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ABSTRACT

We examine how accounting-based compensation plans influence a firm's contracts with its creditors. After granting long-term accounting-based compensation plans (LTAPs) to CEOs, firms pay lower spreads and have fewer restrictive covenants in new bank loans. Mechanisms leading to lower borrowing cost include improvements in debt repayment ability, reduced shareholder-debtholder conflicts, and reduced risk-taking incentives. Creditors view LTAPs as a substitute for monitoring, adjust covenant design based on LTAP features, and value plans with concave performance-payout functions and reasonable performance targets. A firm's credit rating improves and CDS spread declines after LTAP grants, suggesting that LTAPs help reduce firms' credit risk.

Rémunération fondée sur le rendement et contrats d'emprunt

RÉSUMÉ

Nous examinons de quelle façon les régimes de rémunération fondée sur le rendement influencent les contrats qui lient une société et ses créanciers. Une fois qu'elles ont accordé un régime de rémunération fondée sur le rendement à long terme (LTAP) à leur PDG, les sociétés qui contractent de nouveaux emprunts bancaires profitent de marges plus faibles et d'un nombre moins élevé de clauses restrictives. Les mécanismes entraînant une baisse du coût des emprunts comprennent l'accroissement de la capacité de remboursement, des relations moins conflictuelles entre les actionnaires et les créanciers ainsi qu'une réduction des incitatifs à la prise de risques. Les créanciers considèrent les LTAP comme une mesure de remplacement de la surveillance, élaborent les conventions en fonction des caractéristiques des LTAP et apprécient les régimes présentant des fonctions concaves pour la rémunération fondée sur le rendement et des cibles de rendement raisonnables. Après l'octroi d'un LTAP, la cote de crédit des sociétés s'améliore et les écarts liés aux swaps sur défaillance diminuent, ce qui porte à croire que les LTAP contribuent à réduire le risque de crédit des sociétés.

1. Introduction

Recently, publicly traded firms in the United States have dramatically increased their use of accounting-based compensation plans (DeAngelis and Grinstein 2014; Li and Wang 2016). These

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plans specify payouts to top managers when the firm reaches predetermined accounting-based performance hurdles. The performance measures used are typically earnings-related, such as EPS, EBIT, and EBITDA. As shown in Figure 1, between 1998 and 2012 the percentage of large U.S. public firms using long-term (i.e., multiyear) accounting-based compensation plans (LTAPs) as part of the CEO's compensation package increased from 15 to 41 percent. Between 2006 and 2012, the years for which data are available, the percentage of large U.S. public firms using short-term (i.e., 12 months or less) accounting-based compensation plans (STAPs) increased from 65 to 84 percent.[1] A number of recent studies examine this trend and its impact on the structure of compensation and firm performance.[2] To date, there is scant evidence on the impact of accounting-based compensation plans on the terms of debt contracts, despite their growing importance. Thus, the purpose of this paper is to analyze how and why the grant of an accounting-based compensation plan to the CEO affects a firm's subsequent debt contracts.

There are several nonmutually exclusive mechanisms through which accounting-based compensation could reduce a firm's credit risk and consequently its cost of borrowing. First, prior research shows that creditors rely on accounting performance to evaluate a firm's ability to fulfill its debt obligations and accounting-based covenants to protect their interests by restricting managerial decisions.[3] Accounting-based compensation plans focus the CEO's attention on accounting performance measures, such as earnings and cash flow, that are directly correlated with a firm's ability to repay debt and the measures used in debt covenants. A CEO's efforts to improve these performance measures, if successful, will increase the firm's creditworthiness (reduce default risk) and reduce the need to include these measures in debt covenants.

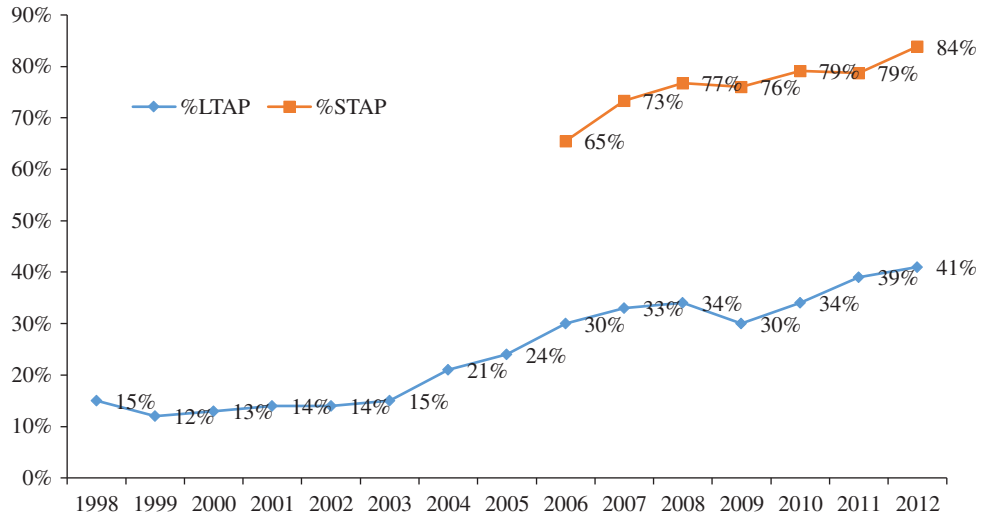
Second, accounting-based compensation plans may alleviate potential shareholder-debtholder conflicts. As has been shown, CEOs sometimes have incentives to engage in activities, such as risk-shifting, that maximize shareholder value at the expense of debtholder value (Galai and Masulis 1976; Jensen and Meckling 1976; Myers 1977; among others). By tying the CEO's pay to performance measures that are valued by debtholders, accounting-based compensation plans could better align the CEO's interests with those debtholders, and thus reduce his or her incentive to engage in activities that reduce debtholder value. If this is the case, it follows that there will be less need for creditors to monitor or use costly debt covenants to restrict managerial behavior.

Lastly, accounting-based compensation plans with time horizons more closely aligned with debtholders' time horizons will help reduce credit risk and the cost of borrowing. Debtholders' concern regarding a borrowing firm's credit risk is higher for longer-duration debt. Aligning the time horizon of executive compensation plans with the duration of debt will help ensure creditors that a CEO will not take myopic actions that inflate the firm's short-term performance at the expense of its longer-term performance.

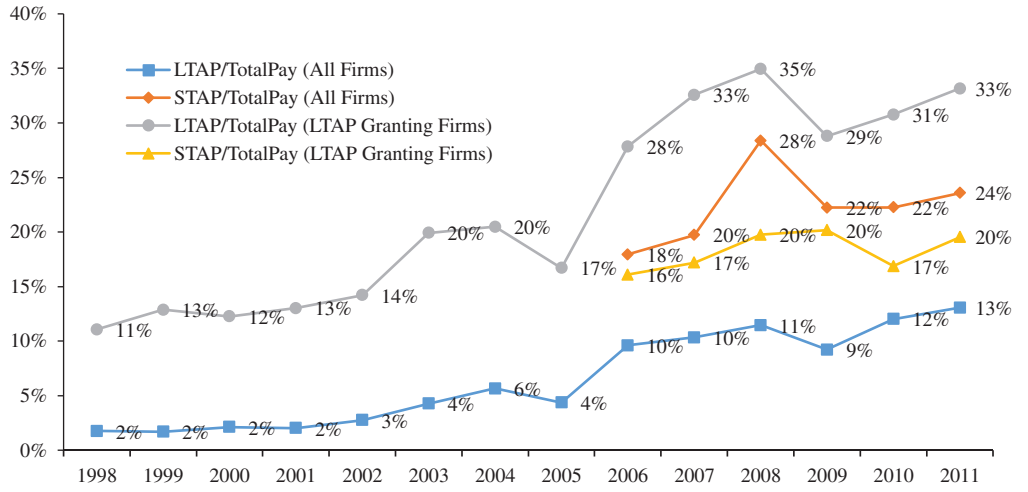
It is possible, however, that the addition of an accounting-based compensation plan has no material impact on managerial behavior in the context of an executive's overall pay package. Furthermore, prior research suggests that accounting-based compensation plans with a short performance horizon motivate executives to manage earnings, which can help managers achieve performance goals but not, perhaps, for the right reasons (Healy 1985; Guidry et al. 1999; Bennett et al. 2017).

1. Panel A of Appendix 1 provides an example of the use of STAP and LTAP as disclosed in the 2007 proxy statement by Fedex Corp. Panel B summarizes the types of performance criteria used in accounting-based performance plans.
2. Several papers conclude that firms grant accounting-based compensation plans to complement existing equity-based incentive pay (Core and Packard 2016; Li and Wang 2016). Other studies related to accounting-based pay include Bettis et al. (2018), Guay et al. (2019), and Bennett et al. (2017).
3. There is a vast literature on debt contracting and the use of accounting information, including Watts and Zimmerman (1978); Smith and Warner (1979); Anderson et al. (2004); Bharath et al. (2008); Graham et al. (2008); Armstrong et al. (2010); Bradley and Roberts (2015); Christensen et al. (2016); among many others.

Figure 1 Time series trend of accounting-based compensation plans



Panel A: Percentage of firms granting accounting-based plans



Panel B: Accounting incentives as a percentage of total pay

Notes: Panel A presents the percentage of sample firms using accounting-based plans from 1998 to 2012. The sample includes 1,500 large U.S. firms covered by the ISS Incentive Lab data set from 1998 to 2012. %LTAP is the percentage of firms using compensation plans that are contingent on multiyear 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 the SEC to disclose details of annual incentive plans after December 2005. Panel B presents the magnitude of target accounting incentives as a percentage of total pay from 1998 to 2012. The sample includes 1,500 large U.S. firms covered by the ISS Incentive Lab data set 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 December 2005.

Thus, it is an empirical question as to whether or not the addition of a new accounting-based compensation plan to the CEO's pay package influences the firm's debt contracts.

Our primary tests are conducted using a sample of bank loans initiated within a year *after* the firm discloses its CEO's compensation package. As private lenders, banks are unlikely to exit a loan before maturity. Thus, bank lenders have strong incentives to understand all contracts in place related to the CEO and the borrowing firm when negotiating the terms of a new loan. Within our sample, the average maturity of bank loans is 3.46 years, close to the average performance horizon of LTAP grants (3.15 years).

Our main finding is that new CEO LTAP grants are negatively associated with the future cost of borrowing. After controlling for firm and loan characteristics, the yield spread for a newly initiated loan is, on average, 9.26 basis points (bps) lower for firms that granted their CEO an LTAP in the prior year than for firms that did not. Consistent with the idea that performance plans with shorter horizons do not provide incentive alignment between the CEO and longer-term debtholders, results for STAPs are insignificant. Confirming the importance of a performance plan's horizon, we find that among LTAPs a one-year increase in plan horizon decreases borrowing costs by 10.70 bps.

One concern is that our results may be driven by hidden factors or omitted variables that determine both executive compensation design and the cost of borrowing. We undertake additional analyses to address these concerns. We first conduct subsample analysis based on potential hidden factors that could simultaneously influence executive compensation design and the firm's cost of borrowing. For example, our results could be driven by high-performing firms that choose to grant CEO LTAPs and are also able to borrow at a lower cost. Our findings could also be driven by firms that grant LTAPs and are relatively less reliant on external financing, thus facing a lower cost of borrowing. Also, our findings might be driven by CEO turnover events, for example, when a new CEO is granted an LTAP and offered a lower borrowing cost by optimistic lenders. Our empirical analysis shows that none of these factors drive our findings. Relatedly, we test whether our results are driven by the CFO's LTAP grants rather than the CEO's, and find that this is not the case. We repeat our analyses including firm-fixed effects to control for time-invariant unobservable firm characteristics and find that the results remain unchanged. We further estimate 2SLS/IV models and use propensity score matched (PSM) samples. Our findings are robust using both approaches.

We next investigate the mechanisms by which LTAPs lower a firm's cost of borrowing. We find that LTAPs motivate CEOs to improve accounting performance measures related to debt repayment ability and reduce risk-taking incentives. Specifically, firms granting CEO LTAPs subsequently improve their interest coverage ratio and profit margins, which benefits both debtholders and shareholders. In addition, LTAP-granting firms subsequently experience a significant decline in earnings volatility and R&D spending. These results suggest that LTAPs discourage managers from engaging in risk-shifting activities that could potentially hurt debtholders. Overall, the evidence is consistent with the idea that creditors offer LTAP firms reduced loan yield spreads in anticipation of higher creditworthiness and reduced risk taking. But which of these mechanisms is more important? We conclude that the improvement in profit margin growth rate following new LTAP grants has the biggest impact on loan spread, followed by the reduction in earnings volatility, and then the increase in interest coverage. The effect of LTAPs on subsequent R&D spending has the smallest impact on future yield spread.

Because debt financing introduces the potential for shareholder-debtholder conflicts that distort managerial behavior, loans generally include contractual covenants that restrict managerial decisions with respect to investment, payout, and financing policies. Debt covenants can impose costs on the borrowing firm, as managers may be forced to pursue suboptimal investment or financing strategies (Smith and Warner 1979). If creditors perceive that LTAPs help reduce potential agency conflict then, all else constant, they will require fewer restrictive covenants following an LTAP grant. Our evidence supports this conjecture.

Firms with CEO LTAP grants are able to secure loans with lower covenant intensity. In addition, LTAPs with longer horizons are also associated with lower covenant intensity. Furthermore, creditors are less likely to include an earnings-based covenant in a loan agreement for a borrower that granted an earnings-based LTAP in the prior year. These results suggest that creditors are cognizant of LTAP design and view earnings-based LTAPs as a substitute for earnings-based covenants. Finally, LTAP-granting borrowers are less likely to have a high probability of financial covenant violation than other borrowers, confirming that LTAP grants help alleviate potential shareholder-debtholder conflicts.

