

# Does Uncertainty about Management Affect Firms' Costs of Borrowing?

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## Abstract

Uncertainty about management appears to affect firms' cost of borrowing and financial policies. In a sample of S&P 1500 firms between 1987 and 2010, CDS spreads, loan spreads and bond yield spreads all decline over the first three years of CEO tenure, holding other macroeconomic, firm, and security level factors constant. This decline occurs regardless of the reason for the prior CEO's departure. Similar but smaller declines occur following turnovers of CFOs. The spreads are more sensitive to CEO tenure when the prior uncertainty about the CEO's ability is likely to be higher: when he is not an heir apparent, is an outsider, is younger, and when he does not have a prior relationship with the lender. The spread-tenure sensitivity is also higher when the firm has a higher default risk and when the debt claim is riskier. These patterns are consistent with the view that the decline in spreads in a manager's first three years of tenure reflects the resolution of uncertainty about management. Firms adjust their propensities to issue external debt, precautionary cash holding, and reliance on internal funds in response to these short-term increases in borrowing costs early in their CEOs' tenure.

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**Key words:** CEO turnover, CEO tenure, CFO, exogenous turnover, cost of borrowing, loan spread, bond yield spread, CDS spread, financial policy

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## 1. Introduction

A firm's default risk reflects not only the likelihood that a firm will have bad luck, but also the risk that the firm's managerial decisions will lead the firm to default. Consequently, when evaluating a firm's risk, it is important to understand not only the value of the firm's assets, but also the quality of the firm's management. Management risk occurs because the impact of management on firm value is uncertain, and this uncertainty will affect the market's perception of a firm's risk. Practitioners have long understood the importance of management risk, and regularly state that a firm's management is an important factor in evaluating a firm's risk.<sup>1</sup> However, the academic literature has largely ignored the importance of management in a firm's risk. In this paper, we empirically assess the extent to which this uncertainty affects the market's expectation of a firm's default risk.

We identify the effect of management uncertainty on the costs of borrowing using the idea that a manager's impact on firm value becomes known more precisely over his tenure. In a sample of S&P 1500 firms between 1987 and 2010, the existence of a new CEO leads to higher spreads on the firm's CDS, bank loans and public debt. The CDS spread, a measure of a firm's expected default risk, is about 35 basis points (22% relative to the sample mean) higher when a new CEO takes office than three years into his tenure (after an extensive list of controls). Similarly, our estimates imply that the spread on a new loan is about 20 basis points higher, and the bond yield spread on a new bond issue is about 23 basis points higher, for a firm led by a new CEO than for the same firm when the CEO is in his third year in office. The estimated declines in borrowing costs over CEO tenure are not driven by turnovers occurring at times of high uncertainty about the firm's fundamentals: the spread difference over CEO tenure following various subsamples of likely exogenous turnovers is comparable to that in the entire sample of turnovers. These

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<sup>1</sup> For example, a special document Moody's circulated about corporate governance claims: "[T]here is inherent transition risk in any CEO change and we therefore look to evaluate any changes to strategic initiatives or financial policies that differ from previous expectations, and whether credit metrics or liquidity deteriorates as a result." See: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1285082](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1285082)

results suggest that uncertainty about the CEO contributes substantially to a firm's cost of borrowing during the early years of a CEO's tenure.

The CEO, however, is not the only member of the management team that is relevant for decision-making in the firm. Chief Financial Officers (CFOs) have a large role in financial decision-making, so uncertainty about new CFOs could also affect the firm's default risk and cost of borrowing. Our estimates indicate that, similar to CEOs, spreads on new debt decline over the first three years of a CFO's tenure, but the magnitude of the decline is smaller than that following CEO turnovers, particularly if the CFO turnover is not accompanied by a CEO turnover. The result suggests that uncertainty about CFOs does affect firms' costs of borrowing, but not as much as uncertainty about CEOs.

The effect of management uncertainty on the firm's cost of borrowing around management turnovers is likely to vary cross-sectionally depending on the characteristics of the new management and the debt itself. In particular, when the new CEO is not considered an "heir apparent" prior to getting the position, when he comes from outside of the company, and when the new CEO is younger, we expect the market to perceive relatively high uncertainty about the CEO's ability or future actions. Empirically, we find that the sensitivity of the firms' spreads to the CEO's tenure more than doubles in these circumstances, relative to when the new CEO is an insider, is an heir apparent, or is older. For example, the CDS spreads decline by 87 basis points in the first three years of tenure for outsider CEOs, much larger than the 35 basis-point decline in the full sample.

In addition, when the CEO has an existing relationship with a lender before he takes his current job, the lender is likely to have less uncertainty about the CEO's ability or choice of actions. Consistent with this argument, we find that the sensitivity of interest rates to the CEO's time in office is 39-57% lower for loans in which the CEO has a prior relationship with the lender relative to those without, even if the CEO is an outsider and the relationship occurred while the CEO was at his previous firm. Further, any additional management-induced risk should have a larger impact on the default risk and the pricing of riskier debt than of safer debt. Consistent with this prediction, we find that the firm's spreads are more sensitive to

CEO tenure when the firm is more highly levered, for term loans and junior bonds. Overall, all the cross-sectional evidence is consistent with the notion that the decline in spreads over tenure reflects the resolution of uncertainty about management.

If firms' costs of borrowing increase at the beginning of a CEO's tenure, then firms should change their financial policies over time as a function of these changes in borrowing costs. If the higher risk at the beginning of a CEO's tenure reflects management-related uncertainty, then this increase is likely to be idiosyncratic rather than systematic risk. Accordingly, firms should not adjust the cost of capital they use for capital budgeting purposes because of management-related uncertainty. However, a short-term increase in borrowing costs is likely to lead firms to change their cash management policies, and to be reluctant to issue debt at times when they face higher spreads. Consistent with these predictions, we find that firms have lower propensities to issue external debt, higher precautionary cash holdings, and less use of external debt to finance acquisitions when their CEOs are newer in office.

This paper contributes to several literatures. It suggests that management's decisions and the uncertainty about them have substantial value-related consequences. In a similar vein, Clayton, Hartzell and Rosenberg (2005), Taylor (2013), and Pan, Wang, and Weisbach (2014a) document that a firm's stock return volatility substantially increases around CEO turnover and then declines during the first three years of tenure. The implication of this decline is that uncertainty about management is an important element of a firm's overall uncertainty. Pan, Wang and Weisbach (2014a) further identifies how much of the volatility is attributable to uncertainty about the management versus about the firm's fundamentals in a Bayesian learning framework. This paper builds on this earlier work, and, consistent with these earlier estimates, finds that during the same first three years of tenure, uncertainty about management appears to affect the pricing of the firm's debt and the firm's financial policies.

This paper also contributes to the literature on the pricing of corporate debt. It isolates a specific source of risk that has been largely ignored in the academic literature but that practitioners are well aware of. Our estimates suggest that management-related uncertainty has a significant impact on the pricing of the

firm's debt. Collin-Dufresne, Goldstein, and Martin (2001) find that traditional credit risk factors and liquidity measures fail to explain the bulk part of the credit spread changes and suggest firm-specific factors omitted from their analysis are likely to be important. Our results suggest that uncertainty about management is potentially one such factor and that a promising direction of research would be to incorporate management risk into empirical models of credit spreads.

The remainder of this paper proceeds as follows. Section 2 describes the data. Section 3 presents evidence of a robust relation between the firm's cost of borrowing and its CEO's tenure. Section 4 presents cross-sectional evidence to further support the argument that the dynamic of the firm's borrowing cost over CEO tenure reflects the resolution of uncertainty about the management. Section 5 examines the effects of the managerial-related uncertainty and the corresponding higher cost of borrowing on the firm's financial policies, while Section 6 concludes.

## **2. Data**

### *2.1. The Cost of Borrowing*

To measure a firm's cost of borrowing, we use the cost of insuring against the firm's default risk (the CDS spread), the interest rate spread above the risk-free rate that the firm has to pay on its new loans, and the promised yield on its bonds minus the yield of a Treasury bond of the same maturity.

#### 2.1.1 CDS Spread

The firm's cost of debt is reflected in the premium that the bondholders are willing to pay to hedge against the default risk. The spread on a firm's CDS will reflect this premium: a higher CDS spread implies that the underlying debt (and the issuer) is riskier, and thus more expensive for the firm to borrow.

There are at least three advantages of using the CDS spread as a measure of the firm's cost of debt in our setting. First, as is documented by Blanco et al. (2005), the CDS and bond yield spreads are close to each other over long intervals, while over short intervals, CDS spreads tend to respond more quickly to changes in credit conditions. Second, the existence of CDS spreads does not depend on firms' capital

raising decisions, so there is no possibility that changes in CDS spreads over time could occur because of non-random sampling. Third, CDS spread data is available at the daily frequency. However, a disadvantage of CDS spreads over loan spreads and bond yield spreads is that many firms do not have CDS available on their debt and the CDS data are only available since 2001.

Our CDS data are provided by *MarkIt*, a comprehensive data source that assembles a network of industry-leading partners who contribute information for about 2,600 credit default swaps on a daily basis. Based on the contributed quotes, *MarkIt* creates a daily composite quote for each CDS contract. We use the five-year spreads because these contracts are the most liquid and constitute over 85 percent of the entire CDS market. To maintain uniformity in contracts, we only keep CDS quotations for senior unsecured debt, which makes up over 91% of the entire CDS sample in *MarkIt*, with a modified restructuring (MR) clause and denominated in U.S. dollars.<sup>2</sup> The first section in Table 1, Panel A reports the CDS statistics at the daily level over 946 CEOs' first ten years of their tenure in 539 firms (the CEO sample is described in Section 2.2). The average CDS spreads in our sample is 159 basis points (median 76).

### 2.1.2 Loan Spread Data

We supplement the data on CDS spreads with data on bank loans and corporate bonds. We retrieve data for bank loans occurring between 1987 and 2012 from *DealScan*, which is maintained by Thomson Reuters' Loan Pricing Corporation (LPC). This database contains detailed information on loans (also referred to as a facility or tranche) to U.S. corporations since 1987.<sup>3</sup> While *DealScan* provides comprehensive information on loan contract terms, it does not provide much information on borrowers. We thus match the borrowers to the firms in our sample using a procedure described in Chava and Roberts (2008).<sup>4</sup>

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<sup>2</sup> The Modified Restructuring clause was introduced in the ISDA standard contract in 2001. This clause limits the scope of opportunistic behavior by sellers in the event of restructuring agreement to deliverable obligations with maturity of 30 months or less. This clause applies to the majority of quoted CDS for North American entities.

<sup>3</sup> The data are primarily gathered from SEC filings, and the rest from direct research by LPC through contacts with borrowers, lenders, and the credit industry at large. Strahan (1999) provides a detailed description of the *DealScan* database.

<sup>4</sup> <http://wrds-web.wharton.upenn.edu/wrds/ds/linkingtable/index.cfm>

The second part of Panel A of Table 1 reports loan-level statistics for loans taken by our sample CEOs during the first ten years of their tenure. The 3,693 CEOs, from 2,316 firms, initiated 17,076 loans for which *DealScan* reports non-missing spreads.

