3] Until relatively recently, firms mainly used stock-price based compensation plans to motivate CEOs, especially when designing long-term incentives. As a result, the academic literature extensively studied the relation between stock-based compensation incentives and debt related variables (DeFusco, Johnson, and Zorn, 1990; Jensen and Murphy, 1990; Coles, Daniel, and Naveen, 2006; Billet, Mauer, and Zhang, 2010; among many others). With the recent trend of incorporating accounting performance measures in compensation contracts, we are, however, unaware of any empirical study that directly investigates how such incentive design influences the terms of debt contracts. Our intention is to begin to fill this gap in the literature.

Agency costs of debt arise when managers engage in projects or take actions that benefit shareholders at the cost of bondholders (Jensen and Meckling, 1976). Anticipating the potential for conflicts of interests between shareholders and bondholders, creditors may specify higher borrowing costs or include restrictive covenants in debt contracts. Prior research shows that accounting information plays an important role in identifying and helping to alleviate potential conflicts between debtholders and shareholders (e.g., Armstrong, Guay and Weber, 2010). Creditors rely on accounting information to evaluate a firm's ability to fulfill its debt obligations and incorporate accounting-based covenants into debt contracts to protect their interests by restricting managers' investment and financing decisions (Watts and Zimmerman 1978; Smith and Warner, 1979; Bradley and Roberts, 2004). For these reasons, firms with higher quality accounting information are able to secure loans with lower borrowing costs (e.g., Anderson, Mansi and Reed, 2004; Graham, Li and Qiu, 2008; Bharath, Sunder, and Sunder, 2008).

Our paper extends the literature by investigating whether the use of accounting information in compensation contracts affects creditors' assessment of the firm's credit risk, and thus the terms and structure of its debt contracts. By definition, firms that grant an accounting-based compensation plan reward

[3] "CEO compensation and credit risk", Moody's Investors Service, 2005.

top managers when the firm reaches a pre-determined accounting-based performance target. Commonly used accounting measures in these plans, such as earnings, are directly correlated with the firm's ability to generate cash flow and repay debt obligations. Thus, debtholders are likely to view the inclusion of these performance measures favorably, which reduces the perceived potential conflicts between shareholders and debtholders. Based on these arguments, we predict that incorporating accounting-based performance measures in compensation contracts will reduce the cost of borrowing and the need for restrictive debt covenants.

Our main analysis focuses on how the terms of private loan contracts are affected by the adoption of accounting-based compensation plans. Private lenders are unlikely to exit a loan before maturity and thus have strong incentives to monitor any contract that may affect the firm's ability to repay its debt. We construct our sample by merging data on the structure of executive compensation from the ISS Incentive Lab database with data on newly initiated bank loan facilities. Our final sample consists of 8,095 bank loan facilities undertaken by U.S. public firms between 1998 and 2012. These loans are originated within a year after the public disclosure of CEO annual compensation contracts in proxy filings. Compensation contracts adopted by sample firms include 3,133 CEO LTAPs and 5,632 CEO STAPs. Accounting measures used in these plans are based largely on earnings and also cash flow and sales.

Our analysis shows that granting an LTAP to the CEO reduces the subsequent cost of borrowing. On average, the spread for newly initiated bank loans after firms grant a CEO LTAP is 8.48 basis points (8.5% based on the median loan spread of the sample) lower than the spread for firms that do not grant such a plan. The adoption of an STAP, however, is not significantly related to the subsequent cost of borrowing. One reason that results for LTAPs and STAPs might differ is that the performance horizon for STAPs does not match debtholders' time to maturity. In our bank loan sample, the average loan maturity is 3.49 years, while STAPs expire within one year. In contrast, the average evaluation period for an LTAP is 3.07 years. Moreover, prior research shows that short-term accounting-based compensation plans can induce accounting manipulation as managers seek to maximize their plans' payouts (Healy, 1985; Holthausen,

Larcker and Sloan, 1995; Guidry, Leone and Rock, 1999). In contrast, long-term performance plans may deter manipulation and improve accounting quality because the CEO is evaluated on cumulative performance over a multi-year horizon. This makes it more difficult for managers to "shift" earnings across years or to use accruals to inflate earnings without suffering from the negative impact of a reversal during the performance period (Holmstrom and Milgrom, 1987; Murphy, 2012). Supporting this argument, we find that the cost of borrowing is negatively related to the length of the LTAP performance evaluation period. Indeed, our findings suggest that a 12-month increase in plan horizon decreases borrowing cost by 2.86 basis points, a 2.9% decrease based on the sample median of loan spreads.

It is possible that the decision to grant accounting-based incentives and the cost of borrowing are jointly determined by omitted or hidden factors. To address such endogeneity concerns, we first use the fact that the growing popularity of accounting-based performance plans is partially driven by two exogenous events: the 2006 FASB rule change that mandates option expensing and the uncovering of option backdating scandals in 2005 (Li and Wang, 2016). Given these exogenous shocks to compensation design, post-2005 plan adoptions are less likely to be subject to endogeneity issues. We conduct all of our analyses for the post-2005 period and find similar results. Next, we conduct subsample analysis based on potential hidden factors that could simultaneously influence a firm's compensation and borrowing decisions; our results remain robust. More specifically, our findings are not driven by high performing firms that simultaneously grant LTAPs and are able to borrow at a lower cost. Further, our findings are not driven by firms that both grant LTAPs and are less reliant on external financing, thus facing a lower cost of borrowing. Finally, our findings are not driven by CEO turnover events, such as situations in which a new CEO is granted an LTAP and offered a lower borrowing cost by optimistic lenders.

To further address endogeneity concerns related to unobserved omitted variables, we estimate 2SLS/IV models. We use two instruments that are related to the firm's decision to adopt an LTAP, but unrelated to its debt contracting outcomes. Our first instrument is the proportion of firms with CEO LTAPs among firms using the same compensation consultant. Ceteris paribus, we expect that firms advised by the

same consulting firm share a similar inclination toward adopting LTAPs (Bizjak, Lemmon and Naveen; 2008). Our second instrument is the proportion of firms in the same market capitalization decile that grant LTAPs to their CEOs. Faulkender and Yang (2010) show boards tend to benchmark CEO compensation against peers of similar size. Results of our 2SLS/IV analysis confirm our previous findings; the cost of borrowing for new bank loans is significantly lower after the adoption of a CEO LTAP.

Private lenders would offer lower loan spreads to LTAP firms if they believed that this type of compensation plan helps align CEO incentives with debtholder interests. If this is the case, the effect of LTAP adoption on borrowing cost should be stronger in situations where the potential for debtholder-shareholder conflict is relatively high. Consistent with this line of argument, we find that the adoption of an LTAP is associated with lower loan spreads only for firms with high leverage and high bankruptcy risk. Also, we find that spreads for unsecured loans are significantly lower after LTAP adoption, while spreads for secured loans are unrelated to LTAP adoption. Further, when lead lenders are foreign banks or their primary executive offices are located outside the borrowing firm's headquarters state, they are likely to be less effective in monitoring and more reliant on the management incentives that are in place. Consistent with this, we find that LTAP adoption is associated with significantly lower loan spreads only for these lender categories. Overall, the documented pattern is consistent with the hypothesis that accounting-based performance plans influence the cost of debt by mitigating potential conflicts of interest between shareholders and debtholders.

We next investigate the relation between LTAPs and the use of debt covenants. Creditors often include covenants, especially earnings-related covenants, in debt contracts to restrict opportunistic behavior by managers. But such covenants can impose extra costs on the firm, as managers may be forced to pursue financing or investment strategies that are suboptimal. If LTAPs improve the creditors' assessment of the firm's credit risk, it would reduce the value of loan covenants as such restrictions become redundant. Indeed, we find that lenders include fewer covenants in new loan agreements following the adoption of a CEO LTAP. This is particularly true when performance plans have a relatively long evaluation period. Moreover,

when firms grant LTAPs with earnings-based performance criteria, lenders are less likely to use earnings-based covenants in new loan contracts. These results indicate that lenders view accounting-based performance plans as playing a role that is similar to debt covenants when it comes to reducing the agency cost of debt.

Our main analysis focuses on debt contracts in the private debt market. Of course, firms may choose to borrow in public markets. To assess the robustness of our findings, we examine borrowing costs in public bond markets. For our group of large US firms, we collect a sample of public bond offerings made within one year of the public disclosure of executive compensation plans in proxy filings. We use the offering yield of these bonds to measure borrowing cost. We find that firms granting CEO LTAPs issue bonds with significantly lower yields than firms without such plans. We also collect data on sample firms' credit ratings and find that after granting LTAPs, firms enjoy a credit rating improvement. Overall, this evidence demonstrates that, like private debt markets, public debt markets view LTAP adoption favorably.

As another robustness check, we explore one additional proxy for the firm's cost of borrowing: the spread on its credit default swap (CDS) contracts. The CDS spread reflects the market's perception of a firm's default risk and has been shown to be highly correlated with borrowing cost (Blanco, Brennan and Marsh, 2005). We find that firms granting an LTAP to their CEO experience a significant decrease in CDS spread the following year. The existence and trading of a CDS contract do not rely on a firm's financing decisions or CEO discretion. This reduces the endogeneity concern that our results are driven by the CEO's simultaneous influence on compensation and debt contracts.

A relevant debate in the compensation literature is whether the incentives of CEOs or chief financial officers (CFOs) exert greater influence on a firm's financing policies and accounting quality. Most studies of compensation design focus exclusively on the CEO (e.g., Cheng and Warfield, 2005; Bergstresser and Philippon, 2006; Burns and Kedia, 2006). Recent studies, however, show that CFO incentives may have more impact on a firm's earnings quality and debt maturity (e.g., Chava and Purnanandam, 2010; Jiang, Petroni and Wang, 2010). We investigate whether our findings regarding CEO incentives are, in fact, driven

by CFO incentives. We find that the adoption of an LTAP for the CFO is not significantly related to bank loan spreads. When both CEO and CFO incentives are included in the analysis, only the adoption of a CEO LTAP is negatively related to loan spreads. Further, after removing the component of CEO pay that is correlated with CFO pay, the influence of CEO compensation plans remains significant. These findings suggest that CFO compensation plans do not have an independent impact on the firm's cost of borrowing.

Our paper adds to a growing literature on the interaction between compensation and debt contracts (e.g., Begley and Feltham, 1999; Brockman, Martin and Unlu 2010; Anantharaman, Fang and Gong, 2013). Researchers have long been interested in the interaction of contracts whose nexus defines the modern corporation. Because the trend toward adopting accounting-based compensation plans for top executives is relatively recent, prior research focuses largely on compensation plans that emphasize stock-price performance. There are, however, a few exceptions. Bushman, Engel, Smith (2006) find that the weight placed on accounting earnings in a CEO's cash bonus is greater the more important earnings information is for investors valuing the firm. Bond, Goldstein, Prescott (2010) suggest that accounting information helps boards put a firm's stock performance in context and allows them to make a more informed assessment of CEO performance. Our paper adds to this literature by providing evidence on the relation between accounting-based compensation plans and the terms of debt contracts. We show that the use of long-term accounting-based performance criteria in CEO compensation contracts can reduce both the cost of borrowing and the use of restrictive covenants, especially when the potential for conflicts of interest between shareholders and debtholders is high.

Our study also contributes to a new line of research that focuses on the recent regime shift in executive compensation design. Over the past decade, U.S. public firms increasingly incorporate accounting-based performance metrics into executive compensation contracts. Several recent papers investigate the motives behind this shift and its impact on the structure of executive compensation, earnings quality, and firm performance (e.g., Bettis, Bizjak, Coles, and Kalpathy, 2014; Li and Wang, 2016; Core and Packard, 2016; Guay, Kepler and Tsui, 2016; Bennett, Bettis, Gopalan, and Milbourn, 2017). We

contribute to this literature by providing empirical evidence on how creditors are affected. Our findings can help researchers and practitioners evaluate the impact of this shift in compensation design and identify the types of firms more likely to benefit from the use of accounting-based compensation incentives.