Creditors also rely on monitoring to alleviate potential shareholder-debtholder conflicts (e.g., Diamond 1984). We find that when borrowing firms grant CEO LTAPs, the lead lender of a syndicated loan retains a significantly smaller share of the loan relative to firms without CEO LTAPs. This suggests that participant banks view LTAP grants as a substitute for lead lender monitoring (Holmstrom and Tirole 1997; Vasvari 2008; Ivashina 2009). The benefits of LTAPs in alleviating agency costs should be especially valuable to creditors when monitoring is relatively costly or ineffective. Supporting this conjecture, we find that loan yield spreads are significantly lower after LTAP grants when the lead lender and borrowing firm are geographically distant, that is, when monitoring is costly and/or less effective (e.g., Kang and Kim 2008).

We further examine whether financial markets recognize the benefits of LTAPs in reducing a firm's credit risk by analyzing changes in firm credit ratings and CDS spreads following LTAP grants. We find that firms receive higher credit ratings after granting CEO LTAPs. We also find that CDS spreads, which capture the capital market's perception of a firm's default risk, decrease significantly after LTAP grants. These results corroborate our earlier findings that LTAP grants boost firms' overall creditworthiness through improved profitability and reduced earnings volatility.

We also examine whether our findings are driven by features of LTAP plans other than the multiyear accounting-based performance contingency. In our sample, LTAPs pay out either a fixed cash value (35 percent of plans) or a fixed number of shares (62 percent of plans). It is important to understand whether it is the accounting performance contingency or the type of payout (or both) that influence the cost of borrowing. We first compare the influence of LTAP grants on future loan yield spreads to that of performance grants contingent on total stock return (TSR). We find that TSR-contingent grants have no significant relation to future loan yield spreads. Furthermore, controlling for TSR grants in regression models does not affect the negative relation between LTAP grants and future loan yield spreads. In addition, there is no significant difference in loan yield spreads between firms granting cash-based versus stock-based LTAPs. These results suggest that the lower borrowing cost following LTAP grants is driven by the accounting-based performance contingency and not the form of payout. Given that managers will not receive payment (equity or cash) until the end of the LTAP performance period and unless they meet their performance goals, it seems natural for managers to focus primarily on the accounting performance rather than on the type of payout.

We next examine whether the design of performance hurdles in LTAP plans influences the cost of borrowing. Past literature suggests that the concavity of the performance-payout function affects a CEO's risk-taking decisions (Bennett et al. 2017). We find that LTAPs with more concave performance-payout functions, which provide weaker risk-taking incentives, are associated with significantly lower borrowing costs. We also investigate whether the level of an LTAP's accounting performance target influences the cost of borrowing. Extremely easy targets provide little incentive; extremely difficult targets may cause managers to either give up or "swing for the fences." Using a subsample of LTAPs that disclose valid and replicable performance targets, we find that only LTAPs with performance targets that are "reasonable" relative to historical performance are associated with lower future borrowing costs. Together, our findings highlight the importance of setting performance hurdles that better align the interests of debtholders and shareholders. In determining the cost of borrowing, lenders value not only the accounting-based

performance contingency but also the concavity of the payout function and the reasonableness of the target.

A number of recent papers investigate the economic impact of the recent regime shift in executive compensation. We contribute to this growing literature by providing empirical evidence on how and why creditors react to changes in executive compensation packages. We identify specific mechanisms through which new LTAP grants affect a firm's credit risk, and how creditors adjust different aspects of loan contracts accordingly. Our findings can help researchers and practitioners better understand the impact of recent compensation trends and identify the mechanisms through which firms benefit from the addition of accounting-based incentive pay.

Furthermore, our paper adds to the literature on the interplay between executive compensation contracts and debt contracts. Because historically U.S. public firms emphasized equity incentives, prior research focused on stock price-based incentive pay.[4] Given the growing importance of accounting-based performance plans in executive compensation in the United States, recent studies have begun to investigate the relation between these plans and creditor's interests (e.g., Rhodes 2016; Akins et al. 2019). Complementing these studies, we provide some of the first empirical evidence on the impact of accounting-based compensation plans on the terms of debt contracts.

A related and complementary study by Bizjak et al. (2019) examines the relation between debt contracts and equity grants with either earnings, sales, or stock price-based targets. They find that only equity awards contingent on earnings or sales metrics are negatively related to the cost of borrowing. We show that lenders value a plan's *long-term* accounting performance contingency regardless of whether it pays out in equity or cash. Furthermore, we provide evidence on the mechanisms through which LTAPs influence credit risk and the potential for shareholder-debtholder conflict, including unique evidence from the CDS market that captures the capital market's perception of a firm's default risk. We also show that LTAPs serve as a substitute for lender monitoring and are especially valuable when monitoring costs are high. Finally, we provide evidence on the importance of the design of performance hurdles used in LTAPs. Collectively, our findings shed light on when, how, and why including long-term accounting performance contingencies in executive contracts influence borrowing cost.

2. Sample and variable construction

Our primary analysis examines how granting an accounting-based compensation plan to the CEO affects the terms of loan contracts. Specifically, we study a sample of new bank loans and test to see if granting the CEO an accounting-based compensation plan in the year prior influences a firm's cost of borrowing. Compared to public lenders, private bank lenders have limited options should they want to exit a loan prior to maturity. In addition, the terms of bank loans are negotiated directly with the firm. Therefore, bank lenders have strong incentives to collect and analyze information on compensation contracts and any other firm information that pertains to creditworthiness. If lenders believe that accounting-based performance plans reduce a borrower's credit risk, all else constant, they will agree to lower yield spreads and fewer and/or less restrictive loan covenants for firms that grant such plans.

Sample selection: Accounting-based performance plans

To obtain our sample, we start with U.S. firms covered by the ISS Incentive Lab data set from 1998 to July 2012. The Incentive Lab data set contains the largest 750 firms in terms of market capitalization each year, with more than 1,000 firms covered in total due to back-fill and forward-fill of data for each firm included. All sample observations must be covered by the ISS Incentive

4. There is a substantial related literature too large to enumerate here, including Jensen and Murphy (1990); DeFusco et al. (1990); John and John (1993); Begley and Feltham (1999); Billet et al. (2010); Ortiz-Molina (2006); Coles et al. (2006); Sundaram and Yermack (2007); Brockman et al. (2010); Tchistyi et al. (2011); Hayes et al. (2012); Anantharaman et al. (2013); Kabir et al. (2013).

Lab, as it provides details of executive compensation contracts from annual proxy statements (DEF14A). Relevant details of a CEO's performance-based compensation plan include the performance criteria, performance evaluation period, and plan payout. To be classified as an accounting-based performance plan, at least one of the performance criteria used must be an accounting measure. Accounting-based performance plans with evaluation periods longer than 12 months are classified as long-term plans (LTAPs) and those with shorter evaluation periods are short-term plans (STAPs). Because the SEC did not mandate that firms disclose details of short-term incentive plans until December 2005, our analysis of STAPs is conducted only for the 2006 to 2012 period.[5]

Appendix 1, panel A, provides an example of the detailed terms of accounting-based performance plans adopted by FedEx in fiscal year 2007. Panel B provides summary statistics of the accounting measures used in our sample plans. Earnings-based measures, such as earnings per share, ROA, net income, and ROE, are the most widely used performance criteria. In our sample, 85.06 percent of LTAPs and 90.86 percent of STAPs contain at least one earnings-based performance criteria. Sales-based criteria are the next most popular measure, followed by cash flow and economic value added.

Other CEO and compensation data are from ExecuComp. Accounting data are from COMPUSTAT. Firm-year observations without the necessary accounting or executive compensation information are excluded. Over half of our sample firms (52.42 percent) grant LTAPs at least once during the sample period. During the post-2005 period, 80.20 percent of firms grant STAPs. For LTAPs, the mean 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 test or control variables in our analysis.

Sample selection: New bank loan contracts

Private bank loans (a.k.a. facilities or tranches) are identified using the Thomson Reuters DealScan database. Because we examine how the grant of an accounting-based compensation plan affects the terms of debt contracts, we want to construct an experiment in which lenders observe the CEO's preexisting compensation package before they negotiate terms of the loan. For each firm year with valid CEO compensation data in the ISS Incentive Lab, we investigate bank loans initiated by the borrowing firm within a one-year window *after* the firm publicly discloses its compensation information in a proxy statement. In total, there are 8,658 facilities with valid loan data from DealScan that are initiated within a one-year window following the disclosure of the CEO's compensation package. We lose 90 observations due to missing CEO data and 473 observations due to incomplete firm data.

Our final sample consists of 8,095 new bank loan facilities made to 1,094 firms between 1998 and 2012. Of the new bank loans, 1,974 (24.4 percent) are originated within one year after the borrower's proxy statement discloses that the firm has granted a new LTAP to its CEO; 75.60 percent of new loans are not associated with a new CEO LTAP grant. Of the 2,489 new loans originated between 2006 and 2012, 1,996 (80.20 percent) are associated with a new CEO STAP granted in the prior year.

Following the literature, we measure the cost of borrowing as the all-in drawn spread reported in DealScan, which represents the bps that the borrower pays over LIBOR for each dollar drawn down (e.g., Graham et al. 2008). The first section of Table 1 presents descriptive statistics for our loan facilities. The average (median) yield spread is 139.53 (100) bps over LIBOR and is comparable to that documented in the literature (Demiroglu and James 2010; Berg et al. 2015). The average (median) facility amount is $728 (400) million and the average (median) number of lenders per facility is 11.92 (10). These numbers are slightly larger than those documented in prior work, as our sample consists of the relatively large public firms covered in the ISS Incentive Lab database.

5. In untabulated robustness tests, we confirm that all our results for LTAPs also hold for the 2006 to 2012 subperiod. In addition, we obtain consistent results when we exclude financial services and utility firms from the sample.

TABLE 1
Summary statistics

Variable	*N*	Mean	Median	Min	Max	*SD*
Loan characteristics						
Loan yield 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 ($m)	8,095	728	400	15	6000	945
#Lenders	8,095	11.918	10	1	42	8.556
Covenant intensity	3,887	1.815	2	0	4	1.220
Prob(covenant violation)	3,298	0.221	0.015	0	1	0.367
Credit rating	9,590	9.060	9	1	17	3.167
CDS spread	5,445	188.874	89.602	12.831	2169.299	308.944
Compensation plans						
LTAP (0/1)	8,095	0.244	0			0.429
STAP (0/1)	2,489	0.802	1			0.399
LTAP plan horizon (months)	1,974	37.750	36	13	122	8.857
CEO and firm characteristics						
CEO tenure	8,095	7.063	5	1	48	6.182
Salary ($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
Firm size	8,095	8.728	8.596	5.784	13.413	1.445
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
Earnings quality	8,095	0.004	0.003	−0.140	0.162	0.046
Z-score	8,095	12.685	3.563	−0.210	392.676	46.892

Notes: 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 *Credit rating* and *CDS spread* are based on firm-year observations covered in the Incentive Lab database and that have credit rating or CDS five-year spread information in Mergent, COMPUSTAT, or HIS Markit, respectively. See Appendix 2 for variable definitions.

3. Accounting-based performance plans and loan yield spreads

Model specification

We use the following multivariate model to examine the loan yield spread after lenders observe whether or not the firm grants an accounting-based performance plan to its CEO:

$$Loan\ yield\ spread_t = \alpha + \beta_1 LTAP_{t-1} + \beta_2 STAP_{t-1} + \sum_{k=3}^{n} \beta_k\ control\ variable_{kt-1}. \quad (1)$$

In this regression, each observation represents a single loan facility. The explanatory variables of interest are *LTAP* and *STAP*, which equal one if the most recent prior proxy statement disclosed the grant of a new CEO *LTAP* or *STAP*, respectively.

Following earlier studies, we control for firm and loan characteristics that are likely to be associated with loan yield spreads (e.g., Bradley and Roberts 2015; Denis and Mihov 2003;

Graham et al. 2008). Controls for loan characteristics include loan size and maturity, number of lenders, and loan type and primary purpose indicators. Controls for firm characteristics include firm size, market-to-book, leverage, ROA, asset tangibility, cash-flow volatility, quartile rank of the Altman's *Z*-score, and quartile rank of the absolute value of discretionary accruals as a proxy for earnings quality.[6] We also include controls for a CEO's characteristics and compensation package: specifically, CEO tenure, salary, equity ownership, and the delta and vega of the CEO's equity portfolio. Appendix 2 provides detailed variable definitions. Table 1 presents the summary statistics of the control variables. All models include year and industry fixed effects. Due to the inclusion of fixed effects, we do not report the constant term when presenting regression results. Statistical significance is calculated based on robust standard errors clustered at the firm level. All non-binary variables are winsorized at 1 and 99 percent values.

Baseline results

Table 2 presents baseline results. In column (1), the LTAP indicator coefficient is significantly negative and reveals that the yield spread for a newly initiated bank loan is 9.26 bps lower for firms that granted an LTAP to their CEO in the year prior than for other borrowing firms. The 9.26 bps represents a 9.3 percent reduction in the loan yield spread based on the sample median (100 bps). In contrast, the STAP indicator coefficient is not statistically significant, indicating that STAPs are not associated with the future cost of borrowing.[7]

As reported earlier, the vast majority of borrowers in our sample (80.20 percent) routinely grant CEO STAPs. Indeed, Guay et al. (2019) find that short-term bonus plans are primarily used to satisfy a CEO's liquidity and consumption needs rather than to provide incentives. Moreover, STAPs expire within a year. In contrast, the average LTAP horizon (37.75 months) is very close to the average maturity in our bank loan sample (41.47 months), providing lenders and managers with a similar time horizon. Thus, the STAP indicator may be insignificant due to a lack of variation in the data and/or the short time horizon of STAPs. Prior research shows that short-term bonus plans can induce managers to manipulate annual accounting performance (Healy 1985; Guidry et al. 1999, among many others). LTAPs mainly differ from short-term plans in that they measure accounting performance over a multiyear horizon (Holmstrom and Milgrom 1987; Murphy 2013). It is likely more difficult to manipulate accounting performance for an extended period of time without suffering a reversal or some other negative impact of earnings manipulation. Even if CEOs with LTAPs have incentives to manage earnings to meet performance goals, they would be more likely to do so near the end of the performance vesting period and not in the year following the grant (Edmans et al. 2017). For these reasons, and due to the lack of significant results for STAPs, we focus solely on LTAPs going forward.