To measure the price of bank debt, we use the All-in-Drawn Spread (AIS) that the borrower pays over LIBOR at the loan origination date.<sup>5</sup> Following existing studies, we winsorize the spreads at the top and the bottom 1% of the *DealScan* sample distribution. The mean of the loan spreads in our sample is 158 basis points, and the median is 125 basis points. We also report the summary statistics for other components of the bank loan contracts, such as loan maturity, loan size, number of lenders, whether the loan has performance pricing, whether the loan is secured, whether the borrowing company has a speculative grade when the loan was initiated, and whether the loan is classified as “refinancing” by *DealScan*. All variable definitions are reported in Appendix A.

### 2.1.3 Corporate Bond Yield Spread Data

The corporate bond data are retrieved from the *Mergent Fixed Investment Securities Database (FISD)*, a comprehensive database of publicly-offered U.S. bonds since 1987. *FISD* provides details on debt issues and the issuers. Our sample period is from 1987 to 2012. The third part of Panel A of Table 1 reports the statistics for bonds issued during the first ten years of CEO tenure. There are 8,525 public bonds with available data on offering yield, issued by 2,135 CEOs from 1,433 firms.

To measure the price of public debt, we use the bond yield spread, which is the offering yield of a corporate bond at issue minus the yield of the maturity-matched Treasury bond. We winsorize the spreads at the top and the bottom 1% of the entire *FISD* sample distribution. When the maturity of the bond for which the spread is calculated does not exactly match the maturity of the available government bonds, we use linear interpolation to estimate the yield of the risk-free benchmark. The average bond yield spread in our sample is 182 basis points, (median 121). Summary statistics for other bond characteristics, such as bond maturity, offering size, whether the bond is subordinate, are also reported in Panel A of Table 1.

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<sup>5</sup> This measure adds to the borrowing spread any annual fees the firms pay to the lenders.

## 2.2. CEO Turnover and Tenure

We construct a sample of CEOs from 1987 to 2010, since both the loan data and the bond data begin in 1987. We use the information on job title, the year becoming CEO, and the CEO annual flag provided in *ExecuComp* to identify CEOs at the firm-year level, based on which we identify whether there is a CEO turnover in a firm and year.<sup>6</sup> Panel B of Table 1 describes the distribution of turnovers over time in the loan, bond, and CDS samples.

For each CEO, the variable “*Tenure*” equals 0 for the fiscal year in which the CEO takes office, and increases with each year the CEO is in office. The average CEO’s total time in office (see Appendix A for definition) in our sample is 6.14 years and the median is 5 years. About 85% of the CEOs in our sample are long-term CEOs with total time in office no less than three years. Pan, Wang, and Weisbach (2014a) document that the market’s learning about the CEO’s ability is most pronounced during the first three years of the CEO’s tenure. For this reason, we focus on a CEO’s first three years in our main analysis.

A challenge in drawing inferences in the CEO turnover setting is that the timing of CEO turnover can coincide with firm performance because CEO are sometimes fired for performance-related reasons. Following Pan, Wang, and Weisbach (2014a,b), we identify several subsamples of turnovers that are likely to have occurred for non-performance related reasons. The first group consists of turnovers caused by illness, of the death, of the departing CEO. We combine CEO turnover announcements in Capital IQ’s *Key Developments* with *Factiva* news search to identify a subsample of such turnovers.<sup>7</sup> Second, we combine the death/illness subsample with announced retirements. To mitigate the incidence of “suspicious” retirement announcements, we only include retirements for which the firm’s stock performance in the year prior to the turnover be above the industry-year median for the turnover. The third group consists of turnovers for which there is no change in the top management team (the top four most highly paid non-CEO executives) in the year when the CEO is changed, which are unlikely to be firings, since firings

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<sup>6</sup> Although *ExecuComp*’s coverage starts in 1992, some of the CEOs in the database took office before 1992, leading to some CEO turnovers from the late 1980s in our sample.

<sup>7</sup> We thank Edward Fee, Charles Hadlock, and Joshua Pierce for kindly providing us with the classification of illness, death related, and outright forced turnovers for the sub-period 1990 to 2006 used in Fee, Hadlock and Pierce (2013).



typically involve changes of other top managers in addition to the CEO. Fourth, because forced turnovers tend to be preceded by high stock return volatility or poor stock and accounting performances, we consider the group of turnovers that are preceded by both good performance (both stock return and ROA above industry-year median) as well as low idiosyncratic volatility (below industry-year median) to be unlikely to have been motivated by performance.

Fifth and more specific to the context in this study, we identify a subsample of turnovers that were not preceded by a significant run-up of default risk as reflected in the firms' CDS spreads in the prior two years. The idea is that if there is a run-up of default risk before turnover, then a decline following turnover could reflect a reversion to usual levels. Specifically, for each firm with CDS data in our sample, we estimate the time trend in CDS spreads during dates [-730, -30], with date 0 being the day when the new CEO takes office. We include 185 turnovers with negative or insignificantly positive pre-turnover CDS trend in this subsample.

Finally, we use the *Factiva* news search to identify turnovers that appear to be overtly forced (e.g., *Factiva* reported that the CEO was forced to leave or left under pressure). Panel C of Table 1 reports the number of turnovers in each subsample.

The incoming CEO's background is likely to be related to the amount of uncertainty about his ability. We identify two dimensions about the CEO's background that are potentially related to such uncertainty: the CEO's age and his succession origin. The average age of the incoming CEO at the time of turnover in our sample is 51. We thus classify new CEOs who are younger than 50 at the time of turnover as "*Young CEOs*". Using information on the time of a CEO "joining company" from *ExecuComp*, supplemented by the data on "starting job" from *Boardex*, we classify CEOs who have been with the firm for less than three years when becoming CEO as "*Outsider CEOs*", and others as insider CEOs. We also follow Naveen (2006) and classify "*Heir-Apparent CEOs*" in our sample as executives with the title "president" or "chief operating officer (COO)" prior to becoming CEO. Panel C of Table 1 reports the number of turnovers that involve young CEOs, outsider CEOs, and heir-apparent CEOs.

### 2.3. Other Variables

To control for other factors that potentially affect the loan, bond, or CDS spreads, we include a set of firm characteristics and credit market conditions in our empirical specifications. For credit market conditions, we control for three variables: “*Credit Spread*” is the difference between the yields of AAA and BAA corporate bonds; “*Term Spread*” is the difference between the yields of 10-year Treasury bonds and 2-year Treasury bonds; “*VIX*” is CBOE volatility index, which shows the market’s expectation of 30-day volatility. Table 1, Panel D reports summary statistics for the three variables.

We obtain firm-specific variables from *Compustat* and winsorize them at the top and the bottom 1% of the distribution. The average firm in our sample has book assets of about \$1.4 billion, 24% book leverage, a market-to-book equity ratio of 2.9, an asset tangibility ratio of 0.28, and cash flow volatility of 0.56, ROA of 11%, and dividend payout ratio of 0.22. Appendix A presents detailed definitions of all variables.

## 3. Managerial Uncertainty and Cost of Borrowing

### 3.1. Default Risk over CEO Tenure

To evaluate whether uncertainty about a new CEO’s ability and policies affects the market’s expectation of a firm’s default risk, we first examine the way in which firms’ CDS spreads change over CEO tenure. Since the CDS spreads provide a market-based assessment of the likelihood that the firm will default on its debt at any point in time, the way they vary over a CEO’s tenure measures the change in default risk over this period.

Figure 1 plots the average CDS spread at the key event months associated with the evolution of the uncertainty about a new CEO. Panel A is constructed using the 112 CEO turnovers of firms with available CDS data, and for which the departure announcements of the outgoing CEOs occurred in a different month from the appointment announcements of the new CEOs and the inauguration of the new CEOs. Although a small sample, these turnovers allow us to examine exactly how CDS spreads respond to each key event. In

the month of the departure announcement, the CDS spread increases by almost 57 basis points over the average spread in the prior three months, reflecting the increase in the uncertainty about the management. The spread subsequently decreases by about 15 basis points when the new CEO is announced, indicating that part of the uncertainty about the management is resolved. This decrease suggests that the overall pattern is unlikely to be driven by turnovers occurring at times of high risk, since it is unlikely that fundamentals change noticeably between the departure announcement and the appointment announcement. The spread decreases only slightly by the time that the new CEO takes office, and then declines by another 26 basis points in the first three years of the new CEO's tenure, suggesting that the uncertainty about the CEO declines further during this period of time.

However, not all turnovers have clearly identifiable dates for all the key events, and these events sometimes occur sufficiently close to each other in time that it is impossible to identify the effect of each one. For example, Panel B plots the path of CDS spread for the 87 turnovers with departure, appointment, and inauguration all occurring in the same month. In this case, we observe an inverse V: the CDS spread increases in the turnover month and then declines over the first three years of the new CEO's tenure. Both panels suggest that there is a non-trivial decline in CDS spreads after a new CEO takes office. Hence our analysis focuses on post-turnover changes in spreads. While the pre-turnover information flows occur differently at different firms and it is difficult to tell in a consistent way exactly when information about the departure of the outgoing CEO and the new CEO's identity reaches the market, following turnover it is straightforward to measure the way a firm's managerial-related risk changes over time.

To estimate the way in which CDS spreads are affected by the resolution of uncertainty about the CEO in the first few years of his tenure, we estimate the following equation:

$$CDS\_Spread_t^{ij} = f(Tenure_t^{ij}) + \alpha^{ij} + \lambda_t + Controls_t^i + \varepsilon_t^{ij} \quad (1)$$

The variable " $Tenure_t^{ij}$ " is CEO- $j$ 's time in office in firm- $i$  at time  $t$ . To capture the predicted convexity in the tenure-spread relation, we use a piecewise-linear (spline) specification that allows the relation to change over time. The variable  $\alpha^{ij}$  is the firm-CEO fixed effect for firm  $i$  and CEO  $j$ ; its inclusion implies that we

identify the effect of managerial uncertainty from the time-series variation in CDS spreads *within* a particular firm-CEO pair. This approach, therefore, controls for any time-invariant differences cross firm-CEO pairs. The variable  $\lambda_t$  is the calendar year fixed effect, which controls for market-wide factors that affect firm-level default risk. Time-varying controls include the debt recovery rate as reported by data distributors, firm-specific financial variables, as well as measures of credit market conditions such as the aggregate credit spread, term spread, and the VIX index.

Table 2 reports estimates of this equation. Column (1) presents the spline regression estimates for all CEOs in our sample, regardless of how long they stayed in office, from year 0 to year 10. These estimates indicate that a firm's CDS spread declines by 0.032 basis points for each day in the CEO's first three years in office. Over the first 1095 calendar days (three years), the total decline amounts to 35 basis points, a 46% decline relative to the sample median CDS spread of 76 basis points (22% relative to the sample mean of 159). The speed of decline in the CDS spread is slower but still statistically significant during the CEO's second three years, and becomes statistically insignificant and small in magnitude after six years.