2. Sample and data

2.1 Sample selection and accounting-based performance plans

To obtain our sample, we start with U.S. firms covered by the ISS Incentive Lab dataset from 1998 to July 2012.[4] This dataset provides details of performance-based compensation plans granted to top executives, including the performance criteria used, the performance evaluation period, and the target plan payment. To be classified as an accounting-based performance plan, at least one of the performance criteria used has to be an accounting measure. We classify plans with performance evaluation periods longer than 12 months as long-term plans (LTAPs) and those with shorter evaluation periods as short-term plans (STAPs). Because the SEC does not mandate that firms disclose details of annual incentive plans until after December 2005, our analysis of STAPs is conducted for the 2006 to 2012 period only; our analysis of LTAPs covers the entire sample period. We gather other CEO compensation and CEO tenure data from the Execucomp database. Accounting data are from the *Compustat* database. Firm-year observations without the necessary accounting or executive compensation information are excluded.

For our sample, 52.42% of firms grant LTAPs at least once during the sample period. In the post-2005 period, 87.61% of firms grant STAPs. For long-term plans, the mean plan horizon is 37.75 months, with a median of 36 months. Table 1 presents summary statistics for components of the CEO compensation package, and CEO and firm characteristics that serve as either test or control variables in our analysis.

[4] ISS Incentive Lab constructs its database based on the largest 750 firms in terms of market capitalization each year. The data covers more than 1,000 firms in total due to back-fill and forward-fill of data for each firm included.

2.2 Private loan contracts

Our main analysis focuses on whether and how private loan contracts are affected by the adoption of accounting-based compensation incentives. We use the Thomson Reuters Dealscan database to identify private bank loans (a.k.a. facilities or tranches) that are initiated within a one-year window that begins on the filing date of a firm's annual proxy statement (DEF 14A). Loans initiated before the proxy filing date are either excluded or associated with the firm's prior proxy statement, while loans initiated after the one-year window are either excluded or associated with the subsequent proxy statement. The final sample consists of 8,095 loan facilities initiated by 1,094 firms between 1998 and 2012. Within this sample, 1,974 (24.4%) loan facilities are originated after disclosure of the adoption of an LTAP for the CEO. Of the 2,489 loans originated in the 2006-2012 sub-period, 1,996 (80.2%) are originated after the disclosure of the adoption of a new STAP for the CEO.

Following the literature, we measure the cost of borrowing as the all-in spread reported in Dealscan, which represents the basis points that the borrower pays over LIBOR for each dollar drawn down (e.g. Graham, Li and Qiu, 2008). The first section of Table 1 presents descriptive statistics on the loan facilities in our sample. The average loan spread is 139.5 basis points over LIBOR and is comparable to those documented in the literature (Demiroglu and James, 2010; Berg, Saunders and Steffen, 2015). The average facility amount is $728 million and the average number of lenders per facility is 11.9. These numbers are slightly larger than those documented in prior work, probably due to the fact that our sample consists of larger public firms.

Debt covenant information is disclosed at the package level; multiple loan facilities may be grouped into one package. In our sample, there are 3,558 loan packages that report valid covenant information. Following the literature, we construct a covenant intensity index to quantify the use of covenants in debt contracts (Demiroglu and James, 2010; Bradley and Roberts, 2015). The index is measured as the sum of four covenant indicator variables: the use of a collateral covenant, the use of a dividend covenant, the use of more than two types of financial covenants, and the use of sweeps. Each indicator is set to one if the loan

facility includes the specified type of covenant, and zero otherwise. Table 1 shows that within the sample of loan packages that disclose covenant information, the average covenant intensity index is 1.797, with a minimum of 0 and a maximum of 4 by construction.

3. Accounting-based performance plans and the terms of private loan contracts

Our primary analysis examines whether the adoption of accounting-based performance plans affects the terms of newly initiated private loan contracts originated within a year of the public disclosure of such performance plans. The disclosure of the design of executive compensation contracts is not standardized across firms' annual proxy statements. Indeed, prior to 2012, there was no readily available commercial dataset that covered such contracts.[5] As a result, it requires considerable effort and expertise for outside parties to collect and analyze executive compensation contracts. Compared to public lenders, private bank lenders have limited options should they want to exit a loan prior to maturity. In addition, private loan contracts are negotiated directly between a firm and its lender. Therefore, private bank lenders are likely to have strong incentives to collect and analyze information on compensation contracts and any other firm data that are informative regarding credit risk. If private lenders believe that accounting-based performance plans reduce the risk of default, all else constant, they will accept lower loan spreads and adjust the covenants used in loan contracts for firms that grant such plans.

3.1 Accounting-based performance plans and the loan spread

We use the following multivariate model to examine the cost of borrowing after lenders observe whether or not the firm grants an accounting-based performance plan for its CEO:

$$\textit{Cost of Borrowing}_t = \alpha + \beta_1 \textit{Long-term Accounting Plan}_{t-1} + \beta_2 \textit{Short-term Accounting Plan}_{t-1} + \sum_{k=3}^{n} \beta_k \textit{control variable}_{k,\,t-1} \quad (1)$$

[5] Prior to 2006, most firms report the magnitude and horizon of long-term performance plans in "Long-term incentive plans" tables. The new SEC amendment in December 2005 requires firms to report the expected payouts and horizons of performance plans as a part of the "Plan-based award" tables in proxy statements. Contractual details are often disclosed in the compensation discussion sections or the footnotes of compensation tables and must be hand-collected.

In this regression, each observation represents a single loan facility initiated within a year following the filing date of a firm's proxy statement. The dependent variable is the yield spread of the new loan. The independent variables of interests are two binary variables, LTAP and STAP, which equal one if the prior proxy statement discloses that the CEO receives a long- or short-term accounting-based compensation plan in year t-1, respectively. Analysis of LTAPs covers the entire sample period (1998 to 2012), while the analysis of STAPs can only be conducted for the 2006 to 2012 subsample.

Following earlier studies, we control for firm and loan characteristics that are likely to be associated with loan spreads and loan characteristics (e.g., Bradley and Roberts, 2014; Denis and Mihov, 2003; and Graham, Li and Qiu, 2008). Control variables for loan characteristics include the size and maturity of the loan, the number of lenders, and loan type and primary purpose dummies. Control variables for firm characteristics include firm size, the market-to-book ratio, leverage, profitability, asset tangibility, cash-flow volatility, and Altman's Z-score. Given that our variables of interests are CEO compensation plan indicator variables, we also include CEO tenure, salary, equity ownership, and the delta and vega of the CEO's equity portfolio as control variables. Finally, we include year and industry fixed effects. Statistical significance is calculated based on robust standard errors clustered at the firm level. The appendix provides detailed definitions for all variables. All non-binary variables are winsorized at 1% and 99% values.

Table 2 presents our baseline OLS regression results. In Column (1), the coefficient for the LTAP dummy variable is significantly negative. The coefficient indicates that the spread for newly initiated private loans is 8.48 basis points (8.5% based on the median loan spread of the sample) lower for firms that grant CEO LTAPs the prior year relative to firms that do not. In column (2), we examine the influence of both long- and short-term accounting-based compensation plans for the post-2005 period. The coefficient for the LTAP indicator variable remains significantly negative, implying a 9.23 basis point reduction in the spread on newly initiated loans following CEO LTAP adoption. The coefficient for the STAP indicator variable is also negative, but it is not significant (p-value = 0.39).

Pertaining to control variables, we find a significant negative correlation between loan amount and loan spread. This might be an endogenous outcome. Firms borrow more (and prefer private loans over other sources of financing) if they can borrow at a lower cost. Earlier papers, such as Graham, Li and Qiu (2008), also find a strong negative correlation between loan size and loan spread. Further, Pan, Wang and Weisbach (2016) find that management risk declines as the CEO stays longer. Consistent with their study, we find that CEO tenure is negatively correlated with loan spreads.

There are several factors that could explain the lack of relation between CEO STAP adoption and the cost of borrowing. First, the vast majority of firms (80.2%) routinely grant STAPs as a part of their CEO's compensation package. Guay, Kepler and Tsui (2016) find that firms use short-term bonus plans primarily to satisfy CEOs' liquidity and consumption needs, not to provide performance-based incentives. The combination of a lack of variation in the data and the ambiguous purpose of STAPs likely make it difficult for us to detect any significant associations. Second, the average loan maturity in our sample is 3.45 years (41.47 months), while STAPs expire within a year. In contrast, CEO LTAPs have an average performance period of 3.14 years (37.75 months) and thus better match the horizon of bank lenders. Finally, prior studies show that short-term accounting incentives may induce managers to manipulate accounting numbers to maximize expected plan payouts (e.g., Healy, 1985; Holthausen, Larcker and Sloan, 1995; Guidry, Leone and Rock, 1999). Such earnings management reduces accounting signal quality and increases the cost of borrowing (e.g., Anderson, Mansi and Reed, 2004; Graham, Li and Qiu, 2008; Bharath, Sunder, and Sunder, 2008). In contrast, LTAPs may help deter earnings manipulation and improve accounting quality. Under long-term performance plans, the evaluation of managers depends on average or cumulative performance over multiple years. As a result, it is more difficult for managers to "shift" performance across years, or to use accruals to inflate earnings, without risking the negative impact of a reversal later in the same performance period (e.g., Holmstrom and Milgrom, 1987; Murphy, 2012).

The above discussion suggests that loan spreads are likely to be related to the horizon of accounting-based performance plans. We measure plan horizon as the length of the performance evaluation period

specified in an LTAP. For observations without LTAPs, we set our horizon variable equal to zero. Column (3) of Table 2 presents results for regressions that include plan horizon. As expected, the coefficient for our plan horizon variable is negative and statistically significant at the 1% level. The coefficient implies that a 12-month increase in plan horizon decreases the yield spread of a new loan by 2.86 basis points. We repeat this analysis for the post-2005 sub-period and find similar results (see Table 2, Column (4)). In untabulated regression models, we verify that our results are robust to the exclusion of observations with missing plan horizon data. Overall, these results highlight the importance of a longer plan horizon in reducing the cost of borrowing for bank loans.

3.2 Addressing endogeneity concerns

Our findings may be subject to some possible endogeneity concerns. First, the decision to grant accounting-based performance plans and the cost of borrowing may be jointly determined. For example, prior accounting performance or financing need may provide incentives for firms to grant accounting-based performance plans to CEOs and at the same time, influence firms' borrowing costs in the debt market. Second, the design of debt contracts may in turn have influence on the design of CEO compensation contract, resulting in a reverse causality problem. For example, Rhodes (2016) finds that if pre-existing debt contracts contain earnings-based covenants, the CEO's cash component of compensation is not sensitive to future accounting earnings. The paper interprets its finding as evidence that debt covenants affect future compensation contract design. While Rhodes (2016) only studies cash compensation, one may extend the argument to the adoption of LTAPs. To alleviate this potential concern of reverse causality, throughout the paper, we focus on new debt contracts that are initiated after the adoption of executive compensation plans in the prior year. Nevertheless, we take extra steps in this section to address these potential endogeneity concerns.

Li and Wang (2016) show that the decision to award LTAPs after 2005 is driven, at least in part, by the 2006 FASB accounting rule change on option expensing and the uncovering of option backdating scandals in 2005. Both these events are exogenous and unrelated to a firm's financing decisions or credit

worthiness, and are beyond the influence of the CEO. Thus, post-2005 adoptions of LTAP are more likely to be exogenously driven and less likely to be subject to any potential endogeneity problem that could induce a spurious negative relation between the cost of borrowing and the design of CEO compensation contracts. As shown in Columns (1) and (2) in Table 2, the reduction in borrowing cost following the adoption of an LTAP is similar in magnitude and significance for both the pre- and post-2005 period. This pattern of results mitigates the concern that the effect we document is driven by omitted variables or hidden factors.