The above discussion suggests that loan yield spreads should be negatively related to plan horizon. Column (2) of Table 2 presents regressions including plan horizon as the explanatory variable of interest, measured as the duration (in months) of an LTAP's performance evaluation period. For borrowers that did not grant a new LTAP, plan horizon is set to zero. The plan horizon coefficient is −0.278 and highly significant. In column (3), we restrict the sample to include

6. Our results are robust to using an alternative control of accounting quality, the number of material internal control weaknesses reported by a firm under Section 404 of the Sarbanes Oxley Act in a year (Costello and Wittenberg-Moerman 2011).

7. We further investigate whether specific types of accounting performance criteria, summarized in panel B of Appendix 1, drive the negative relation between LTAP grants and loan yield spread. In untabulated test, we rerun the baseline regression replacing the *LTAP* dummy with five dummy variables indicating each type of performance criteria used. The results show that the coefficients for all five types of criteria are negative, with only the coefficient on earnings-based criteria being significant at the conventional level. This is consistent with the dominance of earnings-based criteria used in LTAPs.

TABLE 2
Loan yield spread and accounting-based compensation plans

	(1) Whole sample	(2) Whole sample	(3) LTAP sample
LTAP (0/1)	−9.261***		
	(−2.94)		
STAP (0/1)	0.987		
	(0.26)		
LTAP plan horizon		−0.278***	−0.892***
		(−3.30)	(−3.29)
Ln(*CEO tenure*)	−2.476	−2.507	−8.534**
	(−1.31)	(−1.33)	(−2.25)
Ln(*Salary*)	−0.041	0.039	5.089
	(−0.01)	(0.01)	(0.99)
CEO share ownership	84.806	85.667	−52.233
	(1.61)	(1.62)	(−0.43)
CEO vega	−9.025**	−9.076**	−14.694**
	(−2.09)	(−2.10)	(−2.25)
CEO delta	0.077	0.055	1.259
	(0.09)	(0.06)	(0.94)
Ln(*Loan maturity*)	−1.433	−1.394	−0.208
	(−0.31)	(−0.31)	(−0.02)
Ln(*Loan size*)	−12.219***	−12.268***	−6.805**
	(−7.27)	(−7.28)	(−2.44)
Firm size	−7.197***	−7.074***	−11.675***
	(−3.36)	(−3.30)	(−3.65)
Market-to-book ratio	−2.041	−2.022	2.036
	(−0.96)	(−0.95)	(0.47)
#Lenders	−0.314	−0.314	−0.235
	(−1.63)	(−1.63)	(−0.80)
Leverage	60.011***	60.230***	17.528
	(3.95)	(3.95)	(0.70)
ROA	−219.066***	−218.666***	−353.959***
	(−5.75)	(−5.75)	(−4.99)
Tangibility	5.046	5.058	17.662
	(0.38)	(0.39)	(0.74)
Cash flow volatility	379.505***	379.519***	429.358***
	(5.90)	(5.89)	(3.76)
Earnings quality quartile	2.163*	2.138*	0.552
	(1.84)	(1.81)	(0.35)
Z-score quartile	−16.946***	−16.958***	−17.025***
	(−7.56)	(−7.57)	(−4.85)
Industry and year dummies	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes
Observations	8,095	8,095	1,974
R^2	0.611	0.611	0.670

Notes: This table presents OLS regression results of loan yield spread on accounting-based compensation plans. Explanatory variables are measured in year $t - 1$. The LTAP sample only includes observations with a disclosed new LTAP grant to the CEO in the prior year. See Appendix 2 for variable definitions. We report in parentheses *t*-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

only borrowers with new LTAP grants to pinpoint how creditors respond to variation in plan horizon among LTAP-granting firms. Within this subsample, the plan horizon coefficient is −0.892 and significant at the 1 percent level; this implies that extending an LTAP's horizon by 12 months is associated with a 10.70 bps reduction in the cost of borrowing. Overall, these results highlight the importance of a longer plan horizon in reducing a firm's subsequent cost of borrowing.

Addressing endogeneity concerns

To confirm the validity of our results, it is important to address endogeneity concerns. Our research design examines loan initiations that take place within a year *after* the borrowing firm publicly discloses its compensation contracts, thus attenuating concerns regarding explicit reverse causality. However, it is possible that omitted variables or hidden factors jointly determine the design of CEO compensation contracts and a firm's cost of borrowing. As discussed below, we undertake additional empirical analyses to address these concerns.

Potential hidden factors

We conduct subsample analysis based on three possible hidden factors that might simultaneously influence the firm's compensation contracts and its borrowing cost: (i) prior performance, (ii) the need for external financing, and (iii) the effect of a new CEO.

CEOs of firms with strong accounting performance may be more willing to accept accounting-based pay and simultaneously issue debt to take advantage of the lower borrowing cost given their firm's superior performance. To assess this possibility, we divide our sample into quartiles based on the prior year's ROA. If the reduction in borrowing cost is driven by strongly performing firms who simultaneously borrow on more favorable terms, we should find that the negative relation between LTAP grants and subsequent borrowing cost is concentrated among strong performers. When we estimate equation (1) for the bottom and top performance quartiles, however, results are inconsistent with this conjecture. As columns (1) and (2) of Table 3 show, in both groups, borrowers granting LTAPs enjoy significantly lower yield spreads than spreads for other borrowers. For the bottom performance quartile, the estimated reduction in borrowing cost is 17.75 bps; for the top quartile it is 11.95 bps.

It is also possible that firms granting CEO LTAPs have different external financing needs than other borrowing firms. For example, firms that award LTAPs may be less reliant on external financing, and thus able to borrow at a lower cost. To address this, we divide our sample into quartiles each year 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 borrowers in both the lowest and highest quartiles experience significantly lower borrowing cost following LTAP grants (11.28 and 14.96 bps, respectively). These results suggest that the lower borrowing cost is not driven by differing external financing needs.

Furthermore, 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. To address this possibility, we first examine the relation between CEO tenure and LTAP grants. For our sample, the percentage of new CEOs (*CEO tenure* ≤ three years) receiving a new LTAP grant is 25.70 percent: a similar percentage, 23.78 percent, of seasoned CEOs (*CEO tenure* > three years) receive a new LTAP grant. Moreover, during the post-2005 period, the percentage of new CEOs granted an LTAP (31.77 percent) is actually lower than the percentage of seasoned CEOs (36.27 percent). These basic statistics suggest that new LTAPs are not predominantly granted to new CEOs. Next, we divide the sample into quartiles each year based on CEO tenure. Column (5) of Table 3 shows that for CEOs in the bottom quartile, the cost of borrowing is 10.79 bps lower for LTAP firms. For CEOs in the top quartile, the analogous reduction in borrowing cost is greater at 22.63 bps (column 6). Prior research suggests that CEOs gain power as their tenure increases (e.g., Hermalin and Weisbach 1998; Berger et al. 1997; Harford and Li 2007). As a result, lenders may value LTAPs more when CEOs have greater influence. Moreover, CEOs with longer tenure tend to have a shorter horizon as they are closer to retirement. LTAPs

TABLE 3
Loan yield spread and accounting-based compensation plans: Hidden factors

	(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)	−17.750**	−11.946***	−11.284**	−14.957*	−10.785**	−22.634***
	(−2.24)	(−3.18)	(−2.24)	(−1.91)	(−2.17)	(−4.04)
Ln(*CEO tenure*)	0.620	−3.685*	0.796	−1.645	3.818	9.870
	(0.13)	(−1.84)	(0.30)	(−0.35)	(0.75)	(1.06)
Ln(*Salary*)	1.214	4.546	6.622**	−10.251	3.628	12.827***
	(0.45)	(1.33)	(2.10)	(−1.32)	(1.54)	(2.79)
CEO share ownership	−75.383	110.245	118.404	−38.121	164.500	117.769
	(−0.58)	(1.48)	(1.49)	(−0.32)	(1.44)	(1.38)
CEO vega	−16.710	−12.117**	−9.419	−11.587	−17.892**	−3.090
	(−1.52)	(−2.22)	(−1.63)	(−0.77)	(−2.30)	(−0.44)
CEO delta	0.966	0.219	0.432	2.005	−2.008	−0.644
	(0.69)	(0.23)	(0.51)	(1.11)	(−1.35)	(−0.67)
Ln(*Loan maturity*)	−9.670	−13.928*	8.076	−17.525**	−3.255	−0.244
	(−1.05)	(−1.79)	(1.18)	(−2.12)	(−0.47)	(−0.02)
Ln(*Loan size*)	−9.379***	−14.035***	−15.272***	−8.131**	−11.875***	−14.276***
	(−3.16)	(−4.74)	(−5.53)	(−2.42)	(−4.49)	(−3.82)
Firm size	−9.397**	−2.152	−11.953***	−0.239	−10.352***	−4.207
	(−2.32)	(−0.78)	(−4.29)	(−0.04)	(−3.84)	(−0.93)
Market-to-book ratio	−4.626	−7.589***	−5.634**	−11.008**	8.953***	−4.991
	(−0.72)	(−3.63)	(−2.33)	(−2.01)	(2.62)	(−1.51)
#Lenders	−1.178***	0.397	0.243	−1.372***	−0.256	−0.682**
	(−3.07)	(1.13)	(0.66)	(−3.02)	(−0.82)	(−1.99)
Leverage	65.475**	44.957***	78.051***	154.295***	57.409***	78.319***
	(2.14)	(3.17)	(4.95)	(4.05)	(2.89)	(3.08)

(The table is continued on the next page.)

TABLE 3 (continued)

	(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
ROA	−296.798***	9.913	−163.401***	−208.822**	−392.031***	−173.677***
	(−3.25)	(0.26)	(−4.00)	(−2.35)	(−7.12)	(−3.11)
Tangibility	37.941	9.680	19.663	−22.261	18.750	−12.951
	(1.01)	(0.62)	(0.79)	(−0.68)	(1.11)	(−0.50)
Cash flow volatility	372.237***	330.746***	176.264**	653.947***	302.778***	283.538***
	(2.60)	(3.68)	(2.34)	(4.11)	(3.26)	(2.61)
Earnings quality quartile	3.236	0.722	−0.748	3.329	1.552	4.855**
	(1.09)	(0.45)	(−0.40)	(0.99)	(0.82)	(2.05)
Z-score quartile	−20.403***	−9.587***	−11.017***	−7.584	−22.322***	−7.528*
	(−3.40)	(−3.11)	(−3.95)	(−1.28)	(−6.19)	(−1.74)
Industry and year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,996	1,970	1,951	1,932	2,629	1,811
R^2	0.608	0.664	0.664	0.580	0.645	0.637

Notes: This table presents OLS regression results of loan yield spread on long-term accounting-based compensation plans. Regressions are run separately for observations with values in the top quartile and for observations with values in the bottom quartile of variables used to stratify the sample. Quartiles are defined yearly. Independent variables are measured in year $t - 1$. See Appendix 2 for variable definitions. We report in parentheses t-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

may help extend that horizon. Overall, these results do not support the idea that the negative association between LTAPs and borrowing cost is driven by new CEOs.

Our analysis above focuses on accounting-based compensation plans granted to CEOs. Several prior studies show that the CFO's compensation has a significant impact on earnings quality and the firm's debt maturity structure (e.g., Chava and Purnanandam 2010; Jiang et al. 2010). Thus, we also investigate whether our findings for CEO LTAPs are driven by their correlation with CFO compensation. We calculate the same compensation variables for each CFO as we do for each CEO. In untabulated tests, we find that after including indicator variables for both CEO and CFO LTAP grants, the coefficient for CEO *LTAP* remains significantly negative, while the coefficient for CFO *LTAP* is positive and insignificant. As CEO and CFO compensation are likely to be highly correlated, we also regress the CFO *LTAP* indicator variable on the analogous CEO indicator variable and use the residual as an explanatory variable. We find that the residual component of CFO pay is not related to future loan yield spread. These findings indicate that CFO compensation does not have an independent impact on the firm's cost of borrowing.

Finally, it is possible that the negative association between LTAP grants and the subsequent cost of borrowing is driven by time-invariant unobservable firm characteristics. For example, borrowing firms granting LTAPs may, for some unobservable reason, be more creditworthy than other borrowers that do not use such plans. To address this, we include firm fixed effects in our baseline regression model. The *LTAP* coefficient remains negative and highly significant at −8.465 after the inclusion of firm fixed effects (see column 1 of Table 4).

2SLS/IV estimation

To further address endogeneity concerns related to unobserved time-varying omitted variables, we estimate a 2SLS/IV model. We construct two instrumental variables (IVs) that are related to the firm's tendency to grant an LTAP but are unlikely to be related to the firm's cost of borrowing. The first IV is the proportion of firms granting LTAPs among firms sharing the same compensation consultant, excluding firms in the borrowing firm's industry (defined by 1-digit SIC code). This exclusion reduces the possibility of violating the exclusion restriction due to industry-specific compensation practices.[8] Ceteris paribus, compensation consultants familiar with LTAPs are more likely to recommend them when advising a board. Because firms only began disclosing the identity of their compensation consultant following a 2006 SEC rule change, this IV limits our analysis to post-2005 observations.