In Column (2) we focus only on the first three years of CEO tenure for CEOs who stay in office for at least three years, and we use a linear specification of tenure. In this specification, we exclude short-term CEOs (e.g., interim CEOs, turnaround specialists, and CEOs that departed very quickly), so that our estimates will not be affected by the unbalanced nature of the panel. We find that the firm's CDS spread declines by 0.031 basis points per day during this time period.<sup>8</sup> These results suggest that firms' default risk is higher when there is a new CEO, and declines over time as the CEO's quality, as well as the policies he is likely to pursue, becomes known over time. The fact that the magnitude of the decline in CDS spread

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<sup>8</sup> In unreported robustness tests, we use the monthly average CDS spreads instead of the daily data. The results are essentially the same as those reported in Table 2, with CDS spreads declining by about 1.1 basis points per month during the CEO's first three years.

during the first three years is very similar between Column (1) and Column (2) implies that including or excluding CEOs with less than three years' of tenure does not affect our inference.<sup>9</sup>

However, an alternative interpretation of the declining default risk over CEO tenure is that CEO changes tend to occur at times of relatively high uncertainty, leading to heightened default risk around CEO changes. Firms tend to fire CEOs at times when they are doing poorly, which are likely to be times when uncertainty about the firms' prospects is also high and their debt is riskier.

To isolate the way that uncertainty about the incoming CEO varies over time and its effect on a firm's risk, we wish to consider cases of "normal" turnovers, in which the CEO turnover is unrelated to performance. These cases are unlikely to occur with greater frequency at times of unusual firm risk. In subsection 2.2 we describe a number of subsamples of turnovers that are unlikely to have been forced. Pan, Wang, and Weisbach (2014a) document that the decline in firm volatility following turnovers in each of these subsamples is approximately the same magnitude as in the overall sample, suggesting that the overall decline in volatility is not driven by the endogenous timing of turnovers. We perform a similar exercise for CDS spreads in Table 3 to evaluate the extent to which the decline in CDS spreads over tenure occurs because of turnovers occurring when volatility tends to be unusually high.

The results in Table 3 indicate that the decline of the firm's cost of borrowing over CEO tenure occurs regardless of the factors leading to the CEO turnover. Furthermore, the estimated magnitude of decline in CDS spread is very similar across various subsamples of likely exogenous turnovers (Columns 1-5), as well as the subsample of turnovers that is classified as neither exogenous nor forced (Column 6). In each specification the estimates suggest that there is a significant decline of CDS spread over CEO tenure. In contrast, for the outright forced turnover sample (Column 7), the estimated decline in CDS spread is about 0.132 basis point per day, which is about four times as large as the estimate for the rest of the turnovers. Since outright forced turnovers tend to follow poor firm performance and high volatility, this

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<sup>9</sup> We obtain similar results including or excluding short-term CEOs throughout the paper.

high estimated decline could reflect relatively high uncertainty at the time of the turnover about both the firm's fundamentals and the new CEO.

### *3.2. CEO Tenure and Interest Rates on Firms' Debt*

#### 3.2.1. Loan Spreads over CEO Tenure

If uncertainty about the new CEO affects the firm's default risk as measured by CDS spreads, then it should affect the interest rates that the firm pays on its debt. To test this hypothesis, we estimate the way that the spreads on loans firms take out vary over CEO tenure, using the specification in Equation 1 with CDS spreads replaced with the "all in drawn" spreads on the loans. When we estimate this equation, we add a number of controls for loan characteristics. In particular, we include the loan size, maturity, number of lenders, dummies indicating if the loan uses performance pricing, loan purpose, and tranche types.

These estimates are reported in Panel A of Table 4. Column (1) documents that loan spreads decrease with CEO tenure. The speed of decrease declines over time, with the fastest decline occurring in the first three years (6.5 basis points per year, and about 20 basis points in the first three years). Column (2) reports the estimated decrease in loan spread over the CEO's first three years in office for the subsample of CEOs who stay in office for at least three years. Column (3) contains estimates using the subsample of likely non-performance driven turnovers (the union of rows (2)-(5) in Panel C of Table 1), and find that following these turnovers, the loan spread a firm pays declines by 5.1 basis points per year.<sup>10</sup> These estimates using the spreads firms pay on loans are consistent with those reported above for CDS spreads and suggest that the expected default rate on a firm's debt declines over its CEO's tenure. This finding is consistent with the view that uncertainty about management is an important component of a firm's risk, and that this component is priced in the firm's debt contracts.

One difference between the results using CDS spreads and loan spreads is that we observe a firm's CDS spread every day but observe its loan spreads only when a firm initiates one. Therefore, it is possible

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<sup>10</sup> Unlike with the CDS data, which provides daily data on spreads, with the loan data, we only observe spreads when a loan is initiated, and consequently only one spread per loan. Because of the relatively small number of observations with loan data, we pool the different subsamples of likely non-performance related turnovers together for the estimation in Column (3).

that the regressions could be subject to some selection bias, since presumably firms will be less likely to take out a loan at any point in time if interest rates are too high. This concern does not apply to the analysis using CDS spread; nonetheless, the results using CDS spreads are consistent with those using the loan spreads. Further, since we include firm fixed effects in our specification, this concern is to some extent mitigated because the estimates essentially compare the interest rates on different loans over CEO tenure within the same firm.<sup>11</sup>

A way to assess the importance of this potential selection bias is to consider the set of firms for which the loan represents a refinance, rather than a new capital raising. Presumably, if a firm is refinancing its loans, it has much less discretion and has to accept whatever interest rate is available at that time. To assess whether a particular loan represents new capital to the firm or a refinance, we rely on *DealScan's* classification (the variable “Refinancing Indicator”). The equation estimated on only the refinancing is presented in Column (4) of Panel A of Table 4. These estimates from the subsample of refinanced loans are similar to those estimated on the entire sample, and indicate that there is a statistically significant decrease in loan spread of 5.2 basis points in each of the first three years of CEO tenure.

Besides the loan spread, we also observe information on other non-price terms of the loan contracts such as the loan maturity, loan size, number of lenders, and whether the loan is secured or not. If uncertainty about the management affects debt contracting, then these dimensions of the contracts could be affected as well. In Panel B of Table 4, we examine the relation between these non-price terms of the debt contracts and CEO tenure. The main difference in non-price terms over CEO tenure is that bank loans originated earlier tend to have significantly shorter maturities than those originated later.

### 3.2.2. Bond Yield Spread over CEO Tenure

The major alternative corporate debt instrument to a bank loan is a corporate bond. Thus, we also test the hypothesis that the expected default rates and hence promised yields on the firms' issuances of

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<sup>11</sup> More than 60% of the sample firms took multiple loans in the first three years of their CEOs' tenure.

corporate bonds decline with the tenure of a firm's CEO. To do so, we estimate equations similar to those for bank loans using the promised yield on a firm's corporate bonds as our dependent variable.

Panel C of Table 4 presents estimates of this equation. These estimates indicate that CEO tenure has a similar effect on the firm's promised bond yields as it does on CDS spreads and loan spreads. Column (1) presents the spline specification using the entire sample and finds that bond yields decline in a convex manner over the CEO's tenure. Column (2) restricts the sample to the first three years of tenure for CEOs who remain on the job that entire period, and we find a negative effect of tenure on spreads. Finally, Column (3) further restricts the sample to those CEOs following the likely "non-performance related" turnovers (the union of rows (2)-(5) in Panel C of Table 1) and again finds a negative relation between tenure and spreads. The coefficients on tenure range between 7.5 and 9.6 basis points per year, so they imply that over the three-year period, yield spreads decline between 23 and 29 basis points.

### *3.3. Uncertainty about Management Teams: The Role of the CFO*

The analysis to this point has focused on the way that the uncertainty about new CEOs' abilities and policies affects firms' default risks. The underlying assumption is that the CEO plays an important decision-making role in the firm, so that when the person occupying this position changes, policies change. However, the CEO is only one member of the management team. Presumably, when top managers other than the CEO change, there is also an increase in uncertainty about future policies, albeit a smaller one than when the CEO changes.

One manager who is especially likely to influence financial policies is the Chief Financial Officer (CFO). We examine whether a change of CFO has a similar effect on the rates firms pay on their debt than a change of the CEO. We focus on the CFO rather than other members of the top management team for two reasons: first, US firms almost always have one and only one individual with that title, so it is straightforward to identify changes in the individual holding that position, and second, the focus of the responsibilities of CFO is around the financial policies of firms so it is likely that a change in CFO could lead to a change in these policies.



We collect CFO turnover data from corporate news announcements in the Capital IQ database from 2001 to 2009.<sup>12</sup> We exclude transitory CFOs who stayed in the job for less than 3 years. This process leads to a sample of 1,857 CFO turnovers in 1,136 firms during the 2001-2009 period, summarized in Panel A of Table 5. Outsider succession is more common in the CFO sample (37%) than in the CEO sample (28%), consistent with data reported by Mian (2001). We construct a variable that measures the time elapsed (in terms of years or days) since the new CFO takes office; the average CFO spends four years in office and the median is 3.4 years.

In Panel B of Table 5, we estimate the relation between the firm's CDS spread and the CFO's time in office, using the same specification as in Table 3 for CEOs. Column (1) contains estimates implying that the CDS spread declines by 0.027 basis points per day during the first three years of a new CFO's tenure, and the decline is statistically significantly different from zero. During the subsequent 3 years, the decline is just 0.004 basis points per day, which is not statistically significantly different from zero. Column (2) restricts the sample to the first 3 years of a CFO's tenure, and finds a similar decline in CDS spreads of 0.022 basis points per day.

One concern is that many CFO turnovers coincide with CEO turnovers; these cases are likely to reflect uncertainty about both managers, and possibly others as well if there is a large change in the top management team. In this situation, the decline in CDS spreads over CFO tenure could reflect the declining uncertainty about the CEO rather than the CFO. For this reason, we reestimate this equation on the subsample of CFO turnovers into those for which there was not a CEO change within a year before or after the time of the CFO change (Column (3), 722 turnovers), as well as the subsample of CFO changes accompanied by a CEO change within this two-year period (Column (4), 311 turnovers).

In each subsample, the firm's CDS spread significantly declines, but the magnitude of the decline is much smaller in Column (4) using the subsample of CFO changes without CEO changes (-0.017) than in

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<sup>12</sup> We do not use *ExecuComp* to identify CFO turnovers because there is no reliable indicator for CFOs in the pre-2007 data and there is no information on the time that a new CFO takes office. For the firm-years between 2007 and 2009, we have verified that the two data sources are consistent in 86% of observations.

Column (3), estimated for the subsample in which there is both a CEO change and a CFO change at the same time (-0.059). The difference between the two estimates is statistically significant at 1% level. For further comparison, when there is a CEO change without a CFO or other top management change, the estimate is -0.035, which is between these two estimates (see Table 3, Column (3)), and is significantly more negative than -0.017. These results are consistent with the view that uncertainty about top management affects a firm's default risk. Since the CEO is the most important officer, uncertainty about him affects firms the most, but uncertainty about the CFO matters as well. Not surprisingly, when both officers change at the same time, the decline is largest, most likely because these cases are associated with the greatest managerial uncertainty.<sup>13</sup>

As with the CEO turnovers, another possible explanation for the spread/tenure relation is that poor performance can lead to both the turnover and the higher expected default rates. For this reason, we consider the subsample of 43 CFO turnovers that are not accompanied by CEO turnovers and are due to the death, illness, or retirement of the departing CFOs when the firm is performing well. The results using this subsample are presented in Column (5) of Table 5. The results indicate that in this subsample, we still observe a significant CDS spread decline over the CFO's first three years of tenure. The magnitude of the decline (0.021 basis points per day) is close to the full sample estimate (0.022 basis points per day). Consequently, it does not appear that the observed decline in default risk over the first 3 years of a CFO's tenure occurs because of the management changes occurring at times of high uncertainty; instead, the results suggest that uncertainty about his ability or future actions generates incremental default risk.