We conduct additional analysis to further address endogeneity concerns. First, we examine several possible hidden factors that could simultaneously influence a firm's compensation contract design and borrowing contracts. We then estimate an IV/2SLS model to control for any endogeneity problems caused by unobservable factors.

3.2.1 Potential hidden factors

CEOs of firms with strong performance may be more willing to accept performance-based pay and simultaneously issue debt to take advantage of the lower borrowing cost associated with their superior performance. In our prior analysis, we control for firm performance by including ROA in all regressions. However, if this does not adequately control for firm performance, our findings may suffer from an omitted variable bias. To assess the possibility of performance being a hidden factor, we divide our sample into quartiles based on the prior year's operating performance. We then examine if the observed negative relation between LTAP adoption and borrowing cost is concentrated in the subsample of firms exhibiting strong performance. More specifically, we estimate Equation (1) for the bottom and the top performance quartile. Results are presented in Table 3. Columns (1) and (2) show in both groups, firms granting CEO LTAPs benefit from significantly lower loan spreads than firms that did not use LTAPs. For the bottom performance quartile, LTAP firms experience an estimated reduction in borrowing cost of 19 basis points; the estimated reduction for the top quartile is 11 basis points. This suggests that firms with weaker performance actually benefit ***more*** from adopting CEO LTAPs than firms with stronger performance; this

is perhaps driven by a higher potential for agency conflicts between debtholders and shareholders in these firms. Overall, our subsamples findings are inconsistent with the idea that the reduction in borrowing cost following LTAP adoption is driven by strong performers who simultaneously adopt LTAPs and borrow on relatively favorable terms.

It is possible that firms granting CEO LTAPs have different financing needs than other firms. For example, firms that award LTAPs may also be less reliant on external financing, and thus be able to borrow at a lower cost. To address this concern, we divide our sample based on a firm's need for external financing, measured as the difference between investment and cash flow from operations (e.g., Rajan and Zingales, 1998; Fisman and Love, 2003). Columns (3) and (4) of Table 3 show that firms with low and high external financing needs both experience a significant drop in the cost of borrowing after LTAP adoption (of 9.58 and 13.81 basis points, respectively). This indicates that the lower borrowing cost following LTAP adoption is unlikely to be driven by differing financing needs.

Finally, it is possible that new CEOs are more likely to receive new long-term performance contracts and, at the same time, be viewed positively by lenders who offer a lower borrowing cost. In such a scenario, both LTAP adoption and a lower borrowing cost follow CEO turnover. To address this possibility, we first examine the relation between CEO tenure and LTAP adoption. For our sample, the percentage of new CEOs (CEO tenure $\leq$ 3 years) with an LTAP grant is 25.70%, compared to 23.78% for more seasoned CEOs (CEO tenure> 3 years). Post-2005, the percentage of new CEOs granted an LTAP (31.77%) is actually ***lower*** than the percentage for seasoned CEOs (36.27%). Next, we divide the sample into quartiles based on CEO tenure. Column (5) or Table 3 shows that for CEOs in the bottom tenure quartile, the cost of borrowing is 9.98 basis point lower for LTAP adopters than for other firms. For CEOs in the top tenure quartile, the analogous reduction in borrowing cost is 20.50 basis points (Column 6). Prior research suggests that CEOs gain power as their tenure increases (e.g., Hermalin and Weisbach 1998; Berger, Ofek, and Yermack 1997; Harford and Li 2007). As a result, lenders may view LTAP adoption more favorably when CEOs have greater influence on firm value. Moreover, CEOs with longer tenure tend

to have a shorter future horizon with the firm as they are closer to retirement. The use of long-term incentives may help extend CEOs' horizons to match with those of debtholders and thus alleviate potential agency conflicts. Overall, these results provide no evidence that the negative association between LTAP adoption and borrowing cost is driven by the appointment of new CEOs.

3.2.2 Addressing endogeneity related to omitted variables: 2SLS/IV estimation

In this section, we estimate 2SLS/IV models to explicitly address endogeneity concerns related to potential omitted variables. We construct two instrumental variables (IVs) related to the firm's tendency to grant an LTAP, but unrelated to the firm's cost of borrowing. Our first IV is the ratio of firms using an LTAP among firms with the same compensation consultant. Ceteris paribus, the tendency of a firm to adopt an LTAP will be similar to that of other firms advised by the same consultant (Bizjak, Lemmon and Naveen; 2008). Further, there should be no direct relation between this ratio and the firm's cost of borrowing or the terms of its debt contracts. A disadvantage of this IV, however, is that companies only began disclosing the identity of their compensation consultant (or compensation survey provider) in 2006 after an SEC rule change; this limits the sample size for this analysis. Our second IV is the ratio of firms that use an LTAP among firms in the same market capitalization decile. Faulkender and Yang (2010) show that boards choose firms of similar size as compensation peer group. Thus, we expect that firms are more likely to adopt LTAPs if their peers of similar size also do so.

Table 4 presents the 2SLS/IV regression results. Using ISS Incentive Lab data to identify the compensation consultant/survey provider, we obtain consultant information for 95.4% of firm-years in the post-2005 subsample. Columns (1) and (2) of Table 4 present results from first stage regressions predicting a firm's propensity to adopt an LTAP; the dependent variables is the LTAP indicator variable. Explanatory variables are the IVs plus all control variables used in Table 2. As expected, the likelihood of a firm adopting an LTAP is significantly positively related to the percentage of firms adopting a similar contract under the same compensation consultant and within the same market capitalization decile. Columns (3) and (4) of Table 4 present second stage regressions of loan spread on the predicted value of LTAP adoption from first

stage regressions and control variables. In both models, the coefficient for predicted LTAP adoption is negative and statistically significant. Overall, 2SLS/IV analysis supports a causal relationship between the adoption of an LTAP and a subsequent reduction in cost of borrowing through private bank loans.

3.3 Channels: LTAPs and the potential for shareholder-debtholder conflict

In this section, we investigate whether the decrease in borrowing cost following LTAP adoption is driven by the mitigation of potential conflicts of interest between shareholders and debtholders. Suppose that private lenders offer lower loan spreads to LTAP firms because they believe that LTAPs better align CEO incentives with their interests. In this case, the effect of LTAP adoption on borrowing cost should be stronger in situations where the potential for debtholder-shareholder conflict is relatively high. We test this hypothesis by separating our sample into subgroups based on firm characteristics and on loan and lender characteristics that are correlated with the potential for debtholder-shareholder conflict.

3.3.1 Subsamples based on firm characteristics

The potential for conflicts of interest between debtholders and shareholders increases with leverage and the likelihood of bankruptcy (e.g., Jensen and Meckling, 1976). Because stock is a limited liability claim, it can be viewed as an option on firm value with an exercise price equal to the face value of the firm's debt. As leverage and bankruptcy risk increase, firm value is closer to the exercise price. Thus, all else constant, managers have an incentive to increase firm volatility to maximize shareholder value. Further, there are potential underinvestment problems which lead managers to turn down positive net present value projects because the benefits accrue to debtholders (Black and Scholes 1973; Merton, 1974). For firms with low leverage or low bankruptcy risk, the option value of equity is less sensitive to changes in firm volatility as the "option" is deep in the money. Such firms are also unlikely to encounter the underinvestment problem. Therefore, if LTAPs mitigate debtholder-shareholder conflicts, their impact will be more pronounced in firms with high leverage and/or high bankruptcy risk.

To test the ideas above, we first divide our sample into quartiles based on book leverage and estimate Equation (1) separately for firm-years in the top and bottom leverage quartiles. Results are presented in Panel A of Table 5. Column (1) shows that within the top leverage quartile, LTAPs are significantly negatively associated with new loan spreads. The economic significance is stronger than it is when using the entire sample (see Table 2). When a high leverage firm grants a CEO LTAP, its subsequent borrowing cost is 17.56 basis points lower, on average, than that of a high leverage firm that did not grant such a plan. For firms in the bottom leverage quartile (Column (2) of Table 5), there is no significant reduction in borrowing cost following the adoption of an LTAP.

Next, we separate the sample into subgroups based on bankruptcy risk, as measured by the Altman Z-Score. Column (3) in Table 5, Panel A shows that among firms with a Z-Score of 3 or higher (considered to have low bankruptcy risk), LTAP adoption is not significantly associated with future loan spread. In contrast, for firms with Z-scores less than 3, spreads for newly initiated loans are 10.9 basis point lower on average for firms adopting LTAPs. This evidence suggests that the influence of LTAPs on the cost of debt is driven, at least in part, by a reduction in the risk of bankruptcy.

3.3.2 Subsamples based on loan and lender characteristics

Prior research shows that pledging collateral as part of a loan contract helps ensure debt repayment in situations of insolvency, thus helping to mitigate the agency cost of debt (e.g., Booth and Booth, 2006). All else constant, we expect that loans without collateral face greater potential shareholder-debtholder conflicts than collateralized loans. We divide our private bank loan sample into secured (collateralized) and unsecured loans and run regressions separately for each subsample. Results are presented in Columns (1) and (2) of Panel B, Table 5. Column (1) shows that there is no association between LTAP adoption and loan spreads for collateralized loans. For unsecured loans, however, the loan spread is 7.67 basis points lower for LTAP adopters versus non-adopters.

Lenders can mitigate shareholder-debtholder conflicts by effectively monitoring the borrowing firm (e.g. Diamond, 1991). The literature shows that geographic proximity plays an important role in facilitating information flow between firms, thus enhancing the ability to monitor (e.g. Kang and Kim, 2008). Following this argument, we expect that when lenders are far away from borrowing firms geographically, they are likely to be less effective in monitoring. Less effective monitoring implies a higher potential for debtholder-shareholder conflicts. To capture the geographic distance between banks and borrowers, we classify the sample into subgroups based on whether the lead lender is a foreign bank and whether the lead lender's primary executive office operates outside the borrowing firm's headquarters state.[6] We then run regressions separately for each subsample. Results are presented in Columns (3) and (4) of Panel B, Table 5.

Panel B of Table 5, column (3), shows that new loan spreads decrease by a significant 13.1 basis points after the adoption of an LTAP if the lead lender is a foreign bank. The reduction in spread is only marginally significant, at 6.1 basis points, if the lead lender is a domestic bank. Similarly, we find that the decrease in loan spreads is statistically significant after LTAP adoption only if the lead lender's primary executive office is in a different state than the borrowing firm's headquarters.

Overall, subsample results show that LTAP adoption influences borrowing costs primarily in situations where the potential for shareholder-debtholder conflicts is relatively high. This is consistent with the idea that the reduction of shareholder-debtholder conflicts is an important channel through which LTAP adoption lowers a firm's borrowing cost. Put differently, our evidence supports the conjecture that creditors view LTAPs as effective in mitigating potential shareholder-debtholder conflicts.

[6] Following Ivashina and Scharfstein (2010), we identify the lead lender as the syndicate member that is designated as "administrative agent". If the Dealscan database does not specify an administrative agent, we identify the lead lender as the lender that is designated as agent, arranger, book runner, lead arranger, lead bank, lead manager, or the one with the highest share of the loan.

3.4 LTAPs and the use of debt covenants

The total cost of borrowing involves more than just interest and principle payments. Loans often include financial and other protective covenants that restrict managerial decisions with respect to investment, payout, and financing policies. Among the various types of debt covenants, financial covenants specify ratios and measures that the firm must maintain, such as maximum debt-to-EBITDA ratios, interest coverage ratios, fixed charge coverage, and so forth. Panel A of Table 6 shows that of the 3,558 private bank loan packages in our sample with disclosed financial covenants, 79.7% use at least one earnings-based covenant. The most common such earnings covenant sets a maximum ratio of debt-to-EBTIDA and the next most common sets a minimum interest coverage ratio.