A second IV is derived from option backdating scandals that attracted wide public scrutiny after the publication of Lie (2005). Driven by unfavorable public sentiment, firms in industries with a high incidence of publicized backdating scandals are more likely to use LTAPs to replace stock options after 2005 (Li and Wang 2016). Following the literature, our second IV is a *High Glass-Lewis industry* indicator variable that equals one if the firm's industry has five or more firms identified in the Glass-Lewis report as option backdaters.[9] We do not expect the number of

8. Compensation consultants will not randomly assign the use of LTAPs across their clients. If their recommendation to use an LTAP is related to some firm characteristics that are correlated with firms' cost of borrowing, this IV may not satisfy the exclusion restriction. Our extensive set of regression control variables, however, should help mitigate this concern. Nonetheless, we want to acknowledge a potential caveat for this IV.

9. The Glass, Lewis & Co. Yellow Card Trend Alert Report was released on June 14, 2007. It compiled information on 257 companies (as of March 2007) that announced SEC inquiries, Justice Department subpoenas, earnings restatements, or internal reviews related to historical option grants. In total, 13 of the 48 Fama and French industries have five or more firms identified in the Glass-Lewis report: Business services, electronic equipment, computers, pharmaceutical products, retail, wholesale, communication, trading, measuring and control equipment, machinery, transportation, medical equipment, and restaurants, hotels, motels.

TABLE 4
Loan yield spread and accounting-based compensation plans: Endogeneity

	(1)	(2)	(3)
		IV/2SLS	
	Firm fixed effects	First stage	Second stage
LTAP (0/1)	−8.465**		
	(−2.17)		
LTAP ratio of a firm's compensation consultant		1.056***	
		(3.19)	
High Glass-Lewis industry (0/1)		0.763**	
		(2.07)	
LTAP predicted			−65.671**
			(−2.22)
Ln(*CEO tenure*)	0.945	0.066	−9.093***
	(0.48)	(1.08)	(−2.73)
Ln(*Salary*)	−6.202	0.074	12.896***
	(−1.16)	(0.63)	(3.00)
CEO share ownership	79.596	−4.634**	142.368
	(0.70)	(−1.98)	(1.11)
CEO vega	−5.835	−0.335*	−13.468*
	(−1.09)	(−1.74)	(−1.65)
CEO delta	−1.035	−0.054*	−2.415
	(−1.00)	(−1.74)	(−1.35)
Ln(*Loan maturity*)	−0.437	−0.030	8.761
	(−0.09)	(−0.32)	(1.00)
Ln(*Loan size*)	−11.471***	0.015	−9.214***
	(−7.01)	(0.38)	(−3.20)
Firm size	−1.222	0.148**	−11.406***
	(−0.22)	(2.56)	(−3.39)
Market-to-book ratio	−0.263	−0.076	−14.422***
	(−0.10)	(−1.06)	(−3.52)
#Lenders	−0.533***	−0.002	−0.765**
	(−2.83)	(−0.31)	(−2.48)
Leverage	55.869***	0.403	58.322***
	(3.02)	(1.05)	(2.97)
ROA	−176.984***	1.211	−123.968**
	(−4.59)	(1.35)	(−2.08)
Tangibility	22.642	0.153	−9.126
	(0.77)	(0.45)	(−0.60)
Cash flow volatility	108.259	−4.898**	351.709***
	(1.35)	(−2.49)	(2.78)
Earnings quality quartile	0.168	0.171***	−14.872***
	(0.15)	(2.58)	(−3.66)
Z-score quartile	−8.610***	−0.040	3.827**
	(−3.32)	(−1.08)	(1.99)
Cragg-Donald Wald *F*-stat		23.01	
Stock-Yogo weak ID test critical values			
10% maximal IV size		19.93	
15% maximal IV size		11.59	
20% maximal IV size		8.75	
25% maximal IV size		7.25	

(The table is continued on the next page.)

TABLE 4 (continued)

	(1)	(2)	(3)
		IV/2SLS	
	Firm fixed effects	First stage	Second stage
Industry and year dummies	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes
Observations	8,095	2,489	2,489
R^2	0.770	0.153	0.446

Notes: This table presents regression results from tests designed to control for endogeneity. The dependent variable is loan yield spread in columns (1) and (3), and *LTAP* indicator variable in column (2). Column (1) includes firm fixed effects and columns (2) and (3) report results from the IV/2SLS estimations. Instrument variables (IVs) are the proportion of LTAP-granting firms that use the sample firm's compensation consultant and are in unrelated industries, and a binary variable that equals one if the firm's industry had more than five firms appearing in the Glass-Lewis report, and zero otherwise. Explanatory variables are measured in year $t - 1$. See Appendix 2 for variable definitions. We report in parentheses *t*-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

past industry-level option backdating events to directly affect a firm's future cost of borrowing in the post-2005 sample.

The last two columns of Table 4 present 2SLS/IV regression results.[10] Column (2) presents first step probit regression results, which predict a firm's propensity to grant an LTAP. The dependent variable is the LTAP indicator; explanatory variables are the IVs and control variables as in Table 2. As expected, the likelihood of an LTAP grant is significantly positively related to both IVs. The Cragg-Donald Wald *F*-statistic for the IVs is 23.01 and is higher than the Stock-Yogo weak ID test critical values for two IVs (Stock and Yogo 2005).

Column (3) presents second stage regressions of yield spread on the predicted *LTAP* value and control variables. The coefficient for predicted *LTAP* is negative and statistically significant at the 5 percent level. The magnitude of the coefficient for the predicted *LTAP* variable seems large, but an assessment of its economic impact puts it into perspective. A movement from the median to 75th percentile of predicted *LTAP* is associated with a 9.64 bps reduction in *Loan yield spread*; the same movement for the original LTAP indicator using the OLS coefficient in column (1) of Table 2 is associated with a 9.26 bps reduction in yield spread. Overall, 2SLS/IV analysis supports a causal relationship between LTAP grants and a lower future cost of borrowing.

Additional tests

We conduct numerous additional tests to verify the negative relation between LTAP grants and the future cost of borrowing. Specifically, we rerun our analyses (i) using only the largest loan facility in each package, (ii) controlling for the credit risk associated with each loan package,

10. Given that the first stage in the IV/2SLS analysis is a probit (nonlinear) model and the second stage is a linear model, the traditional two-stage IV/2SLS estimation procedure which requires OLS regressions in both stages may not produce consistent estimates (Wooldridge 2010). Instead, we follow Adams et al. (2009) and use a two-step procedure. Specifically, in the first step, we use a probit model that regresses the *LTAP* dummy on the two instruments and all other control variables. In the second step, we use the predicted values from the first step as the IV and run a 2SLS regression as normal.

(iii) using a PSM sample, and (iv) examining changes in loan yield spreads surrounding the adoption of FASB ASC Topic 718 in 2005. Results of all these additional tests confirm our findings. Details are presented in the online Appendix.[11]

How do LTAPs reduce loan yield spreads?

In this section, we begin to explore specific mechanism(s) by which accounting-based performance plans influence the cost of borrowing. We examine two nonmutually exclusive ways in which LTAP grants could prove valuable to a firm's creditors.

First, LTAPs tie CEO pay to accounting measures that are positively associated with the firm's ability to repay debt. This provides the CEO with incentives to improve those measures and thus could reduce the borrowing firm's credit risk. We test the validity of this mechanism by analyzing two accounting measures that are directly tied to debt repayment ability: interest coverage ratio (EBIT over interest) and profit margin growth rate (EBIT/Sales growth). Given the high variability and nonlinearity of the interest coverage ratio, we use its yearly quartile rank, instead of its level, in our analysis. Using changes in interest coverage quartile and EBIT/Sales growth from year $t-1$ to year t as dependent variables, we run regressions using the LTAP grant indicator in year $t-1$ and changes in other explanatory variables from our baseline model as right-side variables. We also include the lagged value of the dependent variable to control for possible mean reversion, along with industry and year fixed effects. The sample size is restricted by the data availability of the dependent variable. Results, presented in columns (1) and (2) of Table 5, show significant positive coefficients for the LTAP indicator. This confirms that one mechanism through which LTAPs reduce borrowing cost is anticipated improvement in the firm's ability to repay debt relative to other borrowers.

Second, LTAPs could discourage CEOs from engaging in risk-taking activities. It is well documented that CEOs, acting on behalf of shareholders, may take on risk that increases shareholder value at the expense of debtholders (Galai and Masulis 1976; Jensen and Meckling 1976; Myers 1977, among others). By tying the CEO's pay to performance measures that are valued by debtholders, accounting-based compensation plans better align the interests of managers with those of debtholders and reduce the manager's incentives to engage in risk-shifting activities that may hurt debtholders. Moreover, risk-shifting activities could increase the volatility of a firm's accounting performance and thus may decrease the probability of meeting prespecified accounting performance hurdles. Therefore, we expect that managers with LTAPs will be less likely to engage in risk-shifting activities. To test this conjecture, we regress changes in earnings volatility and R&D investments (R&D/Assets) from $t-1$ to t on the LTAP grant indicator for year $t-1$ and other variables as indicted above. Past literature generally finds that riskier operations lead to more volatile corporate earnings and that R&D expenditures lead to higher firm-level risk (Li et al. 2013; Coles et al. 2006). LTAPs provide incentives to decrease both measures. Results, presented in columns (3) and (4) of Table 5, show a significant reduction in earnings volatility and R&D spending following new LTAP grants.

The evidence above is consistent with the idea that creditors offer LTAP firms reduced loan yield spreads in anticipation of higher creditworthiness and reduced risk taking. But which of

11. Please see supporting information, "Online Appendix" as an addition to the online article. In untabulated tests, we further examine whether the use of LTAPs affects loan features other than yield spread. If, for example, LTAP firms borrow at a lower yield spread but also have shorter loan maturities or lower loan amounts, it would be difficult to conclude that the cost of borrowing is unambiguously lower for LTAP firms. We run regressions with either loan maturity or loan amount as the dependent variable and with the LTAP grant indicator or *LTAP plan horizon* variable, *Loan yield spread* and other control variables, as independent variables. We find that there is no difference in loan maturity or loan amount for observations with and without LTAP grants or for LTAP grants with different plan horizons. This suggests that the lower yield spread associated with LTAP firms is not associated with a lower loan amount or a shorter loan maturity. In other words, lenders do not seem to be trading off protection mechanisms in the face of LTAPs.

TABLE 5
Loan yield spread and accounting-based compensation plans: Mechanisms

	(1) *EBIT/interest* quartile	(2) *EBIT/sales growth*	(3) *Earnings volatility*	(4) *RD/AT*
LTAP (0/1)	0.020*	0.055***	−0.001***	−0.001***
	(1.74)	(2.66)	(−2.78)	(−3.83)
Ln(*CEO tenure*)	0.003	0.044**	0.000	0.000
	(0.31)	(2.44)	(1.34)	(0.82)
Ln(*Salary*)	−0.005	−0.041	−0.000	0.001*
	(−0.28)	(−0.85)	(−1.28)	(1.69)
CEO share ownership	−0.654**	−0.302	−0.002	0.011
	(−2.08)	(−0.45)	(−0.22)	(1.16)
CEO vega	0.076**	0.007	−0.002**	0.001
	(2.44)	(0.16)	(−2.54)	(0.85)
CEO delta	0.005	0.001	−0.000	−0.000
	(1.15)	(0.16)	(−0.95)	(−1.31)
Firm size	0.394***	0.512***	−0.004***	−0.016***
	(8.29)	(7.03)	(−3.32)	(−9.03)
Market-to-book ratio	0.007	0.020	0.000	−0.000
	(0.55)	(1.05)	(1.31)	(−0.52)
Leverage	−1.104***	−0.261	0.001	−0.007*
	(−10.59)	(−1.30)	(0.31)	(−1.84)
ROA	6.152***	3.511***	−0.053***	−0.029***
	(27.86)	(8.37)	(−7.85)	(−4.68)
Tangibility	−0.440***	0.230	−0.022***	0.030***
	(−2.59)	(0.57)	(−4.26)	(4.19)
Cash flow volatility	−0.344	−0.280	0.383***	0.000
	(−0.83)	(−0.27)	(18.16)	(0.01)
Earnings quality quartile	0.003	−0.005	−0.000	0.000**
	(0.74)	(−0.65)	(−1.29)	(2.33)
Z-score quartile	0.036***	0.026	−0.001**	−0.001***
	(2.76)	(1.29)	(−2.18)	(−2.58)
Lagged policy variable	−0.176***	−0.951***	−0.125***	−0.122***
	(−25.25)	(−69.87)	(−21.63)	(−10.18)
Industry and year dummies	Yes	Yes	Yes	Yes
Observations	10,412	10,935	11,626	11,674
R^2	0.339	0.500	0.281	0.151

Notes: This table examines the association between firm performance and policy variables and the use of long-term accounting-based compensation plans. The dependent variable is annual change in firm performance or policy (indicated in column head) from $t-1$ to t. The quartile for *EBIT/interest* is defined annually. The LTAP indicator equals one if there is a new CEO LTAP grant disclosed for the firm in year $t-1$. Other explanatory variables are annual changes from $t-1$ to t. Each regression also includes the lagged value of the dependent variable to control for possible mean reversion, and industry and year fixed effect. See Appendix 2 for other variable definitions. We report in parentheses t-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

these channels is more important? To shed light on the answer to this question, we scale the *LTAP* coefficient from each regression model presented in Table 5 by the difference between the 25th percentile and 75th percentile for that model's dependent variable. This captures the influence of a new LTAP grant on each dependent variable. Then, we estimate the implied impact of

each mechanism on loan spread by multiplying the scaled *LTAP* coefficient by the difference in the average loan spread for borrowing firms in the 1st and 4th quartile of the relevant dependent variable.[12] Based on this methodology, the profit margin growth rate has the largest impact on spread. The inferred reduction in *Loan yield spread* is 5.21 bps, which represents a 5.2 percent reduction in the direct cost of borrowing based on median yield spread of our sample (100 bps). The reduction in earnings volatility that follows LTAP grants lowers future *Loan yield spread* by 2.3 percent, making it the second most impactful channel. Similarly, through increased interest coverage and lower R&D expenditures, the yield spread falls by 1.1 and 0.5 percent, respectively, following an LTAP grant. Overall, results suggest that LTAP grants reduce firms' direct cost of borrowing mainly through higher profitability and lower earnings volatility.