In Panel C of Table 5, we examine the relation between the firm's loan or bond yield spreads and the CFO's tenure. We find that the loan spread tends to decline by 5.2 basis points per year and the bond yield spread tends to decline by 5.7 basis points per year in the CFO's first three years in office. These declines are statistically significant, but, similar to the pattern from CDS spreads, smaller than those reported in Table 4 following CEO turnovers.

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<sup>13</sup> This finding is consistent with the findings in Bennedson et al. (2013) based on managers' hospitalization records that CEOs are more important to firm value than other top executives.

Overall, the results in Tables 2-5 suggest that there is a substantial, statistically significant decrease in the firm's cost of debt financing over the CEO's and the CFO's tenure, reflected by the firm's CDS spread, the spreads on its bank loans, and the yield on its corporate bonds. The decrease is fastest in the chief executives' first three years in office. This decline does not appear to come from the timing of executive turnovers at periods when uncertainty is high. Like for other sources of uncertainty about the firm, when management's ability or policies are unknown, the market responds by raising expected default premiums on the firm's debt.

#### **4. Cross-Sectional Differences in Declines of Default Risk over Tenure**

If the increase in spreads following management changes reflects uncertainty about the ability and policies of the new management, then when this uncertainty is higher, there should be a larger increase in spreads around the time of the turnover, and a larger subsequent decline as the uncertainty becomes resolved. Thus, cross-sectional variation in the sensitivity of spreads to executive tenure provides a way to confirm that the decline in spreads over CEO tenure indeed reflects the resolution of managerial uncertainty.

##### *4.1. CEO Background and Prior Uncertainty about the CEO*

New CEOs differ in the prior uncertainty about their abilities to add value to their firms. For example, the existence of an "heir apparent" usually indicates a well-anticipated succession with an incoming CEO of known talents and a continuation of the prior CEO's policies, so the appointment of an heir-apparent CEO should be associated with relatively low uncertainty. Similarly, we expect an outsider CEO to have higher prior uncertainty than an insider CEO because of the unknown quality of the match between the outsider and the new firm. In addition, younger CEOs generally have shorter track records and less visibility than older CEOs, so the market will likely have less time to observe them and have a more diffuse prior about their abilities. Learning models such as Pastor and Veronesi (2003) predict that learning should be faster when prior uncertainty about ability is higher (see Hermalin and Weisbach (2014) for more

discussion). A consequence of a faster learning speed is that the perceived default risk should decline at a higher rate when there is more prior uncertainty about the CEO's ability.

In Panel A of Table 6, we estimate the way that the sensitivity of CDS spreads to tenure varies with these measures of *ex ante* uncertainty about the incoming CEO. Column (1) includes a term interacting tenure with a dummy variable indicating that the new CEO is an "heir-apparent". The incremental effect of tenure on the firm's CDS spread for such an heir apparent CEO, measured by the sum of the coefficients on tenure and tenure interacted with the heir apparent dummy, is close to zero ( $-0.002 = -0.040 + 0.038$ ). This result suggests that when the new CEO is an heir-apparent, then the decline in CDS spread over the CEO's first three years is minimal. In contrast, when the incoming CEO is not an heir apparent, spreads decline significantly with tenure.

Column (2) presents estimates of a similar equation including a term interacting tenure with a dummy equal to one if the incoming CEO is an outsider. The effect of tenure on CDS spread for outsider CEOs ( $-0.079$ ) is substantially and significantly larger than that for insider CEOs. Similarly, Column (3) presents estimates including an interaction term for young (under 50 years old) CEOs. The results indicate that the coefficient for young CEOs is statistically significantly larger than for older CEOs. All these results suggest that the firm's CDS spread is more sensitive to CEO tenure when there is higher prior uncertainty about the CEO.

A potentially important distinction between CEO and CFO is that a CFO's skills, such as experience with financial reporting, tax, and making accounting judgments, are typically more general and transferrable across firms and industries than a CEO's skills.<sup>14</sup> The generality of CFOs' skills could be one reason why we observe more outsider successions for CFOs than for CEOs. In addition, it suggests that the difference between the prior uncertainty of an insider CFO and that of an outsider CFO should be smaller than between an insider CEO and an outsider CEO. Indeed, in Column (4) of Table 6, Panel A, we find that

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<sup>14</sup> Ralph Bender, CFO of the Manship Media Group, for example, suggests that a successful CFO should be a technical generalist, rather than specializing in one area: "The key to being a successful CFO is not so much knowing everything, but knowing a little bit about a lot of things, trying to stay abreast of these things." (see Lamoreaux (2009))

the CDS spread to tenure sensitivity is not significantly different between insider CFOs and outsider CFOs, suggesting that the prior uncertainty about an outsider CFO is not significantly higher than that about an insider CFO.

#### 4.2. *Prior Relationships with Lenders*

We have presumed to this point that all suppliers of debt capital have access to the same information about the firm's management, so that all have the same assessment of the CEO or CFO's ability or policies at each point in time. This analysis ignores the possibility that some lenders have better information about the CEO and the firm than others; this possibility underlies the literature on relationship banking, which suggests that a long-term relationship between firms and lenders reduces asymmetric information and consequently the spreads that firms pay on loans.<sup>15</sup> If part of the asymmetric information that contributes to the spread differences between relationship and non-relationship based loans is about the management of the borrowing firm, then the existence of a personal relationship between the manager and the lender should reduce this information asymmetry. Consistent with this idea, Karolyi (2014) finds that the existence of such a personal relationship between a firm's management and a lender does in fact lower spreads. To the extent that such a personal relationship lowers the amount of prior uncertainty about the new management from the perspective of a lender, it should reduce the sensitivity of loan spreads to the manager's time in office.

To test this prediction, we rely on *DealScan* data, together with information on executive movements from *ExecuComp*, from which we can measure whether a CEO worked for a firm that previously took a loan from a particular lender. We construct an indicator variable "*Prior CEO-Lender Relationship*", which equals one if the lead bank(s) of the current new loan was a lead bank in a loan of the CEO's employer in the five years before he became the CEO of the current firm, and zero otherwise. We expect such a prior relationship to reduce the lender's initial uncertainty about the new CEO's ability,

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<sup>15</sup> This literature was started by Rajan (1992)'s analysis. Petersen and Rajan (1994, 1995), Berger and Udell (1995), Schenone (2010), Bharath et al. (2007, 2011), and Karolyi (2014) all document that relationship-based loans have lower spreads than otherwise identical loans in which there is not a prior relationship between the firm and its lender.

leading to a lower sensitivity of spreads to the new CEO's tenure. The interpretation of this variable depends on whether a CEO was an internal or external hire; for internal hires the prior relationship would exist whenever the current firm had taken a loan with the lender, while with an external hire, it would exist if his *prior* firm had taken the loan. Table 1 Panel C reports the summary statistics of this variable.

We estimate the way in which the effect of tenure on loan spreads varies with previous lending relationships in Column (1) of Panel B of Table 6, focusing on the first three years of a CEO's tenure. The estimated direct effect of CEO tenure on loan spread is -9.901 and is statistically significant, while the interaction effect between CEO tenure and *Prior CEO-Lender Relationship* is 5.643 and also is statistically significant. These estimates imply that when there is no prior relationship, the spread declines by about 10 basis points per year of CEO tenure. However, the existence of a prior relationship between the new CEO and the lead bank(s) reduces the spread-tenure sensitivity by about 57% ( $=5.643/9.901$ ).

The estimates using our full sample pool CEOs who were internal hires together with those who were external hires. For each case, the prior lending relationship likely resolves some uncertainty perceived by the lenders. However, when the new CEO is an internal hire, a prior relationship with the lender(s) reduces uncertainty about both the current firm and the CEO, while when the new CEO is an external hire, a prior relationship reduces only uncertainty about the CEO. To isolate the extent to which the personal relationship with the lender leads to lower uncertainty perceived by the lender about the management, we re-estimate this equation on the subsample of CEOs who were hired from outside the firm.

Column (2) reports the estimates for the subsample of outsider CEOs. The direct effect of tenure is much larger in absolute magnitude here than in Column (1) (-17.716 vs. -9.901), because there is larger uncertainty about outsider CEOs. The interaction effect is 6.855, which implies that if the new outsider CEO has worked with the lender before joining the current company, then the loan spread is 39% ( $=6.855/17.716$ ) less sensitive to the new CEO's time in office. Thus, a personal relationship between a CEO and a lender, even if it occurs prior to the CEO joining his current firm, leads to less uncertainty on the part of a lender, and consequently lower sensitivity of spreads to CEO tenure.

In Columns (3) and (4), we repeat this exercise for CFOs. Similar to the estimates for CEOs, the existence of a prior relationship between the CFO and the lender(s) significantly reduces the sensitivity of the firm's loan spreads to the CFO's time in office by 32% for the full sample of CFOs ( $=2.790/8.725$ ) and 30% for outsider CFOs ( $=2.852/9.550$ ). The magnitude of this sensitivity for CFOs is smaller than for CEOs, consistent with the view that uncertainty about CEOs is more important than about CFOs because their decisions have a larger impact on firm value.

Overall, the results in Panels A and B of Table 6 suggest that the loan-spread-tenure relation is affected by the amount of prior uncertainty about the new CEO, which is consistent with the argument that the declining interest rate over CEO tenure is driven by the decrease in the amount of uncertainty about the new management over time.

#### *4.3. The Risk of the Debt Claim*

We have argued that the decline in CDS spreads, as well as loan spreads and bond yields, over CEO tenure, occurs because of the reduction in uncertainty associated with a new CEO. As this uncertainty becomes resolved over time, management-related risk declines, lowering the market's expectation of firms' default risk. Another cross-sectional prediction is that the effect of this additional management uncertainty should be larger when the debt is riskier. Merton (1974) shows that a risky corporate bond is a portfolio of a risk-free bond and a short position in a put option on the firm's assets. Therefore, the riskiness of the debt claim is related to the moneyness of the put option. When the claim is riskier, the probability of the put option being in the money before it expires is higher, and the option value is more sensitive to an increase in volatility of the firm's assets due to the change of CEO. This intuition implies that the interest rate that the firm pays on debt should be more sensitive to CEO tenure for speculative grade issuers than for investment grade issuers, for highly levered issuers than for moderately levered issuers, and for subordinated debt than for senior debt.