While covenant restrictions may benefit debtholders, they can also force suboptimal decision-making that negatively affects firm value (Smith and Warner, 1979). If LTAPs help mitigate shareholder-debtholder conflicts, all else constant, we expect that lenders will include fewer restrictive covenants in debt contracts. Panel B of Table 6 presents the correlation between LTAP adoption and the use of debt covenants. Recall from section 2.2 that our covenant intensity variable is a count variable ranging from 0 to 4, with 4 indicating the highest intensity. LTAP adoption and plan horizon are both strongly negatively correlated with debt covenant intensity (ρ = -0.113 and -0.130, respectively). To determine the robustness of this correlation, we estimate an ordered probit regression using covenant intensity as the dependent variable. Results are presented in Panel C of Table 6.[7] Columns (1) and (2) show that both the LTAP indicator variable and LTAP horizon are significantly negatively related to covenant intensity.

In our loan package sample, 792 or 22.3% of the LTAPs use earnings-based performance measures. Given creditors' preference for earnings-based covenants in debt contracts, perhaps earnings-based LTAPs are viewed as a similarly effective tool in influencing executive behavior and decision-making. Column (3)

[7] We obtain similar results for analogous models using OLS and Poisson regressions.

provides confirmatory evidence that covenant intensity falls significantly after firms grant an LTAP with earnings-based performance criteria.

In Columns (4) to (6) in Table 6, we replace the dependent variable with a binary variable that equals one if the loan includes an earnings-based financial covenant and zero otherwise. In Columns (4) and (5), the coefficients for both the LTAP indicator variable and plan horizon are negative and statistically significant, suggesting that firms are less likely to use earnings-based financial covenants in debt contracts after the adoption of an LTAP, particularly one with a relatively long horizon. Column (6) shows that lenders are less likely to demand earnings-based covenants when the CEO's existing compensation contract already incorporates long-term earnings-based metrics. Taken together, Table 6 results suggest that private lenders are cognizant of the design of executives' accounting-based compensation contracts and adjust the terms of debt contracts accordingly.

4. Accounting-based performance plans and alternative measures of the cost of borrowing

So far, our analysis of the effect of LTAPs on debt contracts has focused on the private debt market. However, firms may choose to issue public debt to avoid bank monitoring or the typically more restrictive terms of bank debt (Lin, Ma, Malatesta, and Xuan, 2013). In this section, we assess the robustness of our findings by testing whether or not they persist in public debt markets. To measure borrowing cost in the public market, we use yield of public bonds issued by our sample firms within one year after disclosing their executive compensation contracts in proxy filings. In addition, we use credit rating, changes in credit rating, average CDS spread and changes in average CDS spread as alternative measures of the cost of borrowing.

4.1 LTAP adoption and the yield on newly issued public corporate bonds

Compared to private lenders, bond market investors are dispersed and may not have access to or the incentives to gather the same type and quality of information that private lenders do. Lacking direct

access to the firm, bondholders are likely to rely more heavily on publicly available information, such as financial statements and proxy filings, to assess the firm's debt repayment risk.

We obtain bond-related information from the Mergent Fixed Investment Securities Database. Following the literature, we include only domestic, U.S. dollar-based, fixed coupon straight bonds (non-convertible) with a maturity greater than six months. We assign bond offerings to a one-year window beginning with the filing date of each firm's annual proxy statement. Our public bond sample consists of 4,630 offerings initiated by 524 firms. The yield spread is calculated as the difference between the offering yield and the yield of the US Treasury note/bond with matching maturity. If the maturity of the bond and the maturity of available US Treasury bonds do not match, we use linear extrapolation to estimate a U.S. Treasury yield. Table 1 reports that the average bond yield spread is around 214.6 basis points, with a median of 157.5 basis points.

We use a multivariate regression model similar to the one specified in Section 3.1, and present results in Table 7. Column (1) shows that the coefficient for the LTAP indicator variable is significantly negative. The coefficient's magnitude indicates that, on average, the offering yield spread for a newly issued bond is 47.1 basis points lower for firms that grant an LTAP relative to that do not do so. Dividing the sample into quartiles based on leverage and Z score, we again find that the reduction in bond offering yield is concentrated in firms with high leverage and high bankruptcy risk, where the potential for shareholder-debtholder conflict is relatively high. These results confirm that in both private and public debt markets, the adoption of a CEO LTAP is associated with a reduction in the subsequent cost of borrowing. Also, the evidence again confirms that LTAPs help mitigate potential shareholder-debtholder conflicts.

4.2 LTAP adoption and credit ratings

Next, we next investigate whether LTAP adoption influences a firm's bond ratings. Credit rating agencies claim to view executive compensation contract as a key factor in determining a firm's credit rating (Moody's Investors Service, 2005). If this is the case, we expect LTAPs to be perceived favorably by rating agencies as these plans tie CEO pay to performance measures that are closely related to the firm's ability

to repay debt. To test this hypothesis, we construct a sample of 9,590 firm-year observations with compensation data from ISS Incentive Lab and valid bond rating information from Compustat.[8]

Following the literature, we transform bond ratings from letters to numeric values (e.g., Jiang, 2008), with the highest credit rating (AAA) assigned a value of 1 and crediting ratings below B- assigned a value of 17. A higher (lower) credit rating is expected to be associated with a lower (higher) cost of borrowing. As shown in Table 1, mean and median rating values are both 9, which is equivalent to a Standard & Poors' BBB rating.

Panel A of Table 8 presents results from OLS regressions using bond ratings in year t as the dependent variable. All independent variables are measured in year t-1. Results show significant cross-sectional differences between bond ratings for firms granting LTAPs and other firms. Column (1) shows that bond rating is significantly lower (which represents better credit quality given our numerical assignment scheme) if the firm granted a CEO LTAP in the prior fiscal year. Consistent with our previous findings, the benefit of LTAP adoption is concentrated among firms with the potential for high agency costs of debt. Columns (2) to (5) show that the coefficients for the LTAP indicator variable is only significantly negative when firms are in the top leverage quartile or have high bankruptcy risk.

To further address concerns regarding reverse causality and endogeneity, we investigate changes in firms' credit ratings following the adoption of LTAPs. We measure annual changes in credit rating as the difference in credit rating from year t-1 to year t, standardized by the credit rating value in year t-1. Our credit rating change variable has a median of zero and a mean of 0.12, which suggests that firms' credit ratings are fairly stable over time. Explanatory variables are also measured as changes from year t-1 to year t. OLS regressions results using credit rating change as the dependent variable are presented in the lower half of Panel A, Table 8. To conserve space, we do not present coefficients for control variables. The coefficient for the LTAP indicator variable is negative and significant (p-value of 0.01), suggesting that

[8] Compustat's bond rating information represents the issuer's subordinated debt rating as assigned by Standard & Poors. Our approach largely follows that of Jiang (2008).

firms are more likely to experience a credit rating upgrade the year after granting an LTAP. Consistent with previous subsample findings, firms with high leverage and high bankruptcy risk are more likely to experience credit rating upgrades after CEO LTAP adoption.

In further untabulated robustness tests, we construct a binary indicator variable that equals one if a firm receives a credit rating downgrade in year t. We find that firms are less likely to be downgraded by rating agencies if they granted an LTAP in previous year.

4.3 LTAP adoption and the CDS spread

We use the CDS spread as our final proxy for a firm's cost of borrowing. The CDS spread reflects the premium that investors are willing to pay to hedge against a firm's bankruptcy risk. Thus, this measure captures the market's perception of a firm's default risk. The advantage of this proxy is that CDS spread is independent of a firm's financing decisions and its CEO's preferences. If the adoption of an LTAP shifts managerial focus toward performance measures related to the firm's ability to repay debt, the CDS spread should drop after plan adoption to reflect the reduced default probability.

CDS related data are retrieved from IHS MarkIt. Following Pan, Wang and Weisbach (2016), we only use the spread for five-year contracts as they are the most liquid and account for more than 80% of traded contracts. We further restrict the sample to the CDS spreads of senior unsecured debt dominated in U.S. dollars to ensure debt contract uniformity. We calculate the annual average of daily CDS composite quotes across contracts for each firm. Within our sample of firms with compensation data, there are 5,445 firm-year observations with valid CDS information. As shown in Table 1, the average annual CDS spread is 188 basis points.

Results are presented in Panel B of Table 8. The dependent variable is the annual average of daily CDS spreads in year t, and all independent variables are measured in year t-1. Column (1) shows that the annual average daily CDS spread is significantly lower for firms that adopt LTAPs for their CEOs in the

prior fiscal year than for firms did not do so. Columns (2) to (5) confirm that only firms with high leverage and high bankruptcy risk experience a lower CDS spread after LTAP adoption.

To address the concern that compensation decisions and default risk are endogenous, we investigate the change in a firm's CDS spread after the decision to grant an LTAP. The change in CDS spread is measured as the difference from year t-1 to year t, standardized by the value in year t-1. The lower half of Panel B in Table 8 presents OLS regressions results using change in CDS spread as the dependent variable. Explanatory variables are also measured as changes in values from year t-1 to year t. Again, to conserve space we do not report coefficients for control variables. Results show that after a firm grants an LTAP to its CEO, the firm's CDS trades with a lower spread, indicating that the market's perceived default risk had dropped. Further, this reduction in CDS spread is driven mainly by firms with high leverage and high bankruptcy risk.

In summary, our evidence supports the prediction that LTAP adoption lowers a firm's future credit risk by alleviating potential shareholder-debtholder conflicts. As a result, creditors reduce cost of borrowing in both public and private debt markets.

5. The role of CEO versus CFO compensation plans

Our analysis has thus far focused on accounting-based compensation plans granted to CEOs, as the CEO is generally considered the firm's most important decision-maker. Several recent studies show that the CFO's compensation plan has a significant impact on earnings quality and the firm's debt maturity structure (e.g., Chava and Purnanandam, 2010; Jiang, Petroni and Wang, 2010). Therefore, it is important to investigate whether the design of the CFO's compensation affects the firm's cost of borrowing in a similar fashion. Further, we need to determine whether or not our findings for CEO compensation plans are driven by their correlation with CFO incentives. We identify our sample firms' CFOs using the annual CFO flag in Execucomp. When the annual flag is missing, we identify an executive as CFO for that firm-year observation if his or her title is CFO, chief finance officer, or chief financial officer. We calculate the same

compensation variables for each CFO that we do for each CEO. Following this procedure, we are able to obtain valid CFO compensation information for 6,544 firm-year observations from 1998 to 2012.

We first investigate the relation between the adoption of an LTAP for the CFO and subsequent loan spreads. The regression models are similar to those reported in Table 2, and are presented in Column (1) of Table 9. Without controlling for CEO compensation, we find that CFO LTAP adoption is not significantly correlated with bank loan spreads in the following year. Column (2) includes indicator variables for both CEO and CFO LTAPs in the regression model. While the coefficient for CEO LTAP remains significantly negative, as documented before, the coefficient for CFO LTAP is positive and insignificant. Therefore, our results suggest that the adoption of a CFO LTAP alone does not influence the firm's subsequent cost of borrowing.

Because, within a firm, CEO and CFO compensation contracts are likely to be highly correlated, it is important to control for the component of CFO pay that is driven by CEO pay. To do so, we regress the CFO LTAP indicator variable on the analogous CEO indicator variable, and use the residuals from this regression as an explanatory variable. Results presented in Column (3) of Table 9 show that the residual component of the CFO's performance plan is not related to future loan spread.