LTAPs, covenants, and lender monitoring

Because debt financing introduces the potential for shareholder-debtholder conflicts that distort managerial behavior, loans generally include contractual covenants that restrict managerial decisions with respect to investment, payout, and financing policies. In addition, lenders can reduce their risk exposure through effective monitoring (e.g., Diamond 1984). If creditors perceive that LTAPs help reduce potential agency conflicts, then LTAP grants could serve as a substitute for both debt covenants and lender monitoring.

LTAPs and covenants

Although valuable in alleviating potential agency costs, covenants can impose costs on the borrowing firm, as managers may be forced to pursue suboptimal investment or financing strategies (Smith and Warner 1979). If creditors value LTAP incentives when negotiating loan contracts then, all else constant, we expect that they will require fewer restrictive covenants following an LTAP grant.

Debt covenant information is disclosed at the package level; multiple loan facilities may be grouped into one package. Following Drucker and Puri (2009), we include only loan packages that have either financial covenants, a dividend restriction covenant, or a sweep covenant. Our sample contains 3,887 loan packages with valid covenant information. Following the literature, we construct a covenant intensity index (Demiroglu and James 2010; Bradley and Roberts 2015). The index is measured as the sum of four binary covenant indicator variables which equal one if the loan facility includes (i) a collateral covenant (i.e., if one of the facilities in the loan package is secured or there is a covenant related to collaterals), (ii) a dividend restriction covenant, (iii) more than two types of financial covenants, and (iv) a sweep covenant, and zero otherwise. Panel A of Table 6 summarizes the covenants used in our sample. Almost all loan packages (94.65 percent) contain financial covenants; earnings-related financial covenants are the main type used. The next most popular type is a dividend restriction covenant (61.10 percent). Only 35.07 and 25.91 percent of packages contain collateral or sweep covenants, respectively. The average covenant intensity index is 1.815, with a minimum of zero and a maximum of four by construction (Table 1).

The second half of Table 6, panel A presents correlations between covenant variables and the LTAP indicator and plan horizon variable, respectively. Correlation coefficients are negative

12. For example, the coefficient on the LTAP indicator variable is 0.055 for profit margin growth (column 2). The 25th (75th) percentile value for profit margin growth is −13.63 percent (12.77 percent). The difference in average loan spread between firms in the top and bottom quartile of profit margin growth in 25 bps. Thus, the implied LTAP-related influence of profit margin growth on *Loan yield spread* is $(0.055/(0.1277-(-0.1363))) \times 25 = 5.21$ bps. Less than 50 percent of firms report R&D expenses. Thus, when the dependent variable is R&D intensity (column 4), we focus on firms with positive R&D expenses and estimate the implied spread changes by using the difference in average loan spreads between firms in above- and below-median positive R&D intensity groups.

TABLE 6
Loan covenants and accounting-based compensation plans

Panel A: Summary statistics and the correlations

	Obs.	% of sample
#Packages	3,887	
#Packages with financial covenant	3,679	94.65
Earnings covenant (0/1)	2,836	72.96
Collateral covenant (0/1)	1,351	35.07
Dividend covenant (0/1)	2,375	61.10
Sweeps (0/1)	1,007	25.91

Correlations between covenant variables and LTAPs

	LTAP (0/1)	*LTAP plan horizon*
Covenant intensity	−0.090	−0.091
(*p*-value)	(0.00)	(0.00)
Prob(covenant violation)	−0.079	−0.069
(*p*-value)	(0.00)	(0.00)
Earnings-based covenant (0/1)	−0.053	−0.057
(*p*-value)	(0.00)	(0.00)
Collateral covenant (0/1)	−0.064	−0.063
(*p*-value)	(0.00)	(0.00)
Dividend covenant (0/1)	−0.087	−0.087
(*p*-value)	(0.00)	(0.00)
Sweeps (0/1)	−0.036	−0.039
(*p*-value)	(0.00)	(0.00)

Panel B: Covenant intensity and covenant violations

	(1)	(2)	(3)	(4)
	Covenant intensity		High prob of covenant violation (0/1)	
LTAP (0/1)	−0.136**		−0.067**	
	(−2.48)		(−2.12)	
LTAP plan horizon		−0.003**		−0.002**
		(−2.18)		(−1.97)
Ln(*CEO tenure*)	0.039	0.040	0.009	0.009
	(1.46)	(1.48)	(0.52)	(0.53)
Ln(*Salary*)	−0.006	−0.007	0.020	0.020
	(−0.18)	(−0.20)	(0.96)	(0.95)
CEO share ownership	0.336	0.360	0.889*	0.902*
	(0.43)	(0.46)	(1.74)	(1.77)
CEO vega	−0.147	−0.146	0.027	0.027
	(−1.54)	(−1.53)	(0.57)	(0.58)
CEO delta	−0.005	−0.005	−0.005	−0.005
	(−0.39)	(−0.40)	(−0.62)	(−0.63)
Ln(*Loan maturity*)	0.015	0.015	−0.006	−0.006
	(0.28)	(0.28)	(−0.21)	(−0.22)
Ln(*Loan size*)	0.112***	0.112***	−0.059***	−0.060***
	(3.01)	(3.00)	(−3.09)	(−3.11)
Firm size	−0.430***	−0.430***	−0.085***	−0.084***
	(−10.70)	(−10.68)	(−3.88)	(−3.87)

(The table is continued on the next page.)

TABLE 6 (continued)

Panel B: Covenant intensity and covenant violations

	(1)	(2)	(3)	(4)
	Covenant intensity		High prob of covenant violation (0/1)	
Market-to-book ratio	−0.121***	−0.121***	−0.033*	−0.033*
	(−3.71)	(−3.69)	(−1.72)	(−1.71)
#Lenders	−0.001	−0.001	0.001	0.001
	(−0.32)	(−0.32)	(0.37)	(0.38)
Leverage	0.844***	0.845***	1.001***	1.003***
	(4.07)	(4.08)	(7.30)	(7.31)
ROA	−1.309***	−1.314***	−1.629***	−1.632***
	(−2.80)	(−2.81)	(−6.11)	(−6.13)
Tangibility	−0.257	−0.251	−0.232**	−0.230**
	(−1.32)	(−1.29)	(−2.16)	(−2.14)
Cash flow volatility	2.972***	2.992***	0.523	0.529
	(3.21)	(3.24)	(1.06)	(1.07)
Earnings quality quartile	0.041**	0.041**	0.012	0.012
	(2.23)	(2.24)	(1.19)	(1.19)
Z-score quartile	−0.148***	−0.148***	−0.091***	−0.091***
	(−4.60)	(−4.60)	(−4.35)	(−4.34)
Industry and year dummies	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes
Observations	3,887	3,887	3,298	3,298
R^2	0.189	0.189	0.238	0.238

Panel C: Covenant types

	(1) Dividend covenant	(2) Collateral covenant	(3) Sweeps	(4) Earnings covenant
LTAP (0/1)	−0.062***	−0.038	0.008	
	(−2.58)	(−1.24)	(0.33)	
Earnings-based LTAP (0/1)				−0.063**
				(−2.06)
Ln(*CEO tenure*)	0.026**	0.012	−0.006	0.000
	(2.10)	(0.84)	(−0.56)	(0.00)
Ln(*Salary*)	0.001	0.013	−0.016	0.023*
	(0.07)	(0.77)	(−1.33)	(1.83)
CEO share ownership	−0.064	0.630	−0.132	−0.728**
	(−0.17)	(1.60)	(−0.41)	(−2.09)
CEO vega	−0.069*	−0.046	−0.020	−0.030
	(−1.86)	(−0.94)	(−0.67)	(−0.89)
CEO delta	−0.000	−0.003	0.007	0.002
	(−0.06)	(−0.47)	(1.56)	(0.40)
Ln(*Loan maturity*)	0.031	0.032	−0.059***	0.011
	(1.37)	(1.26)	(−3.20)	(0.54)
Ln(*Loan size*)	−0.001	0.031*	0.115***	0.009
	(−0.04)	(1.75)	(7.94)	(0.65)
Firm size	−0.106***	−0.119***	−0.103***	−0.110***
	(−6.67)	(−5.92)	(−7.47)	(−7.28)

(The table is continued on the next page.)

TABLE 6 (continued)

Panel C: Covenant types

	(1) Dividend covenant	(2) Collateral covenant	(3) Sweeps	(4) Earnings covenant
Market-to-book ratio	−0.032**	−0.012	−0.018	−0.033**
	(−2.06)	(−0.70)	(−1.41)	(−2.38)
#Lenders	0.002	−0.004**	−0.006***	0.005***
	(1.14)	(−2.16)	(−4.44)	(3.48)
Leverage	0.264***	0.197*	0.278***	0.194**
	(2.81)	(1.83)	(3.95)	(2.15)
ROA	−0.596***	−1.130***	−0.406**	0.577***
	(−2.96)	(−4.90)	(−2.23)	(3.09)
Tangibility	−0.036	0.073	−0.054	−0.353***
	(−0.45)	(0.76)	(−0.77)	(−4.11)
Cash flow volatility	0.887**	1.966***	0.905**	0.157
	(2.05)	(4.17)	(2.56)	(0.39)
Earnings quality quartile	0.018**	0.022**	0.015**	−0.004
	(2.15)	(2.48)	(1.97)	(−0.58)
Z-score quartile	−0.007	−0.086***	−0.040***	−0.016
	(−0.46)	(−5.16)	(−3.41)	(−1.10)
Industry and year dummies	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes
Observations	3,887	3,887	3,887	3,887
R^2	0.190	0.332	0.360	0.260

Notes: Panel A lists types of covenants and the correlation of these covenants with the long-term accounting-based compensation plan (LTAP) indicator and plan horizon variable for 3,887 loan packages that have either a financial covenant, a dividend restriction covenant, or a sweep covenant. Panel B presents results for regressions of covenant intensity or probability of covenant violation on LTAP grants and control variables. In columns (1) to (2), the dependent variable is *Covenant intensity* and the model is estimated using ordered probit regressions. In columns (3) to (4), the dependent variable is a binary variable that equals one if the annual probability of covenant violation is above the yearly sample median and zero otherwise, and the model is estimated using probit regressions, and zero otherwise. Panel C presents probit estimation results of specific covenant types on LTAP grant and control variables. The dependent variables are binary variables to indicate if the loan package has a collateral covenant, dividend restriction covenant, sweep, or earnings-based financial covenant, and zero otherwise. For probit models, we present marginal effects estimated at the mean for continuous variables and for a change in an indicator variable from zero to one. Explanatory variables are measured in year $t - 1$. See Appendix 2 for other variable definitions. We report in parentheses *t*-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

and statistically significant throughout the table, confirming fewer restrictive covenants for firms with new LTAPs grants and for grants with longer horizons. We also estimate an ordered probit regression using covenant intensity as the dependent variable. Results are presented in panel B of Table 6. Columns (1) and (2) show that both the LTAP indicator and LTAP horizon variables are significantly negatively associated with covenant intensity, suggesting that creditors view LTAP incentives as a substitute for debt covenants. We obtain similar results for analogous models using OLS and Poisson regressions.

Next, we examine the relation between new LTAP grants and the borrowing firm's probability of violating a financial covenant based on 15 financial measures as developed in Demerjian and Owens (2016). In our sample, 3,298 out of 3,887 loan packages are covered in the Demerjian and Owens (2016) sample and have sufficient data to estimate the probability of covenant violation. We create an indicator variable that equals one if the firm's probability of violating a financial covenant is high (above the sample median that year) and zero otherwise. The marginal effects from probit estimation using this indictor as the dependent variable are presented in column (3), Table 6, panel B. LTAP-granting borrowers are less likely to have a high probability of covenant violation than other borrowers. *LTAP plan horizon* is also strongly negatively correlated with a high probability of covenant violation (column 4). This provides further evidence that LTAP grants alleviate shareholder-debtholder conflict and that, as a result, lenders relax covenant requirements.

To explore the substitution effect between LTAP grants and specific types of covenants, we regress indicator variables for the use of specific covenant types on the LTAP grant indicator and control variables. Column (1) of Table 6, panel C shows that for firm granting CEO LTAPs, lenders are less likely to require dividend restrictions. This suggests that creditors believe that LTAP borrowers are less likely to pay dividends to shareholders when doing so damages creditors. We find no relation between LTAP grants and the less popular covenants: collateral and sweep covenants, suggesting that the use of these more specialized covenants is not influenced by CEO compensation decisions. Furthermore, we know that the performance measures used in LTAPs are predominantly earnings-based and that earnings-based covenants are the main type of financial covenant used in our sample (72.96 percent). If creditors view LTAP grants as a substitute for debt covenants, they are less likely to include an earnings-based covenant in a loan agreement for a borrower that granted an earnings-based LTAP. Results presented in column (4) of Table 6, panel C confirm this conjecture. The earnings-based LTAP indicator has a significantly negative coefficient, supporting a substitution effect between earnings-based covenants and earnings-based LTAPs.

Collectively, the evidence suggests that LTAP grants and their features influence creditors' choices regarding loan covenants. Creditors in general perceive LTAPs as alleviating potential agency conflicts with shareholders and thus require less restrictive covenants with the borrowing firms.