We evaluate these predictions in Panel C of Table 6. In Column 1, we re-estimate the CDS equation from Table 2, Column 2, but also include interaction terms between tenure and a dummy variable

indicating whether the firm has a speculative credit rating (below BBB-) at the time of the turnover, and between tenure and a dummy variable that equals 1 if the firm's leverage ratio is in the top quartile (above 36%) at the time of turnover. The coefficient on the interaction with Speculative Grade variable is close to zero and insignificant, but the coefficient on the interaction with high leverage is negative, large in magnitude, and significantly different from zero. The sensitivity of CDS spread to CEO tenure in highly leveraged firms more than doubles that in moderately leveraged firms.

In Columns 2 and 3, we estimate a similar equation for the sample of loans and bonds respectively. In addition, for the loan equation, we compare term loans and line of credit, as term loans are riskier for the banks than line of credit. For the bond equation, we compare subordinated bonds and senior bonds, as subordinated bonds are riskier for bond holders.<sup>16,17</sup> Column (2) documents that the loan spreads are significantly more sensitive to CEO tenure for highly leveraged firms and for term loans. Column (3) shows that the bond yield spreads are significantly more sensitive to CEO tenure when firms are highly leveraged and bonds are more junior. These results suggest that tenure-spread sensitivities are higher when debt is riskier.

In summary, the cross-sectional evidence about the relation between the firm's cost of debt financing and its CEO's time in office is consistent with the view that reduction in uncertainty about management drives the decline in default risk and the firm's cost of debt over CEO tenure. The cost of debt appears to be more sensitive to CEO tenure when there is higher prior uncertainty about the CEO's ability, when there is no prior relationship between the new CEO and the lender, and when the debt claim is riskier.

## **5. Implications of Management Uncertainty for Financial Policies**

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<sup>16</sup> Almost all of the loans in our sample are senior, so we cannot consider the effect of seniority using the loan sample.

<sup>17</sup> The other differences in the specifications between the columns come from the features of the different markets. For firms with a traded CDS, we have daily values for the CDS, so we estimate our equation using daily data. With daily data, we choose to include firm-CEO fixed effects, so the direct effects of speculative grade and high leverage cannot be estimated since these firm characteristics are measured at the time of each turnover. Using the loan and bond data, we only have one observation for each time a firm takes out a loan or issues a bond, so we measure tenure in years and use firm fixed effects rather than firm-CEO fixed effects, and the direct effects of firm characteristics such as speculative grade and high leverage can be estimated because a firm may have multiple turnovers.



When a new CEO takes office, the uncertainty about his ability and policies affects the total risk of the firm and therefore the interest it must pay on its debt. The additional risk due to uncertainty about the management is likely to be idiosyncratic rather than systematic since there is no reason why the talents of the incoming CEO is likely to co-vary with the overall state of the economy. Thus, its effect on the firm's cost of capital will depend on the level of investors' diversification, which is unobservable to an outsider. However, regardless of investors' diversification, this idiosyncratic risk is likely to affect firms' financing policies. In particular, the temporary increase in promised interest rates could potentially lead firms to refrain from taking loans or issuing bonds at times when uncertainty about the management is high. In addition, the additional cost of borrowing following CEO changes is likely to lead firms to have a higher precautionary savings. Finally, in the years immediately following a CEO turnover, firms should rely more on internal than external funds to finance their investments.

#### *5.1. Propensity to Use External Debt and Precautionary Savings*

We first consider the way firms' propensities to issue external debt and their cash policies vary over their CEOs' first three years in office. In Panel A of Table 7, we estimate the probability of the firm issuing bonds or initiating loans as a function of its CEO's tenure, using the same firm-level controls as in prior specifications. Column (1) presents estimates of the spline specification, which allows the likelihood of using external debt to be different in different stages of the CEO's career. These estimates indicate that the firm's propensity to issue external debt significantly increases during the first three years of the CEO's tenure, and remains constant during the remainder of the CEO's tenure. Column (2) estimates this relation using only the first three years of tenure for CEOs who stay in office for at least 3 years; these specifications imply that the likelihood of issuing external debt increases by about 1.3 percentage points per year.

In Panel B, we do a similar exercise for firms' cash holdings (cash and short-term marketable securities normalized by the book value of assets).<sup>18</sup> In addition to the controls employed in prior

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<sup>18</sup> We obtain similar results if we exclude marketable securities when calculating cash holdings.

specifications, we also control for uses of cash: actual investment expenditures (capital expenditures, acquisitions, change in net working capital), debt obligations (measured by leverage ratios), and dividend payouts. The estimated cash-tenure sensitivity therefore reflects the impact of CEO tenure on the firm's cash holdings, netting out the current uses of cash, so it should capture the impact of management uncertainty on precautionary savings.

The estimates in Column (1) indicate that cash holdings are highest when the firm has a new CEO, significantly decreases in the CEO's first three years, and then becomes insensitive to CEO tenure after three years. Column (2) suggests that the cash to assets ratio decreases by about 0.4 percentage points per year, totaling 1.2 percentage point over the first three years of CEO tenure. Given that the median cash to assets ratio in our sample is 7%, a one-percentage-point decline in cash ratio represents a 17% decline, a nontrivial drop. Column (3) documents that there is a similar decline of cash holding over CEO tenure following turnovers that are not likely to be performance-motivated (turnovers that satisfy any of the criteria in rows (2)-(5) of Table 1, Panel C). Similar to the decline in the cost of borrowing, the estimated decline in cash over the first three years of tenure does not appear to be a consequence of the endogenous timing of turnovers.

If the decline in cash holdings over the first three years of CEO tenure occurs because of uncertainty about the new CEO, then this sensitivity should vary with the amount of uncertainty there is about the new CEO. Panel C of Table 7 presents tests of this hypothesis. The results suggest that when the prior uncertainty about the CEO is relatively high, i.e., the new CEO is young, not an heir apparent, or is an outsider, cash holdings are more sensitive to CEO tenure. The coefficients on the interaction between tenure and "Young" (Column 1) and "Outsider" (Column 3) are negative and significant, increasing the effect of tenure on cash ratios. In contrast, the coefficient on "Heir Apparent" interacted with tenure is .004 and exactly offsets the coefficient of tenure (-.004), so the effect of tenure on cash ratios equals zero when the successor is an heir apparent and negative if he is not an heir apparent. These results are consistent with

the view that the additional cash holdings at the beginning of a CEO's tenure reflect precautionary savings due to the additional uncertainty and cost of raising debt capital during this period.

## 5.2. Evidence from Acquisition Financing

If firms face a higher cost of debt financing during CEOs' first few years of tenure, then all other things equal, firms should be less likely to use debt to finance its investments during this period. To examine this hypothesis, we consider the way that firms finance large acquisitions. We focus on acquisitions because they are large, observable investments, and we can measure the way in which they are financed. We construct a sample of acquisitions with disclosed transaction value above \$1 million from the SDC Platinum Database.<sup>19</sup> Using information from SDC on the means of payment (cash or stock), we calculate the average percentage of deal value financed by stock and by cash for each CEO tenure year (0, 1, 2, 3). The cash financing part can come from either internally generated cash or external debt financing through a loan. We measure the extent to which acquirers raise external cash by matching the acquisitions with the data on loans and bonds used above. For the loan sample, we use *DealScan's* information on the purposes of loans, including "acquisition line" and "takeover", and estimate from this information the amount of loan that is used for the acquisition. Thus, we calculate the average ratio of loan values for acquisition purposes to deal value in each tenure year, and interpret it as the percentage of deal value financed by loans.

Table 8 tabulates the results. Two patterns are evident. First, the split between stock financing and cash financing (14% vs. 86%) is fairly stable over the early CEO tenure years. Second, the percentage of deal value financed by loans increases substantially over time. It equals 5.7% in year 0, and then almost doubles in years 1 and 2, and increases further to 14.8% in year 3. The difference in the percentage financed by loans from year 0 to year 1 is statistically significant at 5% level, while the percentage financed by stock (or cash) is not significantly different across these years.

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<sup>19</sup> We exclude leveraged buyouts, exchange offers, repurchases, spinoffs, minority stake purchases, recapitalizations, self-tenders, and privatizations.

One potential concern is that part of the cash used for an acquisition can come from another form of external debt, bond issuance, for which firms do not disclose the uses of the proceeds. To address this concern, we single out firms that engage in acquisitions but do not have any bond issuance in the same fiscal years as the acquisitions. We find very similar results as those reported in Table 8. The split between stock and cash (15% vs. 85%) is relatively stable over the first three years of CEO tenure, and the percentage financed by loans still significantly increases over time (5.2%, 9.3%, and 13.4% in the first three years, respectively).

Firms increase the likelihood that they issue external debt, decrease their cash holdings, and increase their use of external funds to finance investment during their CEOs' early years of tenure. These effects likely reflect management adjusting its financial policies because of the changing cost of using external debt during the early years of a CEO's tenure.

## **6. Conclusion**

A central feature of financial markets is that the interest rate a firm pays on debt increases with the market's perception of the firm's risk. This risk occurs because of factors that affect the value of the firm's underlying assets, and also because of uncertainty about how these assets will be managed. The literature on debt pricing typically does not distinguish between these types of risks. However, all risks, including those generated by uncertainty about management, should affect the likelihood of default. Consequently, a rational market should incorporate managerial-generated uncertainty into its assessment of a firm's risk when pricing its securities. Holding constant a firm's fundamental risks, when there is more uncertainty about a management team's abilities or its future choices of actions, creditors should increase the interest rates they charge the firm.

Uncertainty about management is likely to be highest when there is a new management team and should decrease over time as the new management's strategy, talent, as well as its match with the firm, become better known to the market. Our empirical analysis suggests that CDS spreads on a firm's debt,

loan spreads at origination, and the bond yield spreads at issuance are all significantly higher when the firm's CEO and/or the CFO are new in office than when they have been in office for three years. This pattern persists regardless of the reason for the management turnover. The sensitivity of the borrowing cost to CEO tenure also becomes more pronounced when the prior uncertainty about the manager is higher: if the CEO is not an heir-apparent, is an outsider, is younger, or has no prior relationship with the lender(s). These results strongly suggest that uncertainty about management does affect firms' costs of borrowing.

If a firm's cost of borrowing is likely to decline over time as a firm's management becomes better-known to the market, firms' financial policies should take account of this expected change in their cost of borrowing. Empirically, we find that firms do adjust their financial policies as a response to decreasing management-related costs of borrowing over time. In particular, firms tend to have a lower propensity to issue debt, to hold more precautionary savings, and to rely more on internal funds for investments when their CEOs are new in office, relative to the level for the same firms three years later when the CEOs are more well-known to the market.

Management-related risk is almost definitionally idiosyncratic and unrelated to firms' exposure to systematic risk. Therefore, although management risk will increase the likelihood of default and therefore the promised interest rates on debt, it should not affect expected returns on debt (or equity), or firms' capital budgeting decisions if investors are well-diversified. The extent to which these assumptions hold in practice is likely to be an interesting topic of future research, especially given that investment behavior appears to vary systematically over the CEO cycle (Pan et al. 2014b), and also that idiosyncratic risk appears to affect expected equity returns (Ang et al. 2006). Overall, our study suggests that uncertainty about management affects firms' costs of borrowing and consequently their financial policies. Such an observation has consequences for management as well as for financial markets. It emphasizes the importance of transparency in managerial policies and communicating them to the marketplace, since predictability of managerial strategies appears to lower future financing costs. In addition, it suggests that existing models of debt pricing are incomplete to the extent that they ignore management risk. More

generally, the paper's results suggest that risk should not be viewed monolithically: a firm's risk comes from many sources, including both the fundamentals of its business and its choice of management team.