Finally, using the same regression method, we remove the component of CEO LTAP that is correlated with CFO LTAP. In Column (4), Table 9, we include the CFO LTAP indicator and the residual component of CEO pay as explanatory variables. The coefficient for the CEO plan residual is negative and statistically significant, while the coefficient for the CFO LTAP remains insignificant. These findings further confirm that the CFO's performance plan does not have an independent impact on the firm's cost of borrowing.

6. Conclusion

Over the past decade, executive compensation has undergone a significant regime shift, with firms increasingly tying executive pay to accounting performance. This shift in the design of compensation plans

is likely to influence managerial actions and consequently, affect all parties to the firm, including debtholders. Our paper provides the first set of empirical evidence on how the adoption of accounting-based incentives for the CEO affects the cost of borrowing and the terms of debt contracts.

We find that the spread for new private bank loans is significantly lower for firms that have recently adopted LTAPs for their CEOs and for LTAP plans with longer performance horizons. The use of LTAPs is also associated with lower debt covenant intensity. Further, lenders are less likely to include earnings-based covenants when the performance metrics specified in CEO compensation plans are earnings-based. Tests of the cost of borrowing using public market bond yield, bond credit rating, and CDS spread yield the same findings. Collectively, our results show that creditors perceive the use of LTAPs favorably and are willing to accept lower yield and impose less restrictive lending agreements when such plans are in place.

In addition, we find that the negative relation between the use of LTAPs and the cost of debt is strongest when the potential for shareholder-debtholder conflict is high. In contrast, when firms have low leverage and low bankruptcy risk, or when lenders can effectively monitor borrowing firms, there is no reduction in borrowing costs after LTAP adoptions in either private or public debt markets. This supports the idea that LTAPs reduce the cost of borrowing by mitigating the agency cost of debt.

Our findings have implications for both practitioners and researchers. Credit rating agencies, such as Moody's, have long considered executive compensation to be a key factor in determining credit ratings. Our findings shed light on the consequences of the recent trend of including long-term accounting-based performance measures in compensation contracts, and identifies firms for which this shift seems valuable. Researchers have long been interested in the interaction of the contracts whose nexus defines the modern corporation. Our paper shows that the choice of performance metrics in executive compensation contracts influences debt contracts. Given the improved disclosure in compensation design after the 2005 FASB rule change, data will be increasingly available to future researchers on the interaction between compensation contracts and other contracts that are critical to the firm and shape firm value.

Appendix. Variable definitions and data sources

Variables	Sources	Definitions
LTAP (0/1)	Incentivelab	Equals one if the firm grants a compensation plant for the CEO that is contingent on accounting performance and the performance with a horizon greater than one year, and zero otherwise.
STAP (0/1)	Incentivelab	Equals one if the firm grants a compensation plant for the CEO that is contingent on accounting performance and the performance with a horizon less than or equal to one year, and zero otherwise.
LTAP Plan horizon	Incentivelab	The performance horizon specified in long-term accounting-based performance plans, in months.
Earnings-based LTAP (0/1)	Incentivelab	Equals one if one of the performance criteria specified in a long-term compensation plan is earnings-based, such as earnings per share, net earnings, return on equity, return on assets, etc.
Loan spread	Dealscan	All-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. This measure includes any annual fee paid to the bank group and is measured in basis points.
Loan maturity	Dealscan	Loan maturity measured in months.
Loan size	Dealscan	Loan facility amount measured in millions of dollars.
#Lenders	Dealscan	Total number of lenders in a single facility.
Covenant intensity	Dealscan	The sum of four covenant indicators: collateral, dividend, more than two financial covenants, sweep. An indicator variable is set to zero if relevant data are missing.
Salary	ExecuComp	Base salary of the CEO during the fiscal year.
CEO tenure	ExecuComp	Number of years served as the CEO.
CEO share ownership	ExecuComp	The percentage of firm shares owned by the CEO.
CEO vega	ExecuComp	The dollar change in the value of the executive's option holdings for a 0.01 change in stock return volatility.
CEO delta	ExecuComp	The dollar change in the value of the executive's stock and option holdings with respect to a 1% change in stock price.
ROA	Compustat	EBITDA divided by total assets.
Market capitalization	Compustat	Market value of equity, which equals price per share multiplies number of shares outstanding at fiscal yearend.
Tangibility	Compustat	The net total value of property, plant and equipment divided by total assets.
Cash flow volatility	Compustat	Standard deviation of operating cash flow over the past five years scaled by lagged total assets.
Z-score	Compustat	1.2×(Working capital/total assets)+1.4×(Retained Earnings/Total Assets)+3.3×(EBIT/Total Assets)+0.6×(Market Value of Equity/Total Liabilities)+1.0×(Sales/Total Assets)

External finance dependence	Compustat	The ratio of capital expenditures minus cash flow from operations divided by capital expenditures.

Appendix continued.

Market-to-book ratio	Compustat	(Market value of equity plus the book value of debt)/total assets
Ln(total assets)	Compustat	Natural log of total assets
Leverage	Compustat	(Long-term debt + debt in current liabilities)/total assets
Bond rating	Compustat	Takes a value of 17 (not rated) to 1 (AAA)
Bond yield spread	Mergent	Bond offering yield spread, which is the difference between the offering yield and the yield of the benchmark treasury note/bond. Only domestic, non-convertible, $USD based fixed coupon bond with a maturity of six months or longer are included in the sample.
CDS spread	MarkIt	Annual average of daily CDS composite quotes for five-year contracts. Only senior unsecured debt with a modified restructuring clause and denominated in U.S. dollars are included in the sample.

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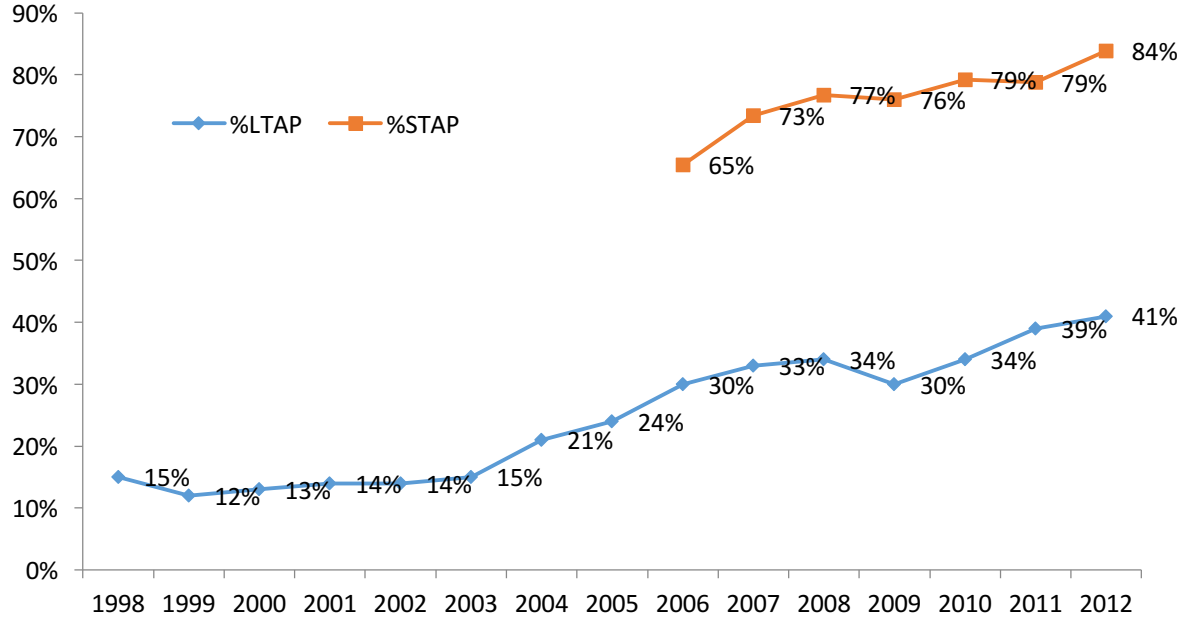
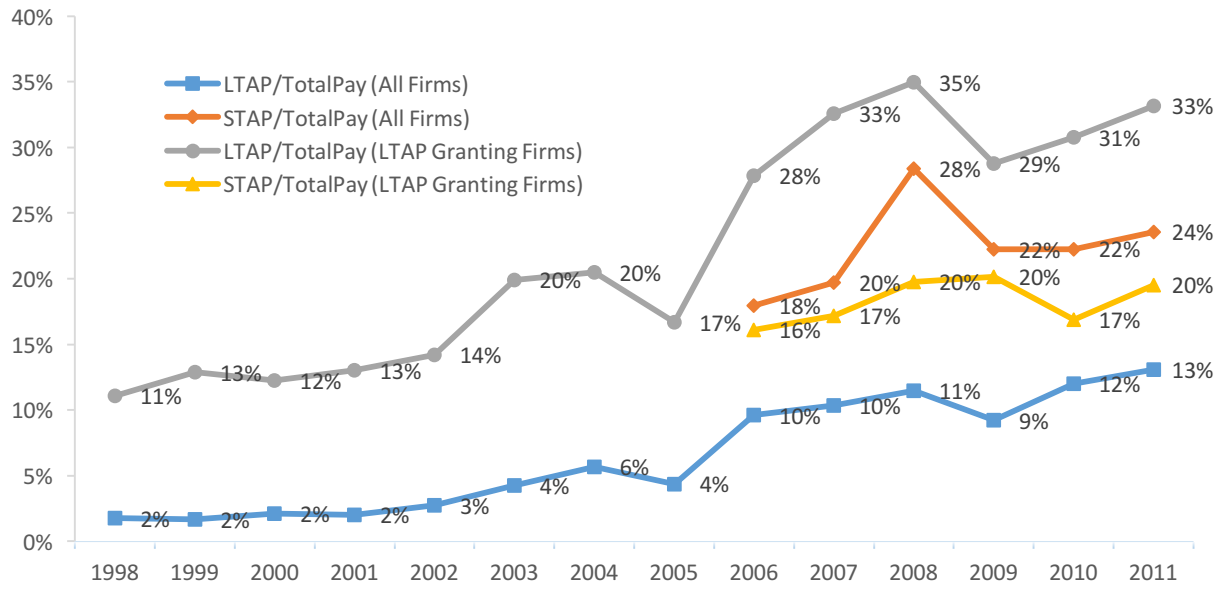
Figure 1. Time Series Trend of Accounting-based Compensation Plans



Panel A. Percentage of firms granting accounting-based plans

This graph presents the percentage of sample firms using accounting-based plans from 1998 to 2012. The sample includes 1,500 large US firms covered by the ISS Incentive Lab dataset from 1998 to 2012. %LTAP is the percentage of firms using compensation plans that are contingent on multi-year accounting performance. %STAP is the percentage of firms using compensation plans that are contingent on annual accounting performance. The %STAP is only calculated from 2006 to 2012 because firms are only mandated by SEC to disclose details of annual incentive plans after Dec. 2005.



Panel B. Accounting incentives as a percentage of total pay

This graph presents the magnitude of target accounting incentives as a percentage of total pay from 1998 to 2012. The sample includes 1,500 large US firms covered by the ISS Incentive Lab dataset from 1998 to 2012. Information for STAP is only calculated from 2006 to 2012 because firms are only mandated by SEC to disclose details of annual incentive plans after Dec. 2005.

Table 1. Summary statistics

This table presents summary statistics for 8,095 private bank loan contracts originated between 1998 and 2012, CEO compensation contracts, CEO characteristics and characteristics of borrowing firms. The summary statistics for bond yield spread, bond rating, and CDS spread are based on firm-year observations covered in the Incentivelab database and that have bond offering yield, bond rating, or CDS 5-year spread information in Mergent, Compustat, or Markit, respectively. See Appendix for detailed variable definitions.