LTAPs and lender monitoring

In this section, we examine the relation between LTAP grants and lender monitoring. In syndicated loans, participant banks rely on lead lender monitoring to alleviate credit risk. When credit risk is high, participant banks will demand that lead lenders retain a larger portion of the loan to strengthen their incentive to monitor the borrowing firm (i.e., Holmstrom and Tirole 1997; Vasvari 2008; Ivashina 2009). If creditors view LTAP grants as a substitute for monitoring in reducing agency cost of debt, all else constant, the lead lender can retain a smaller proportion of loans made to LTAP-granting borrowers. Within our sample, 2,856 facilities disclose the lead lender's loan share. Column (1) of Table 7 shows that for LTAP-granting borrowers, the proportion of the loan held by the lead arranger is lower by a significant 1.65 percent; this translates to a 13.58 percent reduction based on the 12.14 percent median share retained by the lead lender. These findings suggest that syndicated loan participants view an LTAP incentive as a substitute for lead lender monitoring.

To further test the validity of the idea that creditors value LTAP incentives, we group borrowing firms based on expected differences in monitoring costs. Thus, LTAP incentives should be especially valuable to creditors in situations in which monitoring is relatively costly. The literature shows that close geographic proximity plays an important role in monitoring by facilitating information flow between firms (e.g., Kang and Kim 2008). Thus, we expect that lenders which are geographically far from borrowing firms will value LTAP grants more as their costs of monitoring are likely to be higher.

To capture differences in geographic proximity, we divide the sample into subgroups based on whether or not the lead lender, defined as the lead arranger, is a foreign bank or has its primary executive office in a state other than the borrower's headquarters state. Regression results for each subsample are presented in columns (2) to (5) of Table 7. Column (2) shows that when the lead lender is a foreign bank, new loan yield spreads are lower by a significant 22.75 bps following LTAP grants. If the lead lender is a domestic bank, the reduction is only marginally significant at 5.55 bps. A Wald test confirms that the LTAP coefficients are significantly different between the subsamples. Similarly, columns (4) and (5) confirm that yield spread is significantly lower after an LTAP grant only if the lead lender's primary executive office is not in the same state as the borrowing firm's headquarters.

LTAPs and credit risk

Analyses in prior sections show that LTAP grants help improve debt repayment ability and mitigate shareholder-bondholder conflicts. As a result, one would expect a firm's overall credit risk to decline after granting an LTAP to the CEO. In this section, we examine changes in firms' credit risk following new LTAP grants using the following measures: credit ratings, changes in credit ratings, CDS spreads, and changes in CDS spreads.

Credit rating agencies (e.g., Moody's Investors Service) state that executive compensation contracts are a key factor in determining a firm's credit risk. If LTAP incentives are valuable to creditors, then, all else constant, LTAP grants should be associated with higher subsequent credit ratings. To test this, we construct a sample of 9,590 firm-year observations with ISS Incentive Lab compensation data and valid credit rating data for senior unsecured debt from COMPUSTAT (e.g., S&P Domestic Long-term Issuer Credit Rating). Following the literature, we transform credit ratings from letters to numeric values (e.g., Jiang 2008); the highest credit rating (AAA) is assigned a value of one and crediting ratings below B− are assigned a value of 17. A higher (lower) credit rating value is expected to be associated with a higher (lower) 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.

Columns (1) and (2) of Table 8 present regression results using credit ratings in year t and standardized changes in credit ratings between year t and year $t-1$ as dependent variables, respectively. When changes in credit rating are used as the dependent variable, all control variables are also measured as changes from $t-1$ to t. Lagged credit rating is included in change regressions to control for possible mean reversion. Column (1) shows that credit rating value is significantly lower (representing higher credit quality) for firms that granted a CEO LTAP in the prior fiscal year than for other borrowers. In column (2), the coefficient on the LTAP indicator is also significantly negative, suggesting that firms are less likely to experience a credit rating downgrade in the year following an LTAP grant. In additional untabulated tests, we construct a binary indicator variable that equals one if a firm receives a credit rating downgrade in year t, and zero otherwise. We find that firms are less likely to be downgraded by rating agencies if they granted a CEO LTAP in the prior year.

Next, we use CDS spreads as an alternative measure for credit risk. The CDS spread reflects the premium that investors are willing to pay to hedge against a firm's bankruptcy risk. Thus, it captures the market's perception of a firm's default risk. If LTAP grants reduce a firm's credit risk, ceteris paribus, the CDS spread should drop to reflect a reduced probability of default. Following Pan et al. (2018), we only include the spread for five-year CDS contracts from the IHS Markit data as these are the most liquid. These five-year contracts account for more than 80 percent of traded CDS contracts. To ensure debt contract uniformity, we further restrict the sample to CDS spreads for senior unsecured debt denominated in U.S. dollars. We calculate the annual average of daily CDS composite quotes across contracts for each firm. Within our sample, there are 5,445 firm-year observations with valid CDS information. As shown in Table 1, the average annual CDS spread in our sample is 188.87 bps.

TABLE 7
Lender monitoring and accounting-based compensation plans

	(1) Lead lender loan share	(2) Foreign lead lender	(3) Domestic lead lender	(4) Same-state lead lender	(5) Out-of-state lead lender
LTAP (0/1)	−1.648***	−22.753***	−5.553*	−4.873	−10.852***
	(−2.67)	(−3.47)	(−1.68)	(−0.77)	(−3.11)
Ln(*CEO tenure*)	0.093	−3.352	−2.153	−5.068	−2.159
	(0.24)	(−0.90)	(−1.07)	(−1.32)	(−1.05)
Ln(*Salary*)	−0.880**	−1.025	−0.034	2.193	−2.013
	(−2.34)	(−0.29)	(−0.01)	(0.81)	(−0.35)
CEO share ownership	−0.630	426.525***	48.998	−0.342	111.246*
	(−0.05)	(3.08)	(0.96)	(−0.00)	(1.85)
CEO vega	1.171	−22.018***	−5.790	−5.492	−11.333**
	(1.47)	(−2.89)	(−1.23)	(−0.84)	(−2.36)
CEO delta	0.106	−3.106*	0.349	1.265	−0.152
	(0.82)	(−1.75)	(0.39)	(1.34)	(−0.15)
Ln(*Loan maturity*)	−1.945	4.428	−2.396	−10.972	−0.714
	(−1.36)	(0.57)	(−0.45)	(−1.09)	(−0.15)
Ln(*Loan size*)	−2.634***	−12.840***	−12.215***	−15.144***	−11.884***
	(−4.39)	(−4.52)	(−6.27)	(−5.52)	(−6.68)
Firm size	1.442**	−7.572**	−7.011***	−13.784***	−4.646*
	(2.55)	(−2.10)	(−2.93)	(−3.71)	(−1.87)
Market-to-book ratio	0.630	−1.517	−1.295	0.373	−2.808
	(1.35)	(−0.35)	(−0.57)	(0.12)	(−1.24)
#Lenders	−0.970***	−0.953***	−0.253	0.517**	−0.462**
	(−13.31)	(−3.26)	(−1.18)	(2.01)	(−2.15)
Leverage	0.893	41.617	66.092***	57.871**	66.179***
	(0.31)	(1.62)	(4.01)	(2.29)	(3.93)
ROA	−12.615*	−140.649*	−227.188***	−287.214***	−200.908***
	(−1.92)	(−1.91)	(−5.72)	(−4.77)	(−5.06)
Tangibility	1.310	−3.072	6.485	−23.278	2.837
	(0.51)	(−0.15)	(0.46)	(−0.81)	(0.20)
Cash flow volatility	9.874	300.618**	383.394***	218.328**	415.685***
	(0.78)	(2.06)	(6.09)	(2.02)	(5.92)
Earnings quality quartile	−0.007	0.431	1.994	−0.931	2.404*
	(−0.03)	(0.17)	(1.65)	(−0.38)	(1.89)
Z-score quartile	−0.271	−17.474***	−17.136***	−15.515***	−16.747***
	(−0.54)	(−3.66)	(−7.26)	(−3.62)	(−6.87)
Diff in *LTAP* coeff (*p*-value):		(2) vs. (3): 0.01		(4) vs. (5): 0.19	
Industry and year dummies	Yes	Yes	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes	Yes	Yes
Observations	2,856	1,632	6,463	1,028	7,067
R^2	0.497	0.679	0.589	0.724	0.610

Notes: This table examines the relation between lead lender loan share or loan yield spread and the use of LTAPs. The dependent variable is lead lender loan share in column (1), and loan yield spread in columns (2) to (5). Lead lender loan share is the percentage of a syndicated loan retained by the lead lender. The foreign (domestic) lead lender sample includes all loan facilities that have (do not have) a foreign lead lender. The same state (out of state) leader lender sample includes all facilities where the lead lender's chief executive office and the borrowing firm's headquarters are (are not) in the same state. We report in parentheses *t*-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. The *p*-value from two-tailed Wald test comparing coefficients of *LTAP* between models is presented at the bottom of the table.

TABLE 8
Credit risk and accounting-based compensation plans

	(1) *Credit rating*	(2) Change in *Credit rating*	(3) *CDS spread*	(4) Change in *CDS spread*
LTAP (0/1)	−0.346***	−0.053**	−41.681***	−27.556**
	(−3.37)	(−2.46)	(−3.91)	(−2.00)
Ln(*CEO tenure*)	−0.022	−0.014	−8.554	2.292
	(−0.49)	(−0.90)	(−1.06)	(0.17)
Ln(*Salary*)	−0.158*	−0.068**	−19.130*	43.068
	(−1.95)	(−2.43)	(−1.82)	(1.25)
CEO share ownership	5.542***	0.071	155.905	573.109
	(3.58)	(0.11)	(0.49)	(0.99)
CEO vega	−0.360**	−0.342***	−34.226***	−20.783
	(−2.14)	(−5.25)	(−2.59)	(−0.83)
CEO delta	−0.032	−0.003	−3.019	−5.871
	(−1.36)	(−0.39)	(−1.22)	(−1.17)
Firm size	−1.091***	−0.587***	−14.541*	−69.480*
	(−16.59)	(−8.31)	(−1.70)	(−1.88)
Market-to-book ratio	−0.017	0.035*	10.189	7.848
	(−0.30)	(1.88)	(1.00)	(0.46)
Leverage	1.423***	1.389***	281.476***	304.420
	(2.92)	(5.17)	(3.82)	(1.00)
ROA	−8.347***	−1.927***	−991.029***	−610.608
	(−9.31)	(−4.62)	(−4.79)	(−1.53)
Tangibility	−0.574	−1.036***	−21.737	87.142
	(−1.52)	(−2.70)	(−0.37)	(0.27)
Cash flow volatility	14.739***	3.656***	1,133.475***	302.612
	(8.07)	(4.06)	(3.41)	(0.52)
Earnings quality quartile	0.056**	0.017**	13.034***	7.559
	(2.26)	(2.38)	(3.47)	(1.36)
Z-score quartile	−0.962***	−0.125***	−49.743***	2.334
	(−11.39)	(−5.35)	(−3.86)	(0.17)
Lagged *Credit rating*		−0.037***		
		(−9.96)		
Lagged *CDS spread*				−0.122
				(−1.13)
Industry and year dummies	Yes	Yes	Yes	Yes
Observations	9,590	8,367	5,445	4,691
R^2	0.586	0.112	0.316	0.060

Notes: This table presents results of regressions of firm-level credit risk variables on accounting-based compensation plan and control variables. The dependent variables are indicated in the column head. *Credit rating* takes a value of 17 (not rated) to one (AAA). Changes in *credit rating* and *CDS spread* are annual changes in credit rating or CDS spread, respectively. Control variables in columns (1) and (3) are measured in year $t - 1$. Control variables in columns (2) and (4) are measured as changes from year $t - 1$ to year t. See Appendix 2 for variable definitions. We report in parentheses t-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

Column (3) of Table 8 presents regression results using the annual average of daily CDS spreads in year t as the dependent variable. The annual average CDS spread is significantly lower for firms that grant LTAPs to their CEOs in the prior fiscal year than for other firms. Column (4) presents regression results using the change in the CDS spread between year t and year $t-1$ (standardized by year $t-1$ value) as the dependent variable. Explanatory variables are changes over the same period and the lagged CDS spread. Results show that after a firm grants an LTAP to its CEO, the firm's CDS trades at a lower spread, indicating that the market's perception of default risk has dropped. Overall, results presented in Table 8 show that credit rating agencies and capital market participants revise their beliefs about a firm's creditworthiness upward after it grants an LTAP to its CEO.

4. Contractual features of LTAPs

In this section, we examine whether contractual features of LTAPs, other than the accounting performance contingency, explain the negative association between LTAP grants and the subsequent cost of borrowing.

In our sample, 35 percent of LTAPs pay out a fixed cash value, 62 percent pay out fixed number of shares, and the remaining 3 percent pay out in both cash and stock. It is important to understand whether it is the accounting-based performance contingency or the type of payout (or both) that influences the cost of borrowing. First, we run baseline regressions that include an additional indicator variable for new performance plans contingent on TSR. More than 98 percent of TSR performance plans pay out in equity. If it is the equity payout that affects the cost of borrowing, we should see a significantly lower yield spread for firms granting TSR plans. However, results presented in column (1) of Table 9, panel A show that the coefficient for the TSR indicator is insignificant, while the coefficient for the LTAP grant indicator remains significant at −9.887. The difference between the two coefficients is statistically significant at the 5 percent level. In column (2), we run the same regression with indicator variables for both TSR-based grants and LTAPs with stock payouts. Although both incentive plans have equity-based payouts, only the LTAP stock grant indicator is negatively associated with future borrowing cost. Finally, we rerun our regression using two LTAP indicators based on payout type—*LTAP cash* and *LTAP stock* (column 3). The coefficients for both indicators are negative (−7.049 and −11.305, respectively) and their difference is not statistically significant (p-value = 0.25). These results suggest that the lower borrowing cost associated with LTAP grants is driven by the accounting-based performance contingency and not the form of payout. Given that managers will not receive payment (equity or cash) until the end of the LTAP performance period and unless they meet the preestablished performance goals, it seems natural for managers to focus primarily on the accounting-based performance contingency rather than on the type of payout.