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## Appendix A: Variable Definitions

Loan spread (in basis point)	All-in-Drawn Spread (AIS) over LIBOR at the origination date, from the current pricing file. Winsorized at 1% in the Deal Scan/Compustat merged data base.
Loan maturity (in months)	A calculation of how long (in months) the facility will be active from signing date to expiration date, from the facility file.
Loan size (in \$ millions)	The amount of the facility, from the facility data set.
Secured	An indicator variable if the loan is secured, from the facility file.
Number of lenders	Total number of lenders in a loan, from the lender file.
Performance Pricing	A loan feature that ties the interest rate of the loan to an indicator (e.g., leverage, interest coverage ratio) of the firm's performance, from the performance pricing file.
Loan Type	Type of the loan (facility)
Loan Purpose	Purpose of the loan (facility)
Lead Bank	Following Bharath et al. (2007), we focus on lead bank(s) in the syndicate in relationship lending. Any lender characterized as "lead arranger", "lead bank", "lead manager", or have an allocation of more than 90% of the total committed amount to the facility is characterized as a lead bank. Any bank that is described as "participant" is not a leading bank.
Prior CEO (CFO)-Lender Relationship	A binary variable that equals 1 if the lead bank(s) of the current new loan was a lead bank in a loan of the CEO's employer in the five years before he became the CEO of the current firm, and zero otherwise.
Dummy (Loan Initiation or Bond Issuance)	An indicator variable that equals 1 if the firm takes at least one loan or issued one bond in the fiscal year.
Yield spread (in basis point)	Offering yield spread. The difference between the issue's offering yield and the yield of the benchmark treasury bond, calculated only for fixed coupon bond (about 78% of the mergent sample).
Bond size (in \$ millions)	Offering amount, the par value of debt initially issued (in \$ millions)
Bond maturity (in months)	Maturity date – offering date (in months).
Subordinated	An indicator variable that equals 1 if the bond is junior, junior subordinate, subordinate, senior subordinate, and 0 otherwise (senior or senior secured).
CDS Spread (in basis point)	The amount paid by the Protection Buyer to the Protection Seller, typically denominated in basis points and paid quarterly. We use the five-year spreads because these contracts are the most liquid and constitute over 85 percent of the entire CDS market. To maintain uniformity in contracts, we only keep CDS quotations for senior unsecured debt with a modified restructuring (MR) clause and denominated in U.S. dollars.
Recovery Rate (in percentage)	Reported by data contributors. Most pricing methodologies estimate recovery rates in a very simplistic way: a percentage is assigned to the seniority of the debt of a company. For investment grade issuers, recovery is generally assumed to be 40% (as the probability of default is low, the recovery rate is at best an estimate). For distressed issuers however, where the probability of default is

	higher, recovery tends to be more precisely defined.
Credit Spread (in basis point)	The difference between AAA corporate bond yield and BAA corporate bond yield (data source: Federal Reserve Board of Governors) measured in the month prior to loan initiation.
Term Spread (in basis point)	The difference between the 10-year Treasury yield and the 2-year Treasury yield (data source: Federal Reserve Board of Governors) measured in the month prior to loan initiation.
VIX (in percentage)	CBOE volatility index, which shows the market's expectation of 30-day volatility. It is constructed using the implied volatilities of a wide range of S&P 500 index options. This volatility is meant to be forward looking and is calculated from both calls and puts.
Log(Assets)	Logarithm of the total book assets
Leverage	(Long-term debt + debt in current liabilities)/total assets
M/B	Market value of equity (closing price at the fiscal year end times shares outstanding) divided by book value of equity
Q	(Market value of equity + the book value of total debt)/book value of total assets
ROA	Earnings before interest, tax, and depreciation scaled by the total book assets
Tangibility	Net property, plant and equipment/total assets
CF Volatility	Residual volatility of the AR(1) process of ROE, following Pastor and Veronesi (2003)
Payout Ratio	(Dividend/Earnings) per share
Cash Ratio	Cash and short-term marketable securities scaled by (contemporaneous) book assets
Capx	Capital expenditure scaled by total book assets, with missing or negative Capx set to 0.
Acquisition	Value of acquisitions scaled by total book assets. Acquisitions include completed deals covered in <i>SDC</i> with the deal form of “Acquisitions of Assets”, “Acquisitions of certain Assets”, “Acq. Maj. Int.”, “Acq. Part. Int.”, “Acq. Rem. Int.”, “Acquisition” or “Merger” (as the acquirer”).
Change in NWC	Change in net working capital without cash, scaled by total assets
Speculative Grade	An indicator variable that equals 1 if the firm has a rating below BBB-, and 0 otherwise (investment grade)
Highly Levered	An indicator variable that equals 1 if leverage is greater than 36% (corresponds to the 75% of the leverage distribution, as well as the mean of the speculative grade firms).
Total time in office	Equals to 0 if the CEO (or CFO) came into office and left office in the same year; 1 if he left the year after he became CEO (or CFO); etc.
Long-term CEO	CEOs with at least 3 years in office in total (i.e., total time in office no less than 2 years)
Outsider CEO	An indicator that equals 1 if the CEO is hired from outside (i.e, with the firm for less than three year when becoming CEO)
Heir-apparent CEO	An indicator variable that equals 1 if the new CEO was an heir apparent. An executive with the title “president” or “chief operating officer (COO)” or both who is distinct from the CEO and the chairman is designated as the “heir apparent”

Young CEO	An indicator variable that equal to 1 if the CEO who was younger than 50 when taking office.
Turnovers Due to Health or Illness	Include cases where a) news searches revealed that the CEO departure was related to a health condition or death (from Fee et al. 2013), or b) turnover reason provided in Execucomp is “deceased”.
Turnovers Due to Retirement of Departing CEO	This sample includes turnovers cases where a) news searches revealed that the CEO departure was related to a health condition or death (from Fee et al. 2013), b) turnover reason provided in Execucomp is “deceased”, c) departing CEOs older than 65 years. We exclude the “suspicious” retirements by focusing on retirements at good performance. This means that the cumulative monthly industry-adjusted stock return during the 12-months before the new CEO’s inauguration month (see the variable definition for <i>Cum. Industry-adj. Return month[-12,-1]</i> below) is greater than 0.
No Management Shakeup	CEO turnovers not accompanied by management (top-4 highest paid non-CEO executives) changes during the turnover year and the year after turnover
Cum. ind.-adj. return month[-12,-1]	Cumulative industry (Fama-French 49)-adjusted return during the 12 months before the inauguration month
Median monthly IVOL month[-12,-1]	The median of the monthly industry (Fama-French 49)-adjusted idiosyncratic volatility during the 12 months before the inauguration month
Good pre-turnover performance (Pre-turnover Ind-adj. IVOL<=0 & stock return>=0 & ROA>=0)	Turnovers that satisfy the following three conditions: 1) the median of the monthly industry-adjusted idiosyncratic volatility during the 12-months before the inauguration month (see the variable definition for <i>Median Monthly IVOL month[-12,-1]</i> above) is less or equal to 0. 2) the cumulative monthly industry-adjusted stock return during the 12-months before the inauguration month (see the variable definition for <i>Cum. Industry-adj. Return month[-12,-1]</i> above) is no less than 0, 3) the ind-adj. ROA in the fiscal year prior to the inauguration month is no less than 0. ROA is defined as the earnings before interest, tax, and depreciation scaled by the beginning of fiscal year total book assets.
No Pre-turnover run-up in CDS spread	To capture the change in the CDS spread before turnover, we run firm-CEO specific regressions of daily CDS spread on event days [-730, -30], with day 0 being the day when the CEO takes office. We require at least 250 trading day data on CDS spread. Turnovers with non-positive (or insignificant) tenure-time slope are classified as not preceded by an increase in the CDS spread.
Outright Forced	Outright forced turnovers include the “overtly forced” group from Fee et al. (2013) with cases for which news searches indicated that the CEO was forced to leave or left under pressure.

**Table 1: Summary Statistics****Panel A: Loan, Bond, and CDS Attributes**

This table reports the summary statistics of loan, bond, and CDS attributes during the first 10 years of CEO tenure. Loan level and bond level variables, such as the loan spread and yield spread, are calculated when loans are initiated or when bonds are issued for the sample period that we have loan or bond data (1987 – 2012). The CDS variables are measured at the daily frequency for the sample period that we have CDS data (2001 – 2012).

Variables	N	sd	mean	p25	p50	p75
CDS Spread	955,103	229.24	159.12	38.53	75.66	174.67
Recovery Rate	950,007	3.09	39.61	39.43	40	40
Loan Spread	17,076	126.89	157.93	50	125	225
Loan Maturity	16,478	26.74	44.28	20	48	60
log(Loan Size)	17,075	1.45	5.30	4.53	5.37	6.21
Number of lenders	17,063	9.71	9.97	3	7	14
Performance Pricing	17,076	0.50	0.45	0	0	1
Refinancing	12,450	0.38	0.82	1	1	1
Secured	10,568	0.49	0.60	0	1	1
Prior CEO-lender Relationship	11,039	0.48	0.35	0	0	1
Speculative Grade	11,259	0.49	0.39	0	0	1
Yield Spread	8,525	194.77	182.49	62.94	121.27	233
Bond Maturity	8,520	125.62	144.24	61	120	144
log(Bond Size)	8,525	1.74	5.43	5.01	5.70	6.21
Subordinated	8,525	0.37	0.16	0	0	0

**Panel B: CEO Turnovers**

This table reports the distribution of CEO turnovers over time for CEOs in three samples. Information on CEO turnover is obtained from Execucomp for the sample period 1987-2010. Although Execucomp's coverage starts in 1992, some of the CEOs in the database took office before 1992, leading to some CEO turnovers from the late 1980s being in our sample. The CDS data is available only from 2001. Therefore, the turnovers in the CDS sample from early periods tend to be later years of a long-term CEO's tenure and are scarce.

Became CEO Year	# of turnovers in the loan Sample	# of turnovers in the bond Sample	# of turnovers in the CDS Sample
1987 - 1991	532	344	
1992 - 1996	834	454	103
1997 - 2001	988	580	288
2002 - 2006	892	461	303
2007 - 2012	568	348	263
Total	3,814	2,187	957

**CEO Time in Office**

This table reports the distribution of CEO's total time in office (in years) for CEOs in the union of the above three samples.

	Obs	Mean	25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile
CEO Total Time in Office (in years)	4,294	6.14	3	5	9

Panel C: CEO Turnover Types and CEO Characteristics

This table reports the number of various CEO turnovers based on turnover reason (see appendix for more details), succession origin, and CEO age at turnover, for the CEO sample in Panel B.