Variable	N	Mean	Median	Min	Max	Std. Dev.
Loan Characteristics						
Loan spread (basis points)	8,095	139.527	100	15	600	121.051
Loan maturity (months)	8,095	41.47	48	5	85	23.207
Loan size ($m)	8,095	728	400	15	6000	945
#Lenders	8,095	11.918	10	1	42	8.556
Covenant intensity	3,558	1.797	2	0	4	1.270
Bond yield spread	4,630	214.648	157.495	13	1106.081	200.048
Bond rating	9,590	9.060	9	1	17	3.167
CDS spread	5,445	188.874	89.602	12.831	2169.299	308.944
Compensation Plans						
LTAP (0/1)	8,095	0.244	0			0.429
STAP (0/1)	2,489	0.802	1			0.399
LTAP Plan horizon (months)	1,974	37.750	36	13	122	8.857
CEO and Firm Characteristics						
CEO tenure	8,095	7.063	5	1	48	6.182
Salary ($m)	8,095	0.881	0.85	0	2.279	0.365
CEO share ownership	8,095	0.022	0.009	0	0.242	0.039
CEO Vega ($m)	8,095	0.246	0.122	0	2.087	0.346
CEO Delta ($m)	8,095	1.183	0.373	0	20.964	2.768
Ln(market cap)	8,095	8.450	8.338	4.853	12.136	1.355
Market to book ratio	8,095	1.824	1.451	0.851	7.116	1.061
Leverage	8,095	0.291	0.279	0	0.850	0.177
ROA	8,095	0.138	0.127	-0.034	0.430	0.079
Tangibility	8,095	0.314	0.264	0	0.877	0.235
Cash flow volatility	8,095	0.037	0.029	0.004	0.146	0.027
Z-score	8,095	12.685	3.563	-0.210	392.676	46.892

Table 2. Loan spread and accounting-based compensation plans

This table presents OLS regression results of loan spread on accounting-based compensation plans. The dependent variable is loan spread. Independent variables are measured in year t-1. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) 1998-2012	(2) 2006-2012	(3) 1998-2012	(4) 2006-2012
LTAP (0/1)	-8.480*** (0.01)	-9.231** (0.04)		
STAP (0/1)		-4.160 (0.39)		
LTAP Plan horizon			-0.238*** (0.00)	-0.244** (0.04)
Ln(CEO tenure)	-3.599** (0.05)	-7.997** (0.02)	-3.614** (0.05)	-7.945** (0.02)
Ln(salary)	2.257 (0.64)	11.194*** (0.00)	2.280 (0.64)	10.784*** (0.00)
CEO share ownership	-51.258 (0.31)	43.923 (0.71)	-49.772 (0.32)	50.283 (0.68)
CEO Vega	3.362 (0.42)	2.311 (0.77)	3.304 (0.43)	2.505 (0.75)
CEO Delta	2.097** (0.01)	-0.409 (0.79)	2.074** (0.01)	-0.433 (0.78)
Ln(loan maturity)	-3.490 (0.43)	5.345 (0.50)	-3.478 (0.43)	5.178 (0.52)
Ln(loan amount)	-9.961*** (0.00)	-6.654** (0.03)	-9.997*** (0.00)	-6.678** (0.02)
ln(market cap)	-19.685*** (0.00)	-26.010*** (0.00)	-19.583*** (0.00)	-25.951*** (0.00)
Market to book ratio	1.643 (0.50)	-7.428* (0.06)	1.628 (0.50)	-7.472* (0.06)
#Lenders	-0.149 (0.41)	-0.527* (0.07)	-0.150 (0.41)	-0.531* (0.06)
Leverage	99.397*** (0.00)	79.207*** (0.00)	99.668*** (0.00)	78.874*** (0.00)
ROA	-264.687*** (0.00)	-176.240*** (0.00)	-264.808*** (0.00)	-177.112*** (0.00)
Tangibility	3.746 (0.76)	-7.076 (0.61)	3.783 (0.75)	-6.325 (0.65)
Cash flow volatility	259.832*** (0.00)	325.652*** (0.00)	259.945*** (0.00)	325.522*** (0.00)
Z-score	0.053 (0.12)	0.071 (0.16)	0.054 (0.12)	0.071 (0.15)
Constant	634.534*** (0.00)	684.195*** (0.00)	634.030*** (0.00)	686.369*** (0.00)
Industry and year dummies	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes
Observations	8,095	2,489	8,095	2,489
R^2	0.613	0.656	0.613	0.655

Table 3. Loan spread and accounting-based compensation plans – Hidden factors

This table presents OLS regression results of loan spread on accounting-based compensation plans. The dependent variable is loan spread. Regressions are run separately for firms with values in the top quartile and for firms with values in the bottom quartile of variables used to stratify the sample and are defined as follows. Prior year operating performance is the firm's EBITDA over assets in the year before the respective LTAP grant. Prior year external finance dependence is the fraction of total capital expenditure not financed by internal cash flow from operations in the year before the respective LTAP grant. Independent variables are measured in year t-1. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Prior year operating Performance		Prior year external finance dependence		CEO tenure	
	Quartile 1	Quartile 4	Quartile 1	Quartile 4	Quartile 1	Quartile 4
LTAP (0/1)	-19.098**	-11.161***	-9.584**	-13.805*	-9.977*	-20.495***
	(0.02)	(0.00)	(0.04)	(0.07)	(0.05)	(0.00)
Ln(CEO tenure)	-1.500	-3.886*	-1.094	-3.214	0.657	8.650
	(0.73)	(0.05)	(0.73)	(0.49)	(0.89)	(0.33)
Ln(salary)	1.425	9.282**	11.019**	-7.865	3.632	15.573***
	(0.59)	(0.02)	(0.01)	(0.33)	(0.26)	(0.00)
CEO share ownership	-241.077*	39.216	89.300	-232.918**	39.004	-28.070
	(0.07)	(0.59)	(0.33)	(0.04)	(0.70)	(0.71)
CEO Vega	-4.436	-3.570	-2.895	9.472	0.590	8.602
	(0.68)	(0.51)	(0.62)	(0.53)	(0.93)	(0.24)
CEO Delta	2.880**	1.232	1.345	3.916**	-0.041	1.613*
	(0.04)	(0.18)	(0.15)	(0.02)	(0.97)	(0.09)
Ln(loan maturity)	-7.932	-16.974**	7.720	-11.966	-1.471	2.314
	(0.39)	(0.02)	(0.24)	(0.15)	(0.82)	(0.81)
Ln(loan amount)	-9.917***	-10.838***	-13.434***	-4.326	-9.312***	-11.446***
	(0.01)	(0.00)	(0.00)	(0.28)	(0.00)	(0.01)
Ln(market cap)	-19.807***	-12.273***	-20.882***	-20.277***	-22.304***	-18.501***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Market to book ratio	-3.732	-3.619	-0.914	-0.948	13.618***	-1.004
	(0.54)	(0.11)	(0.77)	(0.85)	(0.00)	(0.76)
#Lenders	-0.829**	0.407	0.214	-0.877**	-0.056	-0.619*
	(0.03)	(0.21)	(0.55)	(0.03)	(0.86)	(0.08)
Leverage	117.394***	51.524***	81.700***	170.703***	104.087***	83.680***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROA	-313.406***	-25.294	-151.911***	-241.919***	-457.369***	-183.963***
	(0.00)	(0.48)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	30.995	15.849	12.023	-28.326	6.858	-12.190
	(0.38)	(0.30)	(0.63)	(0.36)	(0.67)	(0.63)
Cash flow volatility	227.061	294.874***	116.077	284.112*	211.946**	204.292**
	(0.13)	(0.00)	(0.15)	(0.07)	(0.02)	(0.05)
Z-score	-0.007	-0.007	0.017	0.032	0.052	0.024
	(0.91)	(0.77)	(0.69)	(0.50)	(0.32)	(0.58)
Constant	655.328***	702.537***	488.879***	679.635***	587.239***	504.493***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,984	1,982	1,943	1,942	2,545	1,904
R^2	0.601	0.668	0.700	0.602	0.652	0.646

Table 4. Loan spread and accounting-based compensation plans: 2SLS/IV estimation
The table presents 2SLS/IV regression results of loan spread on accounting-based compensation plans. The first stage dependent variable is the LTAP dummy variable. Instrument variables (IVs) are the proportion of firms using long-term accounting-based compensation plans for the sample firm's compensation consultant or market capitalization decile. Columns (1) and (2) report results from the first stage and columns (3) and (4) report results from the second stage. Independent variables are measured in year t-1. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	Long-term accounting plans (0/1)		Loan spread	
	First stage		Second stage	
LTAP ratio for the firm's compensation consultant	0.578***			
	(0.00)			
LTAP ratio for the firm's market capitalization decile		0.764***		
		(0.00)		
LTAP (0/1) (predicted)			-73.091**	-288.746***
			(0.01)	(0.00)
Ln(CEO tenure)	0.012	-0.028***	-8.213**	-9.783***
	(0.53)	(0.00)	(0.02)	(0.01)
Ln(salary)	0.026	0.044***	10.782**	8.776
	(0.42)	(0.00)	(0.02)	(0.16)
CEO share ownership	-0.893*	-0.617**	163.696	-62.338
	(0.05)	(0.01)	(0.21)	(0.50)
CEO Vega	-0.101	-0.056*	-17.185**	-22.072**
	(0.10)	(0.07)	(0.04)	(0.02)
CEO Delta	-0.006	-0.002	-3.240**	-0.048
	(0.33)	(0.66)	(0.04)	(0.97)
Ln(loan maturity)	-0.011	0.009	2.957	-1.578
	(0.70)	(0.52)	(0.73)	(0.78)
Ln(loan amount)	0.013	0.005	-10.767***	-13.070***
	(0.34)	(0.51)	(0.00)	(0.00)
Ln(market cap)	0.034*	0.003	-8.602***	4.097
	(0.07)	(0.82)	(0.01)	(0.35)
Market to book ratio	0.001	-0.042***	-17.267***	-11.304***
	(0.98)	(0.00)	(0.00)	(0.00)
#Lenders	-0.000	-0.001	-0.779**	-0.466
	(0.91)	(0.48)	(0.01)	(0.13)
Leverage	-0.043	-0.094	103.317***	90.941***
	(0.70)	(0.14)	(0.00)	(0.00)
ROA	0.446*	0.341**	-178.903***	-148.610***
	(0.09)	(0.02)	(0.00)	(0.01)
Tangibility	0.001	-0.052	-0.284	-11.219
	(0.99)	(0.27)	(0.99)	(0.64)
Cash flow volatility	-1.449***	-0.980***	339.481***	142.782
	(0.01)	(0.00)	(0.01)	(0.24)
Z-score	-0.000	-0.000	0.052	0.037
	(0.27)	(0.57)	(0.27)	(0.47)
Constant	-0.477	-0.296*	541.155***	564.762***
	(0.30)	(0.10)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes
Observations	2,489	8,095	2,489	8,095
R^2	0.182	0.103	0.597	0.470

Table 5. Loan spread and accounting-based compensation plans: Channels

The table presents regression results of loan spread on accounting-based compensation plans. The dependent variable is loan spread. The independent variables are measured in year t-1. Panel A presents results from subsamples based on firm characteristics. Panel B presents results from subsamples based on loan and lender characteristics. The secured (unsecured) loan sample included all loans that is secured (not secured) by collateral. The foreign lead lender sample include all loan facilities that has a foreign lead lender. The domestic lead lender sample include all loan facilities that has no foreign lead lender. The same state leader lender sample includes all facilities where the lead lender's chief executive office and the borrowing firm's headquarters are in the same state. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A. By firm characteristics: Leverage and Zscore