We next examine whether the design of performance hurdles in LTAP plans influences the cost of borrowing. An LTAP may specify a minimum, target, and maximum level of payout contingent on meeting prespecified performance benchmarks that are increasingly challenging (threshold, target, and maximum, respectively). Past literature suggests that the design of performance hurdles influences managers' investment and risk-taking decisions (Bennett et al. 2017). Following this literature, we construct a *Concavity* variable, measured as the performance-payout relation to the left of the target divided by the performance-payout relation to the right of the target. A higher value of this variable is associated with a higher degree of concavity; a value lower than one signals that the pay-performance relation is convex. An incentive plan with a concave (convex) payout function discourages (encourages) CEO risk taking.

We run our baseline regression replacing the LTAP indicator with the LTAP *Concavity* measure. Only about 20 percent of LTAP grants disclose all three performance hurdles. Thus, the regression includes only observations with valid LTAP concavity estimates and non-LTAP granting observations. Results show a strong negative relation between the cost of borrowing and LTAP concavity (column 1 of panel B, Table 9). In panel C, we compare future loan yield spreads between firms that grant a concave

TABLE 9
Loan yield spread and accounting-based compensation plans: Additional contract features

Panel A: Loan yield spread, performance contingency, and payout type

	(1)	(2)	(3)
	LTAP vs. *TSR*		Payout type
LTAP (0/1)	−9.887***		
	(−2.78)		
TSR (0/1)	−1.908	−3.956	
	(−0.36)	(−0.70)	
LTAP stock (0/1)		−12.357***	−11.305***
		(−3.27)	(−3.42)
LTAP cash (0/1)			−7.049
			(−1.21)
Ln(*CEO tenure*)	−2.496	−1.618	−2.467
	(−1.32)	(−0.84)	(−1.31)
Ln(*Salary*)	0.027	−0.237	−0.049
	(0.01)	(−0.05)	(−0.01)
CEO share ownership	83.940	95.265*	84.684
	(1.59)	(1.77)	(1.60)
CEO vega	−8.967**	−8.930**	−8.937**
	(−2.07)	(−2.03)	(−2.06)
CEO delta	0.082	−0.152	0.057
	(0.09)	(−0.16)	(0.06)
Ln(*Loan maturity*)	−1.386	−1.746	−1.500
	(−0.30)	(−0.39)	(−0.33)
Ln(*Loan size*)	−12.231***	−13.007***	−12.266***
	(−7.25)	(−7.58)	(−7.29)
Firm size	−7.205***	−6.799***	−7.104***
	(−3.36)	(−3.12)	(−3.31)
Market-to-book ratio	−2.043	−2.018	−2.014
	(−0.96)	(−0.93)	(−0.94)
#Lenders	−0.312	−0.259	−0.306
	(−1.61)	(−1.29)	(−1.60)
Leverage	60.081***	69.710***	59.949***
	(3.93)	(4.67)	(3.92)
ROA	−219.227***	−202.239***	−219.983***
	(−5.77)	(−5.29)	(−5.79)
Tangibility	5.108	0.810	5.237
	(0.39)	(0.06)	(0.40)
Cash flow volatility	379.624***	374.513***	380.495***
	(5.90)	(5.70)	(5.90)
Earnings quality quartile	2.152*	2.573**	2.198*
	(1.82)	(2.07)	(1.86)
Z-score quartile	−16.964***	−16.959***	−16.895***
	(−7.57)	(−7.30)	(−7.53)
Diff. in coeffs: (*p*-value)	LTAP vs. TSR: 0.05	LTAP stock vs. TSR: 0.04	LTAP stock vs. LTAP cash: 0.25
Industry and year dummies	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes
Observations	8,095	7,406	8,095
R^2	0.611	0.616	0.611

(The table is continued on the next page.)

TABLE 9 (continued)

Panel B: Loan yield spread and the design of LTAP performance hurdles

	(1) Performance concavity	(2) Performance hurdle reasonableness	
Concavity	−24.378***		
	(−3.30)		
Within historical performance distribution (0/1)		−13.579**	−14.326**
		(−2.00)	(−2.07)
Outside historical performance distribution (0/1)			−9.920
			(−1.16)
Ln(*CEO tenure*)	−1.140	−1.040	−1.024
	(−0.56)	(−0.51)	(−0.50)
Ln(*Salary*)	−0.502	−0.512	−0.480
	(−0.11)	(−0.11)	(−0.10)
CEO share ownership	97.586*	98.996*	98.839*
	(1.77)	(1.79)	(1.79)
CEO vega	−9.552**	−8.764*	−8.903*
	(−2.01)	(−1.84)	(−1.86)
CEO delta	−0.105	−0.142	−0.149
	(−0.11)	(−0.15)	(−0.16)
Ln(*Loan maturity*)	−0.994	−1.708	−1.715
	(−0.21)	(−0.36)	(−0.36)
Ln(*Loan size*)	−13.792***	−13.934***	−13.944***
	(−7.45)	(−7.53)	(−7.53)
Firm size	−6.042***	−6.117***	−6.041**
	(−2.61)	(−2.58)	(−2.54)
Market-to-book ratio	−2.084	−2.081	−2.086
	(−0.91)	(−0.91)	(−0.91)
#Lenders	−0.400*	−0.357*	−0.358*
	(−1.88)	(−1.68)	(−1.68)
Leverage	73.650***	74.532***	74.762***
	(4.76)	(4.76)	(4.77)
ROA	−198.177***	−200.110***	−199.430***
	(−4.99)	(−5.01)	(−4.99)
Tangibility	−4.490	−4.697	−4.665
	(−0.32)	(−0.33)	(−0.33)
Cash flow volatility	363.200***	354.036***	353.278***
	(5.20)	(5.04)	(5.03)
Earnings quality quartile	2.192	2.350*	2.323*
	(1.63)	(1.73)	(1.72)
Z-score quartile	−17.574***	−17.566***	−17.517***
	(−7.18)	(−7.15)	(−7.13)
Industry and year dummies	Yes	Yes	Yes
Loan type and purpose dummies	Yes	Yes	Yes
Observations	6,508	6,440	6,440
R^2	0.614	0.611	0.611

(The table is continued on the next page.)

TABLE 9 (continued)

Panel C: Association between the design of LTAP accounting performance hurdles and mean loan yield spreads within the sample with LTAP grants

Variable	Obs.	Mean	Variable	Obs.	Mean
Concave hurdles	347	163.656	*Within historical performance distribution*	198	161.287
Convex hurdles	77	184.740	*Outside historical performance distribution*	134	179.071
Diff (*p*-value)		−21.084 (0.04)	Diff (*p*-value)		−17.784 (0.04)

Notes: This table presents results from regressions of loan yield spread on various features of LTAPs and control variables. Panel A compares the influence of LTAPs versus TSR-based plans, and the plan payout type on loan yield spread. Panel B presents results from regressions of loan yield spread on the concavity of performance-payout functions or whether the target performance hurdle is within the historical performance distribution and control variables. Panel C presents differences in mean loan yield spreads between firms granting LTAP plans with concave versus convex performance-payout functions and between firms granting LTAP plans with targets within the historical performance distribution versus outside the historical performance distribution. Explanatory variables are measured in year $t - 1$. See Appendix 2 for variable definitions. We report in parentheses *t*-statistics based on robust standard errors clustered at the firm level. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively.

LTAP contract (*Concavity* > 1) and firms that grant a convex LTAP contract (*Concavity* < 1). On average, firms granting a concave LTAP pay 21.084 bps less than firms granting a convex plan. The findings confirm that debtholders value LTAPs with concave payout functions that provide weaker risk-taking incentives.

Finally, we investigate whether the level of an LTAP's accounting performance target influences the cost of borrowing. Extremely easy targets provide little incentive; extremely difficult targets may cause managers to either give up or "swing for the fences." To characterize whether a performance target is set at a "reasonable" or "extreme" level, we construct two indicator variables. The first equals one if the target falls within two SDs of the firm's five-year historical performance; the second equals one if the target falls two SDs outside this distribution. Due to the difficulty of replicating the exact performance measures adopted in some LTAP contracts, we only estimate performance variables for the subset of LTAPs that are contingent on earnings, EPS, or sales performance and disclose valid target performance value.[13] Of the 332 LTAP observations for which we can replicate the accounting performance measure, 198 (59.6 percent) are classified as having a reasonable performance target (within two SDs of the historical distribution), while 134 (40.4 percent) are classified as having extreme performance targets.

We rerun our baseline regression, replacing the LTAP indicator with the two LTAP performance reasonableness indicator variables. The regressions include observations with information on the reasonableness of the LTAP performance targets and non-LTAP granting observations.

13. Most firms do not fully disclose detailed information on the accounting performance measure and hurdles used in LTAPs. For example, firms may not disclose the earnings growth target level to protect proprietary information, or the formula and/or adjustments used to calculate the accounting criteria (i.e., EVA, ROIC, adjusted operating income, earnings adjusted for corporate events, etc.). As a result, the analysis of LTAP performance criteria can only be done for a subsample of firm-years with disclosed performance hurdles and performance measures that are relatively straightforward to replicate. Note that even for these variables, our replication may not be entirely accurate due to various adjustments firms may apply or differences between non-GAAP and GAAP reporting.

Results, presented in columns (2) and (3) of Table 9, panel B, show that the significant negative relation between LTAP grants and borrowing cost remains only when the performance target is reasonable. There is no significant relation when the LTAP performance target is extreme. In panel C, we show that loans initiated after the granting of LTAPs with a reasonable target have a lower spread (17.784 bps) than those initiated after the granting of LTAPs with extreme targets.

To test the validity of our findings, we use two alternative measures to capture the reasonableness of performance targets. In the first alternative measure, we define a performance target as extreme if the performance target is 25 percent higher (or lower) than the firm's maximum (or minimum) performance in the past five years. We further set the cutoff point to 50 percent higher (or lower) than the firm's maximum (or minimum) in the second alternative measure of extreme targets. Untabulated results confirm that our results are robust to the use of these alternative measures. Specifically, the significant negative relation between LTAP grants and borrowing cost remains only when the performance target is reasonable. There is no significant relation when the LTAP performance target is extreme.

Together, these findings confirm that debtholders are cognizant of LTAP design and adjust borrowing contracts accordingly, preferring LTAPs that are less encouraging of risk taking—those with concave payoff functions and reasonable performance targets. The results thus highlight the importance of designing appropriate performance hurdles to better align the interests of debtholders and shareholders.

5. 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 some of the first set of empirical evidence on how granting CEOs long-term accounting-based incentives 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 grant LTAPs to their CEOs and for LTAPs with longer performance horizons. The negative relation between LTAP grants and the future cost of borrowing is most likely driven by improvements in profitability and reduced risk-taking activity. Furthermore, creditors view the incentives provided by LTAPs as a substitute for debt covenants, particularly earnings-based covenants, in helping to alleviate potential shareholder-debtholder conflicts. Additional tests utilizing firm-level credit ratings and CDS spreads show that credit rating agencies and market participants perceive an improvement in the firm's creditworthiness following an LTAP grant. Collectively, our results show that creditors view the use of long-term accounting-based performance contingencies in management compensation contracts favorably and are willing to accept a lower yield and impose fewer restrictive covenants when such contingencies are in place.

Our findings shed light on the consequences of the recent trend of including long-term accounting-based performance measures in executive compensation contracts and suggest that a lower cost of borrowing is one potential benefit of adopting these contracts. 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 around compensation plans after the 2005 FASB rule change, data will increasingly be available to future researchers to explore the interaction between compensation contracts and other contracts that are critical in shaping firm value.

Appendix 1

An example of accounting-based performance plans and performance criteria

Panel A: An example of accounting-based performance plans.

In 2007 proxy statement, Fedex Corp disclosed that their CEO was granted an "annual incentive compensation ('AIC')" program and a three-year "long-term incentive ('LTI') compensation program" (https://www.sec.gov/Archives/edgar/data/1048911/000095014407007757/g08526ddef14a.htm).

We classify the AIC program as a short-term accounting-based compensation plan (STAP) and the three-year LTI program as a long-term accounting-based compensation plan (LTAP).

The AIC program has the following features:

–Duration of performance period: one year (fiscal year 2007).

–Performance criteria: consolidated pre-tax income.

–Performance hurdle used: preestablished (target: $3,345 million; maximum: $10,035 million).

–Payout type: cash.

		Estimated future payouts under plan		
Executive name	Performance period	Threshold	Target	Maximum
F. W. Smith (CEO)	1 year	$0	$1,819,802	$5,459,406

The three-year LTI program has the following features:

–Duration of performance period: three years (fiscal years 2007–2009).

–Performance criteria: aggregate earnings per share.

–Performance hurdle used: preestablished (target: $22.24/share).

–Payout type: cash.

		Estimated future payouts under plan		
Executive name	Performance period	Threshold	Target	Maximum
F. W. Smith (CEO)	3 years	$875,000	$3,500,000	$5,250,000

Panel B: Types of performance criteria used in accounting-based performance plans.

The following statistics are based on 3,192 LTAPs from 1998 to 2012 and 6,891 STAPs from 2006 to 2012 in the Incentive Lab sample.