	# of Turnovers
Health/Death	119
Health/Death/Retirement at good performance	242
No Mgt Shakeup	495
Good pre-turnover performance	728
No Pre-turnover run-up in CDS spread	185
Not classified	2,296
Outright Forced	246
Heir-apparent CEO	512
Outsider CEO	1,194
Young CEO	1,651

Panel D: Firm and macro-level Attributes

This table reports the summary statistics of firm attributes (yearly, 1987-2012) for all Execucomp firms that had turnovers between 1987 and 2012, as well as the credit market conditions (daily, 1987-2012 for credit and term spread, 1990-2012 for VIX).

Variables	N	sd	mean	p25	p50	p75
Log(Assets)	35,260	1.94	7.27	5.96	7.21	8.53
Leverage	34,503	0.22	0.24	0.06	0.21	0.36
M/B	34,119	4.30	2.90	1.33	2.04	3.34
ROA	33,962	0.16	0.11	0.07	0.12	0.18
Tangibility	33,349	0.24	0.28	0.08	0.20	0.42
CF Volatility	30,563	0.96	0.56	0.25	0.29	0.42
Payout Ratio	35,528	0.45	0.22	0.00	0.00	0.31
Cash Ratio	35,168	0.18	0.14	0.02	0.07	0.20
Capx	35,192	0.06	0.05	0.01	0.04	0.07
Acquisition	35,192	0.07	0.02	0.00	0.00	0.00
Change in NWC	34,526	0.07	0.00	0.00	0.00	0.00
Credit Spread	6,533	40.37	98.15	72	90	113
Term Spread	6,505	90.95	109.75	26	103	190
VIX	5,794	8.13	20.45	14.73	18.87	23.96

**Table 2: The Effect of CEO Tenure on CDS spread**

This table reports the changes in CDS spread over CEO tenure. The sample period is 2001-2012. CEO tenure is measured by days since the CEO takes office. Column (1) reports the results using a piecewise linear specification for all CEOs (no matter how long they stayed in office) from year 0 to year 10. Column (2) reports the results for the first three years of CEOs who stay in office for at least three years. All the control variables are measured contemporaneous to the CDS spreads. The definitions of all variables are in Appendix A. Standard errors are clustered at the firm-year level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)
	Years [0,10]	Years [0,2]
	CDS Spread	
Tenure (years 0-2)	-0.032*** (0.011)	
Tenure (years 3-5)	-0.015 (0.011)	
Tenure (years 6-10)	-0.002 (0.011)	
Tenure (in days)		-0.031** (0.015)
Recovery Rate	-12.817*** (1.225)	-10.784*** (1.416)
Credit Spread	0.478*** (0.039)	0.443*** (0.066)
Term Spread	-0.020 (0.029)	-0.050 (0.043)
VIX	2.098*** (0.134)	2.443*** (0.259)
Log(Assets)	-44.778*** (12.259)	42.382 (30.398)
Leverage	209.408*** (46.637)	76.313 (61.511)
M/B	-6.977 (6.049)	13.347 (8.938)
ROA	-487.058*** (74.297)	-509.336*** (118.529)
Tangibility	36.790 (77.583)	4.283 (111.459)
CF Volatility	16.036*** (4.381)	4.654 (7.087)
Payout Ratio	-23.384*** (5.167)	-6.306 (5.110)
Firm-CEO and Year F.E.	x	x
Observations	770,255	270,124
Adjusted R-squared	0.758	0.833

**Table 3: Tenure- CDS Spread Relations Following Likely Non-performance Driven Turnovers**

This table reports the changes in CDS spread over the first three years of CEO tenure for various turnover subsamples that are likely to be non-performance driven, outright forced, as well as those not classified. We control for the same set of CDS, firm or, macro level variables as in Table 2, but do not report the coefficients for brevity. All CEOs in our sample stay in office for at least three years. The definitions of turnover types are in Appendix A. Standard errors are clustered at the firm-year level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<u>CDS Spread, Years [0,2], Long-term CEOs</u>							
	Health/ Death	Health/ Death/ Ret. at good perf.	No mgt shakeup	Good pre- turnover perf.	No pre- turnover run-up	Union (2)-(5)	Not classified	Outright forced
Tenure (in Days)	-0.037* (0.020)	-0.042* (0.022)	-0.035* (0.019)	-0.029* (0.016)	-0.043* (0.022)	-0.026** (0.013)	-0.058* (0.030)	-0.132** (0.050)
Firm- CEO and year F.E.	x	x	x	x	x	x	x	x
Obs.	5,928	14,541	38,566	119,125	84,777	164,501	79,759	25,864
Adj. R <sup>2</sup>	0.871	0.876	0.787	0.780	0.814	0.762	0.832	0.910

**Table 4: Borrowing Rates over CEO Tenure**

## Panel A: Loan Spread

This table reports the changes in loan spread over CEO tenure. Column (1) uses piecewise linear regressions, for all the CEOs from year 0 (turnover year) to year 10. Columns (2) to (4) report the results for the first three years of long-term (in office for at least three years) CEOs' tenure. Further, Column (3) reports the results for 961 likely non-performance driven turnovers only (union of the four types of turnovers in columns (2)-(5) in Panel C of Table 1 in the loan sample). Column (4) reports the results for loans that are classified as "refinancing" by DealScan. Lagged firm-level control variables, such as firm size, leverage, M/B, ROA, Tangibility, Payout ratio, are included in all the regressions, but omitted in the table for brevity. Standard errors are clustered at the loan level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	Years [0,10]		Years [0,2], Long-term CEOs	
	(1)	(2)	(3)	(4)
			Likely non-performance driven turnovers	Refinancing
Tenure (years 0-2)	-6.495*** (1.520)			
Tenure (years 3-5)	-0.972 (0.914)			
Tenure (years 6-10)	-0.282 (0.732)			
Tenure (in years)		-6.266*** (1.872)	-5.136** (2.495)	-5.161** (2.419)
Credit Spread	0.358*** (0.053)	0.296*** (0.093)	0.443*** (0.133)	0.325** (0.136)
Term Spread	0.163*** (0.031)	0.122* (0.062)	0.209*** (0.081)	0.098 (0.081)
log(Debt Maturity)	-6.309** (2.745)	-4.113 (4.960)	-4.437 (5.979)	-13.706* (7.109)
log(Debt Size)	-12.011*** (1.118)	-11.591*** (1.983)	-10.553*** (2.950)	-9.743*** (2.666)
Performance Pricing	-16.740*** (2.101)	-24.234*** (4.161)	-15.688** (6.151)	-27.964*** (5.682)
Tranche Type and Loan				
Purpose	x	x	x	x
Firm-level Controls	x	x	x	x
Firm and Year F.E.	x	x	x	x
Observations	12,850	4,887	2,140	3,063
Adjusted R-squared	0.690	0.716	0.747	0.751



Panel B: Non-Price Terms of Loan Contract over Tenure

This table reports the changes in other components of the loan contract during the first three years after CEO turnovers, including loan maturity, loan size, number of lenders, and whether the loan is secured. All CEOs in our sample stay in office for at least three years. The loan sample in this table does not condition on the availability of information on loan spread. The definitions of all variables are in Appendix A. Standard errors are clustered at the loan level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	(1) log(Loan Maturity)	(2) log(Loan Size)	(3) Number of Lenders	(4) Secured
Tenure (in years)	0.015* (0.008)	0.002 (0.020)	-0.304 (0.241)	0.011 (0.011)
Credit Spread	-0.001 (0.000)	-0.002* (0.001)	-0.011 (0.010)	0.000 (0.000)
Term Spread	-0.001* (0.000)	-0.001 (0.001)	-0.001 (0.007)	0.000 (0.000)
Log(Assets)	0.010 (0.022)	0.512*** (0.037)	2.774*** (0.492)	-0.113*** (0.022)
Leverage	-0.106 (0.082)	-0.075 (0.164)	2.432 (1.806)	0.214** (0.089)
M/B	0.000 (0.002)	0.007* (0.004)	-0.016 (0.048)	0.001 (0.002)
ROA	0.337** (0.172)	1.090*** (0.336)	2.667 (4.029)	-0.750*** (0.180)
Tangibility	-0.130 (0.139)	0.099 (0.282)	5.403 (4.464)	-0.087 (0.192)
CF Volatility	-0.001 (0.010)	-0.005 (0.018)	0.152 (0.209)	-0.003 (0.008)
Payout Ratio	0.037* (0.021)	0.053 (0.038)	1.373*** (0.448)	-0.022 (0.025)
Performance Pricing	0.096*** (0.022)	0.286*** (0.043)	4.271*** (0.483)	-0.069*** (0.023)
Tranche Type and Loan Purpose	x	x	x	x
Firm and Year F.E.	x	x	x	x
Observations	4,887	5,054	5,048	3,078
Adj. R <sup>2</sup>	0.744	0.671	0.301	0.679

Panel C: Bond Yield Spreads over CEO Tenure

This table reports the changes in the bond yield spread over CEO tenure. Column (1) uses piecewise linear regressions, for all the CEOs from year 0 (turnover year) to year 10. Columns (2) to (3) report the results for the first three years of long-term CEOs' tenure. Further, Column (3) reports the results for 439 exogenous turnovers only (union of the four types of turnovers in columns (2)-(5) in Panel C of Table 1 in the bond sample). We control macro-level credit conditions, bond characteristics, and lagged firm-level characteristics. Standard errors are clustered at the firm level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	Years [0,10]		Years [0,2]
	(1)	(2)	(3)
			Likely non-performance driven turnovers
Tenure (years 0-2)	-7.519** (3.677)		
Tenure (years 3-5)	-3.107 (2.754)		
Tenure (years 6-10)	1.205 (2.139)		
Tenure (in years)		-9.600** (4.845)	-7.465* (3.849)
Credit Spread	1.107*** (0.103)	1.335*** (0.154)	1.265*** (0.203)
Term Spread	0.110 (0.072)	0.116 (0.149)	0.118 (0.198)
Log(Assets)	-21.810*** (7.695)	-17.309 (13.565)	8.522 (20.698)
Leverage	87.250*** (29.424)	53.402 (69.133)	383.626*** (137.537)
M/B	-4.096* (2.414)	-10.792 (7.810)	-0.317 (10.666)
ROA	-290.524*** (70.329)	-59.060 (120.535)	147.586 (161.223)
Tangibility	-64.012 (44.336)	-11.882 (85.046)	43.747 (110.818)
CF Volatility	3.806 (4.135)	7.954 (7.578)	-2.833 (6.082)
Payout	-24.195*** (6.802)	-17.793 (12.451)	-10.949 (23.168)
log(Debt Maturity)	-9.553 (6.939)	-7.735 (9.238)	9.119 (8.079)
log(Debt Size)	-4.710 (8.635)	-18.150 (16.074)	-15.261 (15.605)
Firm and Year F.E.	x	x	x
Observations	5,921	2,326	1,207
Adjusted R-squared	0.531	0.593	0.599