	(1)	(2)	(3)	(4)
	Leverage Top Quartile	Leverage Bottom Quartile	Zscore ≥ 3	Zscore < 3
LTAP (0/1)	-17.558**	-5.360	-3.383	-10.910**
	(0.02)	(0.25)	(0.25)	(0.04)
Ln(CEO tenure)	-3.388	-4.651*	-2.988*	-0.792
	(0.42)	(0.08)	(0.07)	(0.81)
Ln(salary)	-7.121	10.030***	8.953***	-4.049
	(0.41)	(0.00)	(0.00)	(0.46)
CEO share ownership	52.979	22.215	-11.774	52.272
	(0.70)	(0.80)	(0.80)	(0.60)
CEO Vega	9.983	9.939	2.586	-3.756
	(0.41)	(0.18)	(0.55)	(0.68)
CEO Delta	-0.497	0.975	1.692***	1.449
	(0.85)	(0.30)	(0.01)	(0.43)
Ln(loan maturity)	-1.616	6.692	9.909*	-9.125
	(0.85)	(0.42)	(0.05)	(0.17)
Ln(loan amount)	-9.842***	-9.857***	-12.958***	-9.446***
	(0.00)	(0.01)	(0.00)	(0.00)
ln(market cap)	-19.125***	-22.592***	-16.944***	-16.009***
	(0.00)	(0.00)	(0.00)	(0.00)
Market to book ratio	8.968	0.064	-0.526	-10.587*
	(0.36)	(0.98)	(0.79)	(0.08)
#Lenders	-0.596*	0.191	0.181	-0.491*
	(0.08)	(0.55)	(0.28)	(0.08)
Leverage	168.116***	186.532***	44.805***	51.839**
	(0.00)	(0.00)	(0.00)	(0.03)
ROA	-429.079***	-106.645***	-112.961***	-322.701***
	(0.00)	(0.01)	(0.00)	(0.00)
Tangibility	-8.223	-8.276	4.502	-14.934
	(0.79)	(0.66)	(0.67)	(0.47)
Cash flow volatility	155.331	307.394***	245.856***	355.164***
	(0.23)	(0.00)	(0.00)	(0.00)
Z-score	-6.817	0.033	0.022	-23.664***
	(0.15)	(0.25)	(0.51)	(0.00)
Constant	739.218***	699.532***	618.821***	914.447***
	(0.00)	(0.00)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes
Observations	2,023	2,028	4,671	3,424
R^2	0.654	0.639	0.635	0.618

(continued)

Table 5 continued.

Panel B. By loan characteristics and lender identity

	(1)	(2)	(3)	(4)	(5)	(6)
	Secured loan	Unsecured loan	Foreign lead lender	Domestic lead lender	Same state lead lender	Lead lender not in the same state
LTAP (0/1)	-5.765	-7.665***	-13.101***	-6.128*	-6.888	-8.654**
	(0.42)	(0.01)	(0.00)	(0.08)	(0.28)	(0.01)
Ln(CEO tenure)	-2.960	-2.856**	-2.175	-4.734**	-4.800	-3.089
	(0.41)	(0.05)	(0.43)	(0.03)	(0.15)	(0.12)
Ln(salary)	-2.889	0.267	-1.888	4.921	1.070	1.290
	(0.70)	(0.90)	(0.65)	(0.38)	(0.72)	(0.83)
CEO share ownership	-103.003	80.496	-80.208	-27.747	-85.756	-36.800
	(0.28)	(0.23)	(0.48)	(0.63)	(0.24)	(0.53)
CEO Vega	4.511	-2.795	5.577	2.153	2.534	2.204
	(0.69)	(0.45)	(0.39)	(0.63)	(0.67)	(0.64)
CEO Delta	1.089	-0.109	2.110	1.900**	1.994**	2.101**
	(0.68)	(0.88)	(0.15)	(0.01)	(0.02)	(0.03)
Ln(loan maturity)	-19.187**	-8.748*	-9.755	-1.920	-12.768	-1.941
	(0.01)	(0.10)	(0.18)	(0.73)	(0.17)	(0.69)
Ln(loan amount)	-9.706***	-1.435	-10.823***	-9.630***	-10.830***	-10.116***
	(0.00)	(0.51)	(0.00)	(0.00)	(0.00)	(0.00)
ln(market cap)	-10.445***	-12.468***	-20.843***	-19.133***	-17.415***	-18.712***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Market to book ratio	-8.865**	0.602	5.011	0.386	4.595	0.006
	(0.04)	(0.78)	(0.17)	(0.89)	(0.16)	(1.00)
#Lenders	-0.817***	0.239	-0.204	-0.210	0.154	-0.236
	(0.01)	(0.24)	(0.38)	(0.36)	(0.55)	(0.24)
Leverage	96.287***	62.521***	88.076***	102.966***	79.892***	110.227***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROA	-224.044***	-105.473***	-230.382***	-269.038***	-277.845***	-257.197***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	5.271	0.967	15.617	-2.409	-29.265	0.226
	(0.80)	(0.93)	(0.39)	(0.85)	(0.24)	(0.99)
Cash flow volatility	271.424**	131.668**	181.863*	296.041***	125.781	288.566***
	(0.02)	(0.01)	(0.08)	(0.00)	(0.17)	(0.00)
Z-score	0.012	0.019	0.113	0.049	0.006	0.065*
	(0.84)	(0.60)	(0.16)	(0.21)	(0.87)	(0.08)
Constant	759.195***	466.674***	805.007***	778.635***	733.111***	698.223***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,200	2,628	2,287	5,798	1,063	7,032
R^2	0.496	0.604	0.688	0.600	0.700	0.612

Table 6. Loan covenants and accounting-based compensation plans

Panel A of this table lists types of financial covenants that are related to firm earnings for 3,558 loan packages that reported at least one financial covenant. The sample period is 1998 to 2012. Panel B presents correlations between covenant intensity, earning-based covenant use, and the characteristics of accounting-based compensation plans. Panel C presents regression results of loan covenants on accounting-based compensation plans. In columns (1) to (3), the dependent variable is covenant intensity and the model is estimated using ordered probit regressions. Independent variables are measured in year t-1. In columns (4) to (6), the dependent variable is a binary variable that equals one if the financial covenant includes at least one of the earnings-based measure specified in Panel A and zero otherwise, and the model is estimated using probit regressions. Independent variables are measured in year t-1. The table presents marginal effects estimated at the mean for continuous variables and for a change in an indicator variable from zero to one. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Pane A. Summary statistics

	Obs.	% of Sample
#Packages with financial covenants	3,558	
Earnings-based LTAP (0/1)	792	22.26%
Earnings-based covenant (0/1)	2,836	79.71%
Breakdown of earnings-based covenants:		
Max. debt to EBITDA	1,910	53.68%
Max. senior debt to EBITDA	187	5.26%
Min. debt service coverage	23	0.65%
Min. EBITDA	143	4.02%
Min. fixed charge coverage	783	22.01%
Min. interest coverage	1,684	47.33%

Panel B. Correlations between loan covenants and LTAP

	LTAP (0/1)	Plan horizon	Earnings-based LTAP (0/1)
Covenant intensity	-0.113	-0.130	-0.153
(*p*-value)	(0.00)	(0.00)	(0.00)
Earnings-based covenant (0/1)	-0.080	-0.084	-0.113
(*p*-value)	(0.00)	(0.00)	(0.00)
Long-term loans (loan maturity>12 months)			
Covenant intensity	-0.124	-0.129	-0.147
(*p*-value)	(0.00)	(0.00)	(0.00)
Earnings-based covenant (0/1)	-0.093	-0.100	-0.120
(*p*-value)	(0.00)	(0.00)	(0.00)
Short-term loans (loan maturity<=12 months)			
Covenant intensity	-0.077	-0.116	-0.141
(*p*-value)	(0.05)	(0.00)	(0.00)
Earnings-based covenant (0/1)	-0.045	-0.018	-0.064
(*p*-value)	(0.24)	(0.64)	(0.10)

Panel C. Regression results

	(1)	(2)	(3)	(4)	(5)	(6)
	Dep. Var.=Covenant intensity			Dep. Var. = Earnings-based covenant (0/1)		
LTAP (0/1)	-0.146**			-0.023*		
	(0.01)			(0.09)		
Plan Horizon		-0.003**			-0.001*	
		(0.04)			(0.08)	
Earnings-based LTAP (0/1)			-0.165***			-0.033**
			(0.01)			(0.02)
Ln(CEO tenure)	0.060**	0.060**	0.061**	-0.000	-0.000	-0.000
	(0.04)	(0.04)	(0.04)	(0.96)	(0.97)	(0.98)
Ln(salary)	-0.010	-0.011	-0.009	0.015**	0.015**	0.016**
	(0.77)	(0.75)	(0.78)	(0.02)	(0.02)	(0.02)
CEO share ownership	-0.650	-0.617	-0.622	-0.188	-0.185	-0.189
	(0.48)	(0.50)	(0.50)	(0.34)	(0.35)	(0.34)
CEO Vega	-0.176	-0.174	-0.174	-0.021	-0.021	-0.022
	(0.11)	(0.11)	(0.11)	(0.22)	(0.22)	(0.22)
CEO Delta	0.017	0.016	0.016	-0.000	-0.000	-0.000
	(0.22)	(0.22)	(0.22)	(0.99)	(0.98)	(1.00)
Ln(loan maturity)	0.015	0.015	0.012	0.015	0.015	0.014
	(0.80)	(0.80)	(0.85)	(0.12)	(0.12)	(0.14)
Ln(loan amount)	0.129***	0.129***	0.130***	-0.005	-0.005	-0.005
	(0.00)	(0.00)	(0.00)	(0.49)	(0.49)	(0.50)
ln(market cap)	-0.486***	-0.486***	-0.486***	-0.049***	-0.048***	-0.048***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Market to book ratio	0.047	0.048	0.048	0.015*	0.015*	0.014*
	(0.21)	(0.20)	(0.20)	(0.08)	(0.08)	(0.08)
#Lenders	0.001	0.001	0.001	0.001*	0.001*	0.001*
	(0.87)	(0.87)	(0.87)	(0.07)	(0.08)	(0.08)
Leverage	0.889***	0.891***	0.875***	0.151***	0.151***	0.148***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROA	-0.496	-0.503	-0.513	0.141	0.141	0.140
	(0.29)	(0.28)	(0.28)	(0.14)	(0.14)	(0.14)
Tangibility	-0.386**	-0.379**	-0.385**	-0.191***	-0.190***	-0.193***
	(0.04)	(0.05)	(0.04)	(0.00)	(0.00)	(0.00)
Cash flow volatility	2.876***	2.904***	2.844***	0.333	0.337	0.328
	(0.00)	(0.00)	(0.00)	(0.13)	(0.13)	(0.14)
Z-score	0.001	0.001	0.001	-0.000	-0.000	-0.000
	(0.20)	(0.20)	(0.21)	(0.32)	(0.32)	(0.31)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,558	3,558	3,558	3,558	3,558	3,558
Pseudo R^2	0.189	0.189	0.190	0.343	0.343	0.345