	% of LTAPs using the measure	% of STAPs using the measure
Earnings	85.06	90.86
Cash flow	10.43	18.37
Economic value added	6.02	4.77
Sales	18.55	32.17
Other accounting	4.76	1.42

Appendix 2

Variable definitions and data sources

Variables	Sources	Definitions
#Lenders	DealScan	Total number of lenders in a single facility
Board size	RiskMetrics and proxy statements	The total number of directors on the board
CAPEX/AT	COMPUSTAT	Capital expenditure scaled by total asset
Cash flow volatility	COMPUSTAT	SD of operating cash flow over the past five years (rolling) divided by lagged total assets
CDS spread	IHS 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
CEO delta	ExecuComp	The dollar change in the value of the executive's stock and option holdings with respect to a 1 percent change in stock price
CEO share ownership	ExecuComp	The percentage of firm shares owned by the CEO
CEO tenure	ExecuComp	Number of years served as 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
Concavity	Incentive Lab	The performance-payout relation to the left of the LTAP target divided by the performance-payout relation to the right of the target.
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
Credit rating	COMPUSTAT	Takes a value of 17 (not rated) to 1 (AAA)
Earnings-based LTAP (0/1)	Incentive Lab	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, ROE, ROA, etc.
Earnings volatility	COMPUSTAT	SD of earnings from past five years (rolling), where earnings equals to income before extraordinary items divided by total assets
EBIT/interest	COMPUSTAT	Earnings before interest and taxes scaled by interests and related expenses
EBIT/sales growth	COMPUSTAT	The growth rate of profit margin, that is, earnings before interest and taxes scaled by sales
External finance dependence	COMPUSTAT	The ratio of capital expenditures minus cash flow from operations divided by capital expenditures
Firm size	COMPUSTAT	Natural log of total assets
Fiscal-year stock return	CRSP	Annual stock return in the fiscal year
High Glass-Lewis industry (0/1)	Glass-Lewis report	Dummy variable that equals one if an industry has five or more firms identified in the Glass-Lewis report, and zero otherwise

(Appendix 2 is continued on the next page.)

Appendix 2 (continued)

Variables	Sources	Definitions
Insider %	RiskMetrics and proxy statements	The percentage of inside directors to the total number of directors on the board
Institutional ownership	Thomson Financial 13-f filings	The sum of institutional ownerships
Leverage	COMPUSTAT	(Long-term debt + debt in current liabilities)/total assets
Loan maturity	DealScan	Loan maturity measured in months
Loan size	DealScan	Loan facility amount measured in millions of dollars
Loan yield 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
LTAP (0/1)	Incentive Lab	Equals one if the firm grants a compensation plan for the CEO that is contingent on accounting performance and has a performance horizon greater than one year, and zero otherwise
LTAP plan horizon	Incentive Lab	The performance horizon specified in long-term accounting-based performance plans, in months
LTAP ratio of a firm's compensation consultant	Incentive Lab	Among firms that share the same compensation consultant with the sample firm but not in the same 1-digit SIC code industry, the proportion of firms granting LTAPs
Market-to-book ratio	COMPUSTAT	(Market value of equity plus the book value of debt)/total assets
New CEO (0/1)	ExecuComp	Dummy variable that equals one if CEO tenure is no more than two years, and zero otherwise
Operating performance	COMPUSTAT	EBITDA over total assets
Outside historical performance distribution	Incentive Lab, COMPUSTAT	Within a subset of LTAP grants that use replicable performance measures and disclose target performance value, we set the *Outside historical performance distribution* indicator variable equal to one if the target value falls two SDs outside the firm's previous five-year historical performance
Prob (covenant violation)	Demerjian and Owens (2016)	The estimated probability of violating a financial covenant
RD/AT	COMPUSTAT	R&D scaled by total assets; set to zero if missing
ROA	COMPUSTAT	EBITDA divided by total assets
Salary	ExecuComp	Base salary of the CEO during the fiscal year
Secured (0/1)	DealScan	Equals one if the Secured flag in DealScan has a value of "Yes" and zero if the value is "No"
STAP (0/1)	Incentive Lab	Equals one if the firm grants a compensation plant for the CEO that is contingent on accounting performance and has a performance horizon less than or equal to one year, and zero otherwise
Tangibility	COMPUSTAT	The net total value of property, plant and equipment divided by total assets

(Appendix 2 is continued on the next page.)

Appendix 2 (continued)

Variables	Sources	Definitions
Turnover	CRSP	The monthly trading volume divided by the number of shares outstanding
Within historical performance distribution	Incentive Lab, COMPUSTAT	Within a subset of LTAP grants that use replicable performance measures and disclose target performance value, we set the *Within historical performance distribution* indicator variable equal to one if the target value falls within two SDs of the firm's previous five-year historical performance
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)

References

Adams, R., H. Almeida, and D. Ferreira. 2009. Understanding the relationship between founder-CEOs and firm performance. *Journal of Empirical Finance* 16 (1): 136–50.

Akins, B., J. Bitting, D. D. Angelis, and M. Gaulin. 2019. The salience of creditors' interests and CEO compensation. Working paper, Rice University.

Anantharaman, D., V. Fang, and G. Gong. 2013. Inside debt and the design of corporate debt contracts. *Management Science* 60 (5): 1260–80.

Anderson, R. C., S. A. Mansi, and D. M. Reed. 2004. Board characteristics, accounting report integrity, and the cost of debt. *Journal of Accounting and Economics* 37 (3): 315–42.

Armstrong, C. S., W. R. Guay, and J. P. Weber. 2010. The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics* 50 (2): 179–234.

Begley, J., and G. A. Feltham. 1999. An empirical examination of the relation between debt contracts and management incentives. *Journal of Accounting and Economics* 27 (2): 229–59.

Bennett, B., C. Bettis, R. Gopalan, and T. Milbourn. 2017. Compensation goals and firm performance. *Journal of Financial Economics* 124 (2): 307–30.

Berg, T., A. Saunders, and S. Steffen. 2015. The total cost of corporate borrowing in the loan market: Don't ignore the fees. *Journal of Finance* 71 (3): 1357–92.

Berger, P., E. Ofek, and D. Yermack. 1997. Managerial entrenchment and capital structure decisions. *Journal of Finance* 52 (4): 1411–38.

Bettis, C., J. Bizjak, J. Coles, and S. Kalpathy. 2018. Performance-vesting provisions in executive compensation. *Journal of Accounting and Economics* 61 (1): 194–221.

Bharath, S., J. Sunder, and S. Sunder. 2008. Accounting quality and debt contracting. *The Accounting Review* 83 (1): 1–28.

Bizjak, J., S. Kalpathy, and V. Mihov. 2019. Performance contingencies in CEO equity awards and debt contracting. *The Accounting Review* 94 (5): 57–82.

Billet, M. T., D. C. Mauer, and Y. Zhang. 2010. Stockholder and bondholder wealth effects of CEO incentive grants. *Financial Management* 39 (2): 463–87.

Bradley, M., and M. R. Roberts. 2015. The structure and pricing of corporate debt covenants. *Quarterly Journal of Finance* 5 (2): 1–37.

Brockman, P., X. Martin, and E. Unlu. 2010. Executive compensation and the maturity structure of corporate debt. *Journal of Finance* 65 (3): 1123–61.

Chava, S., and A. Purnanandam. 2010. CEOs versus CFOs: Incentives and corporate policies. *Journal of Financial Economics* 97 (2): 263–78.

Christensen, H. B., V. V. Nikolaev, and R. Wittenberg-Moerman. 2016. Accounting information in financial contracting: The incomplete contract theory perspective. *Journal of Accounting Research* 54 (2): 397–435.

Coles, J. L., N. D. Daniel, and L. Naveen. 2006. Managerial incentives and risk-taking. *Journal of Financial Economics* 79 (2): 431–68.

Core, J. E., and H. A. Packard. 2016. Performance vesting provisions and CEO incentives. Working paper, Massachusetts Institute of Technology.

Costello, A., and R. Wittenberg-Moerman. 2011. The impact of financial reporting quality on debt contracting: Evidence from internal control weakness reports. *Journal of Accounting Research* 49 (1): 97–136.

DeAngelis, D., and Y. Grinstein. 2014. Performance terms in CEO compensation contracts. *Review of Finance* 19 (2): 619–51.

DeFusco, R. A., R. R. Johnson, and T. S. Zorn. 1990. The effect of executive stock option plans on stockholders and bondholders. *Journal of Finance* 45 (2): 617–27.

Demerjian, P. R., and E. L. Owens. 2016. Measuring the probability of financial covenant violation in private debt contracts. *Journal of Accounting and Economics* 61 (2): 433–47.

Demiroglu, C., and C. M. James. 2010. The information content of bank loan covenants. *Review of Financial Studies* 23 (10): 3700–37.

Denis, D., and V. Mihov. 2003. The choice between bank debt, non-bank private debt and public debt: Evidence from new corporate borrowings. *Journal of Financial Economics* 70 (1): 3–28.

Diamond, D. 1984. Financial intermediation and delegated monitoring. *Review of Economic Studies* 51 (3): 393–414.

Drucker, S., and M. Puri. 2009. On loan sales, loan contracting and lending relationships. *Review of Financial Studies* 22 (7): 2835–72.

Edmans, A., X. Gabaix, and D. Jenter. 2017. Executive compensation: A survey of theory and evidence. In *Handbook of the Economics of Corporate Governance*, Vol. 1, edited by B. Hermalin and M. Weisbach, 383–540. Amsterdam: Elsevier.

Fisman, R., and I. Love. 2003. Trade credit, financial intermediary development, and industry growth. *Journal of Finance* 58 (1): 353–74.

Galai, D., and R. Masulis. 1976. The option pricing model and the risk factor of stock. *Journal of Financial Economics* 3 (1–2): 53–82.

Graham, J. R., S. Li, and J. Qiu. 2008. Corporate misreporting and bank loan contracting. *Journal of Financial Economics* 89 (1): 44–61.

Guay, W. R., J. D. Kepler, and D. Tsui. 2019. The role of executive cash bonuses in providing individual and team incentives. *Journal of Financial Economics* 133 (2): 441–71.

Guidry, F., A. Leone, and S. Rock. 1999. Earnings-based bonus plans and earnings management by business-unit managers. *Journal of Accounting and Economics* 26 (1–3): 113–42.

Harford, J., and K. Li. 2007. Decoupling CEO wealth and firm performance: The case of acquiring CEOs. *Journal of Finance* 62 (2): 917–49.

Hayes, R., M. Lemmon, and M. Qiu. 2012. Stock options and managerial incentives for risk taking: Evidence from FAS 123R. *Journal of Financial Economics* 105 (1): 174–90.

Healy, P. 1985. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7 (1–3): 85–107.

Hermalin, B., and M. Weisbach. 1998. Endogenously chosen boards of directors and their monitoring of the CEO. *American Economic Review* 88 (1): 96–118.

Holmstrom, B., and P. Milgrom. 1987. Aggregation and linearity in the provision of intertemporal incentives. *Econometrica* 55 (2): 303–28.

Holmstrom, B., and J. Tirole. 1997. Financial intermediation, loanable funds, and the real sector. *Quarterly Journal of Economics* 112 (3): 663–91.

Ivashina, V. 2009. Asymmetric information effects on loan spreads. *Journal of Financial Economics* 92 (2): 300–19.

Jensen, M. C., and W. H. Meckling. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3 (4): 305–60.

Jensen, M. C., and K. J. Murphy. 1990. Performance pay and top-management incentives. *Journal of Political Economy* 98 (2): 225–64.

Jiang, J. 2008. Beating earnings benchmark and the cost of debt. *The Accounting Review* 83 (2): 377–416.

Jiang, X., K. R. Petroni, and I. Y. Wang. 2010. CFOs and CEOs: Who have the most influence on earnings management? *Journal of Financial Economics* 96 (3): 513–26.

John, T. A., and K. John. 1993. Top-management compensation and capital structure. *Journal of Finance* 48 (3): 949–74.

Kabir, R., H. Li, and Y. V. Veld-Merkoulova. 2013. Executive compensation and the cost of debt. *Journal of Banking and Finance* 37 (8): 893–907.

Kang, J., and J. Kim. 2008. The geography of block acquisitions. *Journal of Finance* 63 (6): 2817–58.

Li, K., D. Griffin, H. Yue, and L. Zhao. 2013. How does culture influence corporate risk-taking? *Journal of Corporate Finance* 23: 1–22.

Li, Z., and L. Wang. 2016. Executive compensation incentives contingent on long-term accounting performance. *Review of Financial Studies* 29 (6): 1586–633.

Lie, E. 2005. On the timing of CEO stock options awards. *Management Science* 51 (5): 802–12.

Myers, S. 1977. Determinants of corporate borrowing. *Journal of Financial Economics* 5 (2): 147–75.

Murphy, K. J. 2013. Executive compensation: Where we are, and how we got there. In *Handbook of the Economics of Finance*, edited by G. Constantinides, M. Harris, and R. Stulz, 211–356. Amsterdam: Elsevier.

Ortiz-Molina, H. 2006. Top management incentives and the pricing of corporate public debt. *Journal of Financial and Quantitative Analysis* 41 (2): 317–40.

Pan, Y., Y. Wang, and M. Weisbach. 2018. How management risk affects corporate debt. *Review of Financial Studies* 31 (9): 3491–531.

Rajan, R., and L. Zingales. 1998. Financial dependence and growth. *American Economic Review* 88 (3): 559–86.

Rhodes, A. 2016. The relation between earnings-based measures in firm debt contracts and CEO pay sensitivity to earnings. *Journal of Accounting and Economics* 61 (1): 1–22.

Smith, C. W., and J. B. Warner. 1979. On financial contracting: An analysis of bond covenants. *Journal of Financial Economics* 7 (2): 117–61.

Stock, J., and M. Yogo. 2005. Asymptotic distributions of instrumental variables statistics with many weak instruments. In *Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg*, edited by D. W. K. Andrews and J. H. Stock. Cambridge, UK: Cambridge University Press.

Sundaram, R. K., and D. Yermack. 2007. Pay me later: Inside debt and its role in managerial compensation. *Journal of Finance* 62 (4): 1551–88.

Tchistyi, A., D. Yermack, and H. Yun. 2011. Negative hedging: Performance sensitive debt and CEOs' equity incentives. *Journal of Financial and Quantitative Analysis* 46 (3): 657–86.

Vasvari, F. P. 2008. Equity compensation and the pricing of syndicated loans. Working paper, London Business School.

Watts, R. L., and J. L. Zimmerman. 1978. Towards a positive theory of the determination of accounting standards. *The Accounting Review* 53 (1): 112–34.

Wooldridge, J. M. 2010. *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article.

Appendix S1 Supporting Information.