Table 7. Bond yield spread and accounting-based compensation plans

The table presents regression results of bond's offering yield spread on accounting-based compensation plans. The sample includes bond offerings initiated in the year subsequent to the disclosure of CEO compensation plans in the firm's proxy statement. Independent variables are measured in year t-1. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Whole Sample	(2) Leverage bottom quartile	(3) Leverage top quartile	(4) Zscore ≥ 3	(5) Zscore < 3
LTAP (0/1)	-47.139***	-12.121	-79.834**	-3.695	-89.185***
	(0.00)	(0.26)	(0.03)	(0.62)	(0.00)
Ln(bond maturity)	-69.096***	8.386	-89.569**	14.273***	-88.356***
	(0.00)	(0.22)	(0.02)	(0.00)	(0.00)
Ln(offering amount)	1.420	19.045***	-14.252	6.476***	0.865
	(0.77)	(0.00)	(0.15)	(0.00)	(0.89)
Enhancement (0/1)	-43.056	56.726*	21.809	28.262	-107.386***
	(0.11)	(0.06)	(0.44)	(0.14)	(0.00)
Ln(CEO tenure)	-17.636**	1.780	-17.899	-6.354	-25.754**
	(0.03)	(0.79)	(0.33)	(0.17)	(0.04)
Ln(salary)	-7.770	-13.118	-22.282	-0.568	-11.249
	(0.46)	(0.31)	(0.33)	(0.96)	(0.40)
CEO share ownership	-768.697***	6.303	-1,119.183	-153.204	-954.750**
	(0.01)	(0.98)	(0.23)	(0.33)	(0.02)
CEO Vega	4.836	0.238	-8.852	1.254	9.194*
	(0.18)	(0.90)	(0.57)	(0.46)	(0.07)
CEO Delta	-8.740	-17.557	-11.472	0.725	-23.483
	(0.58)	(0.24)	(0.85)	(0.94)	(0.48)
ln(market cap)	-43.385***	-60.892***	-11.207	-49.395***	-33.616***
	(0.00)	(0.00)	(0.56)	(0.00)	(0.00)
Market to book ratio	4.797	12.731*	11.893	2.687	-48.552
	(0.53)	(0.05)	(0.75)	(0.61)	(0.18)
Leverage	145.150***	154.671	310.117***	-22.204	60.316
	(0.00)	(0.11)	(0.01)	(0.62)	(0.45)
ROA	-479.736***	-370.642***	-461.032	-182.254**	-318.328
	(0.00)	(0.00)	(0.25)	(0.03)	(0.21)
Tangibility	29.358	-22.447	324.075**	-16.893	67.635
	(0.56)	(0.70)	(0.04)	(0.61)	(0.41)
Cash flow volatility	150.981	263.257	1,022.587***	232.885	58.958
	(0.56)	(0.31)	(0.01)	(0.10)	(0.85)
Z-score	-0.021	0.089	-9.515	0.022	-30.303
	(0.89)	(0.41)	(0.55)	(0.85)	(0.10)
Constant	1,169.385***	392.804***	1,186.418***	817.847***	1,628.648***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes
Observations	4,630	894	1,070	1,782	2,848
R^2	0.425	0.602	0.614	0.560	0.468

Table 8. Bond rating, CDS spread, and accounting-based compensation plans

Panel A presents regression results of bond rating on accounting-based compensation plans. The dependent variable is bond rating in the top part of the panel, which takes a value of 17 (not rated) to 1 (AAA). The dependent variable in the bottom part of the panel is annual change in bond rating. Independent variables are measured as changes from year t-1 to year t. Panel B presents regression results of CDS spread on accounting-based compensation plans. The dependent variable in the top part of the panel is CDS spread. The dependent variable in the bottom part of the panel is annual change in CDS spread. Independent variables are measured as changes from year t-1 to year t for the bottom part. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Bond rating and accounting-based compensation plans

	(1)	(2)	(3)	(4)	(5)
	Dependent variable = Bond rating				
	Whole Sample	Leverage bottom quartile	Leverage top quartile	Zscore ≥ 3	Zscore < 3
LTAP (0/1)	-0.207**	0.049	-0.593***	-0.049	-0.333**
	(0.03)	(0.75)	(0.01)	(0.64)	(0.02)
Ln(CEO tenure)	0.011	-0.046	-0.052	0.022	0.004
	(0.79)	(0.51)	(0.54)	(0.64)	(0.95)
Ln(salary)	-0.136*	-0.086	-0.220*	-0.049	-0.217**
	(0.09)	(0.34)	(0.07)	(0.61)	(0.03)
CEO share ownership	1.367	-2.343	0.570	0.213	3.755**
	(0.34)	(0.38)	(0.76)	(0.91)	(0.04)
CEO Vega	-0.167	0.356*	-0.956**	0.046	-0.422
	(0.30)	(0.09)	(0.03)	(0.78)	(0.14)
CEO Delta	0.015	0.047	0.079**	0.045**	-0.060
	(0.45)	(0.15)	(0.03)	(0.05)	(0.12)
ln(market cap)	-1.301***	-1.669***	-1.034***	-1.473***	-0.971***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Market to book ratio	0.321***	0.449***	0.677***	0.387***	0.546***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	2.870***	3.481**	1.380	2.180***	0.695
	(0.00)	(0.04)	(0.26)	(0.00)	(0.38)
ROA	-8.438***	-6.481***	-6.545***	-7.663***	-3.089***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	-0.385	-2.061**	0.315	-0.831*	-0.441
	(0.30)	(0.02)	(0.62)	(0.06)	(0.40)
Cash flow volatility	11.962***	19.202***	4.913**	14.493***	6.052***
	(0.00)	(0.00)	(0.05)	(0.00)	(0.01)
Z-score	-0.000	-0.000	-0.351***	-0.000	-0.589***
	(0.92)	(0.55)	(0.01)	(0.83)	(0.00)
Constant	21.693***	25.315***	19.352***	21.690***	20.881***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes
Observations	9,590	2,398	2,397	5,489	4,101
R^2	0.596	0.628	0.622	0.600	0.611
	Dependent variable = $(Rating_t — Rating_{t-1}) / Rating_{t-1}$				
LTAP (0/1)	-0.051**	-0.032	-0.140**	0.006	-0.141***
	(0.01)	(0.42)	(0.02)	(0.76)	(0.00)
Control variables	Yes	Yes	Yes	Yes	Yes
Industry and year dummies	Yes	Yes	Yes	Yes	Yes
Observations	8,367	2,090	2,055	4,805	3,562
R^2	0.151	0.212	0.237	0.120	0.207

(continued.)

Table 8 continued.

Panel B: CDS spread and accounting-based compensation plans

	(1)	(2)	(3)	(4)	(5)
	Dependent variable = CDS Spread				
	Whole Sample	Leverage bottom quartile	Leverage top quartile	Zscore ≥ 3	Zscore < 3
LTAP (0/1)	-28.523***	-23.922	-77.093**	-7.114	-54.113***
	(0.01)	(0.11)	(0.01)	(0.27)	(0.01)
Ln(CEO tenure)	-18.756**	-14.696	-13.472	-11.226**	-7.843
	(0.02)	(0.16)	(0.53)	(0.03)	(0.59)
Ln(salary)	-7.027	4.785	-33.453	8.234	-17.760
	(0.50)	(0.63)	(0.17)	(0.33)	(0.16)
CEO share ownership	-744.894**	-907.879**	-460.644	-171.347	-744.829
	(0.02)	(0.03)	(0.55)	(0.48)	(0.14)
CEO Vega	48.290***	33.791*	104.396**	11.529	56.852*
	(0.00)	(0.08)	(0.02)	(0.21)	(0.06)
CEO Delta	7.028***	8.137***	8.954	3.327*	9.916**
	(0.00)	(0.01)	(0.34)	(0.08)	(0.01)
ln(market cap)	-89.030***	-67.319***	-120.560***	-43.318***	-109.438***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Market to book ratio	25.199**	14.829	36.689	-2.025	0.979
	(0.02)	(0.18)	(0.31)	(0.75)	(0.96)
Leverage	348.937***	268.562	514.659**	-8.608	302.434***
	(0.00)	(0.22)	(0.03)	(0.88)	(0.00)
ROA	-1,054.386***	-1,069.888***	-1,369.591***	-476.949***	-1,018.062***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Tangibility	-6.961	49.177	35.152	-8.392	-125.147
	(0.90)	(0.56)	(0.78)	(0.75)	(0.21)
Cash flow volatility	615.183**	1,344.689*	-265.810	844.923***	381.772
	(0.04)	(0.06)	(0.54)	(0.01)	(0.41)
Z-score	0.128***	0.078*	-35.590	0.013	-96.799***
	(0.00)	(0.05)	(0.18)	(0.62)	(0.00)
Constant	913.323***	407.763***	1,505.657***	660.473***	1,715.980***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes
Observations	5,445	1,362	1,361	3,093	2,352
R^2	0.365	0.374	0.456	0.274	0.437
	Dependent variable = (CDS Spread$_t$ — CDS Spread$_{t-1}$) / CDS Spread$_{t-1}$				
LTAP (0/1)	-27.365**	-15.398	-67.144	2.142	-59.387**
	(0.04)	(0.36)	(0.15)	(0.64)	(0.04)
Control variables	Yes	Yes	Yes	Yes	Yes
Industry and year dummies	Yes	Yes	Yes	Yes	Yes
Observations	4,691	1,176	1,147	2,678	2,013
R^2	0.076	0.180	0.125	0.106	0.101

Table 9. Loan spread and accounting-based compensation plans: CEOs vs. CFOs

The table presents regression results of loan spread on accounting-based compensation plans. CFO LTAP equals one if the CFO receives a long-term accounting-based compensation plan in year t-1. CEO (CFO) LTAP Residual is the residual of regressing CEO (CFO) LTAP on CFO (CEO) LTAP. The independent variables are measured in year t-1. See Appendix for detailed variable definitions. We report in parentheses *p*-values based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
CEO LTAP (0/1)		-9.284**	-7.314**	
		(0.03)	(0.03)	
CFO LTAP (0/1)	-5.168	2.763		-5.301
	(0.19)	(0.59)		(0.18)
CEO LTAP Residual				-9.284**
				(0.03)
CFO LTAP Residual			2.763	
			(0.59)	
CEO Ln(salary)		0.529	0.529	0.529
		(0.86)	(0.86)	(0.86)
CFO Ln(salary)	13.953***	14.034***	14.034***	14.034***
	(0.00)	(0.00)	(0.00)	(0.00)
CEO share ownership		-21.567	-21.567	-21.567
		(0.72)	(0.72)	(0.72)
CFO share ownership	-1,415.655**	-1,244.752**	-1,244.752**	-1,244.752**
	(0.02)	(0.04)	(0.04)	(0.04)
CEO Vega		4.682	4.682	4.682
		(0.40)	(0.40)	(0.40)
CFO Vega	-31.872	-42.484	-42.484	-42.484
	(0.25)	(0.15)	(0.15)	(0.15)
CEO Delta		1.618	1.618	1.618
		(0.14)	(0.14)	(0.14)
CFO Delta	51.367***	43.652***	43.652***	43.652***
	(0.00)	(0.00)	(0.00)	(0.00)
Ln(CEO tenure)	-2.363	-3.575*	-3.575*	-3.575*
	(0.23)	(0.09)	(0.09)	(0.09)
Ln(loan maturity)	0.667	0.687	0.687	0.687
	(0.89)	(0.89)	(0.89)	(0.89)
Ln(loan amount)	-9.892***	-9.947***	-9.947***	-9.947***
	(0.00)	(0.00)	(0.00)	(0.00)
ln(market cap)	-23.743***	-24.309***	-24.309***	-24.309***
	(0.00)	(0.00)	(0.00)	(0.00)
Market to book ratio	1.188	0.941	0.941	0.941
	(0.65)	(0.73)	(0.73)	(0.73)
#Lenders	-0.311	-0.327*	-0.327*	-0.327*
	(0.10)	(0.09)	(0.09)	(0.09)
Leverage	91.896***	92.929***	92.929***	92.929***
	(0.00)	(0.00)	(0.00)	(0.00)
ROA	-263.629***	-257.969***	-257.969***	-257.969***
	(0.00)	(0.00)	(0.00)	(0.00)
Tangibility	8.405	8.339	8.339	8.339
	(0.52)	(0.52)	(0.52)	(0.52)
Cash flow volatility	255.918***	249.663***	249.663***	249.663***
	(0.00)	(0.00)	(0.00)	(0.00)
Z-score	0.066	0.065	0.065	0.065
	(0.11)	(0.12)	(0.12)	(0.12)
Constant	563.463***	566.132***	566.163***	565.322***
	(0.00)	(0.00)	(0.00)	(0.00)
Industry and year dummies	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes
Observations	6,544	6,544	6,544	6,544
R^2	0.615	0.617	0.617	0.617