**Table 5: CFO Turnovers and Cost of Debt Financing**

The CFO turnover data is assembled based on the news announcements from 2001 to 2009 in Capital IQ database. Panel A reports the summary statistics of CFO turnover, tenure, and total time in office (in years) for CFOs whose employers took loans or issued bonds or are in the CDS sample during their first 10 years of tenure. “CFO Turnovers with long-term successors” include CFO successions with incoming CFOs that stay in office for at least 3 years. “CFO Turnovers (with long-term successors) not accompanied by CEO turnovers within +/-12 months” also include long-term CFOs only. Further, in this sample, there is no CEO turnover in the 12 months before or the 12 months after a CFO turnover. “Outsider CFO Succession (with long-term successors)” means that the new long-term CFO comes from outside the company. Panel B reports changes in a firm’s CDS spread during its CFO’s tenure. The CFO tenure is measured by the number of days since the CFO takes office. Column (1) reports the results using a piecewise linear specification for all CFOs from year 0 to year 10. Columns (2) to (5) report the results for the first three years of long-term CFOs. Panel C reports changes in a firm’s loan/bond spread during the first three years of its long-term CFO’s tenure. In both Panels B and C, we include the usual set of controls as in Tables 2A and 3A, but for brevity we do not report the coefficient estimates of some of those variables. All variable definitions are in Appendix A. Standard errors are clustered at the firm-year level in Panel A, at the loan level in the loan regression in Panel B, and at the firm level in the bond regression in Panel C. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Summary Statistics of CFO Turnover and CFO Tenure

	# of turnovers 2001-2009
CFO Turnovers	1,857
CFO Turnovers with long-term successors	1,033
CFO Turnovers (with long-term successors) not accompanied by CEO turnovers within +/-12 months	722
CFO Turnovers (with long-term successors) accompanied by CEO turnovers within +/-12 months	311
CFO turnovers (with long-term successors) due to death/health/retirement at good performance	68
CFO turnovers (with long-term successors) due to death/health/retirement at good performance, and not accompanied by CEO turnovers within +/-12 months	43
Outsider CFO succession (with long-term successors)	380

CFO Time in Office

	Obs	Mean	25 <sup>th</sup> percentile	Median	75 <sup>th</sup> percentile
CFO Total Time in Office (in years)	1,857	3.96	1.58	3.42	5.83

Panel B: Uncertainty about CFO and CDS Spread

	(1)	(2)	(3)	(4)	(5)
	Years [0, 10]		Years [0,2], Long-term CFOs		
			Accompanied by CEO turnovers within +/-12 months	Not accompanied by CEO turnovers within +/-12 months	Health/death/ retirement at good perf., not accompanied by CEO turnovers
	CDS Spread				
CFO Tenure (years 0-2)	-0.027*** (0.009)				
CFO Tenure (years 3-5)	-0.004 (0.009)				
CFO Tenure (years 6-10)	-0.009 (0.012)				
Tenure (in days)		-0.022** (0.011)	-0.059** (0.029)	-0.017* (0.009)	-0.021* (0.011)
Controls	x	x	x	x	x
Firm-CFO and Year F.E.	x	x	x	x	x
Observations	611,823	288,831	107,909	180,922	12,116
Adj. R <sup>2</sup>	0.820	0.847	0.843	0.840	0.923

Panel C: Cost of Debt during First Three Years of a CFO's Tenure

	(1)	(2)
	Loan Spread	Bond Spread
Tenure (in years)	-5.204* (2.706)	-5.676* (2.901)
Credit Spread	0.447*** (0.110)	1.088*** (0.157)
Term Spread	0.304*** (0.100)	0.490*** (0.181)
log(Debt Maturity)	10.638 (8.158)	-25.228 (19.445)
log(Debt Size)	-5.175 (3.385)	-19.322 (14.929)
Performance Pricing	-22.047*** (6.621)	
Firm-level Controls	x	x
Tranche Type and Loan Purpose	x	
Firm and Year F.E.	x	x
Observations	2,390	1,313
Adjusted R-squared	0.732	0.534

**Table 6: Cross-Sectional Differences in the Spread-Tenure Relation**

Panel A: Differences in Prior Uncertainty about the New CEO (or CFO)

This table reports the effect of prior uncertainty about the new CEO (or new CFO) on changes in CDS spread during the first three years of the CEO's (or CFO's) tenure. All CEOs or CFOs in our sample stay in office for at least three years. "Heir-apparent CEO" indicates that the CEO was the heir-apparent before becoming the CEO. "Outsider CEO (CFO)" indicates that the CEO (CFO) comes from outside the company. "Young CEO" is a CEO who is less than 50 years old when taking office. All variable definitions are in Appendix A. Standard errors are clustered at the firm-year level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	CDS Spread			
Tenure (in days)	-0.040** (0.016)	-0.011 (0.016)	-0.019 (0.017)	-0.023** (0.011)
Tenure*Heir-apparent CEO	0.038*** (0.013)			
Tenure*Outsider CEO		-0.079*** (0.019)		
Tenure*Young CEO			-0.031** (0.014)	
Tenure*Outsider CFO				0.002 (0.019)
Recovery Rate	-10.922*** (1.464)	-10.425*** (1.475)	-11.382*** (1.512)	-13.041*** (1.684)
Credit Spread	0.447*** (0.067)	0.460*** (0.068)	0.449*** (0.068)	46.579*** (6.077)
Term Spread	-0.048 (0.044)	-0.051 (0.044)	-0.044 (0.045)	-7.637* (4.547)
VIX	2.362*** (0.263)	2.381*** (0.271)	2.395*** (0.268)	2.312*** (0.231)
Log(Assets)	18.709 (29.133)	13.808 (29.271)	35.176 (30.918)	-22.288 (23.211)
Leverage	97.590 (62.022)	70.097 (61.478)	62.883 (61.235)	142.305* (81.475)
M/B	11.223 (9.224)	4.612 (9.609)	17.106* (9.429)	-0.456 (1.009)
ROA	-492.586*** (119.798)	-490.520*** (123.376)	-524.634*** (117.712)	-522.663*** (121.474)
Tangibility	51.508 (105.597)	28.684 (103.968)	27.600 (122.724)	205.937* (115.476)
CF Volatility	3.822 (7.210)	3.854 (7.349)	3.854 (6.984)	28.344*** (6.408)
Payout Ratio	-6.759 (5.088)	-8.479* (4.946)	-6.364 (5.202)	-6.804 (5.245)
Firm-CEO (CFO) and Year F.E.	x	x	x	x
Observations	260,297	252,500	253,091	288,831
Adjusted R-squared	0.833	0.835	0.835	0.847

Panel B: The Effect of a Prior Relationship with a Lender on Spread-Tenure Relations

This table reports the effect of relationship lending on changes in loan spreads during the first three year of CEO's or CFO's tenure. All CEOs and CFOs in our sample stay in office for at least three years. "Prior CEO (or CFO)-lender Relationship" is a dummy variable indicating the existence of a prior lending relationship between the CEO (or CFO) and any of the lead banks in the syndicate when taking office. We collect data on public firms the CEO worked for during his career path to identify the CEO-lender relationship variable. We collect data on both public and private firms the CFO worked for during his career path, to identify the CFO-lender relationship variable. All variable definitions are in Appendix A. Standard errors are clustered at the loan level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	(1) Full sample CEOs	(2) Outsider CEOs	(3) Full sample CFOs	(4) Outsider CFOs
	Loan Spread			
Tenure (in years)	-9.901*** (3.019)	-17.716*** (5.338)	-8.725* (4.464)	-9.550* (4.860)
Tenure (in years)*Prior CEO (CFO)- Lender Relationship	5.643* (2.952)	6.855* (3.518)	2.790* (1.447)	2.852* (1.459)
Prior CEO (CFO)-Lender Relationship	-11.878 (8.139)	-9.067 (20.535)	-10.685 (9.060)	-7.630 (16.380)
Credit Spread	0.343*** (0.107)	0.368* (0.207)	0.444*** (0.111)	0.524*** (0.165)
Term Spread	0.169** (0.073)	0.224 (0.168)	0.301*** (0.101)	0.444** (0.174)
Log(Assets)	-10.617* (5.528)	-6.249 (9.153)	-0.924 (12.594)	2.755 (22.806)
Leverage	93.736*** (20.533)	84.908* (44.521)	62.953 (41.470)	0.811 (61.842)
M/B	0.540 (0.535)	0.881 (0.772)	-1.478* (0.820)	-0.519 (1.006)
ROA	-238.228*** (41.279)	-218.209*** (76.650)	-307.629** (131.372)	-219.927 (240.148)
Tangibility	-30.248 (31.489)	11.348 (69.590)	-33.350 (65.311)	-21.229 (122.190)
CF Volatility	0.357 (2.459)	-0.568 (3.606)	7.247* (3.838)	6.167 (5.043)
Payout Ratio	4.620 (5.678)	13.987 (11.402)	4.965 (11.481)	12.716 (18.398)
log(Debt Maturity)	-2.243 (5.764)	0.980 (9.707)	10.904 (8.180)	7.879 (13.517)
log(Debt Size)	-10.828*** (2.177)	-14.284*** (3.936)	-5.183 (3.397)	-5.038 (5.074)
Performance Pricing	-24.917*** (4.951)	-23.211*** (8.795)	-22.294*** (6.732)	-28.696** (12.019)
Tranche Type and Loan Purpose	x	x	x	x
Firm and Year F.E.	x	x	x	x
Observations	3,965	1,511	2,394	1,034
Adjusted R-squared	0.707	0.699	0.732	0.715

Panel C: Risk of the Debt Claim and the Spread-Tenure Relation

This table contrasts the changes in the CDS spread, loan spread or bond yield spread over the first three years of the CEO's tenure for riskier debt claims and less risky debt claims. All CEOs in our sample stay in office for at least three years. "Speculative Grade" indicates a firm with credit rating below BBB- in the turnover year. "Highly Levered" indicates borrowers with leverage ratio in the top quartile (0.36) in the turnover year. "Subordinated" indicates junior bonds. "Term Loan" indicates (all types of) term loans. We include the usual set of firm, loan, or bond level controls, but for brevity we do not report the coefficient estimates of those variables. All variable definitions are in Appendix A. Standard errors are clustered at the firm-year level in Column (1), at the loan level in Column (2), and at the firm level in Column (3). \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
	CDS Spread	Loan Spread	Yield Spread
Tenure (in days)	-0.025*		
	(0.013)		
Tenure (in days)*Speculative	-0.015		
	(0.020)		
Tenure (in days)*Highly Levered	-0.033*		
	(0.018)		
Tenure (in years)		-0.487	-4.176*
		(2.185)	(2.414)
Tenure (in years)*Speculative		-4.817	5.998
		(4.995)	(7.352)
Tenure (in years)*Highly Levered		-5.348*	-5.551*
		(2.729)	(2.846)
Tenure (in years)*Term Loan		-10.377**	
		(4.897)	
Tenure (in years)*Subordinated			-6.921*
			(3.508)
Speculative		106.351***	105.611***
		(10.311)	(34.117)
Highly Levered		18.612**	51.654***
		(7.759)	(19.318)
Term Loan		47.475**	
		(22.959)	
Subordinated			6.275
			(24.144)
Firm level controls	x	x	x
Loan or bond level controls		x	x
Firm-CEO and Year F.E.	x		
Firm and Year F.E.		x	x
Observations	248,186	3,452	2,246
Adjusted R-squared	0.832	0.771	0.611

**Table 7: Propensity to Use External Debt and Precautionary Savings**

## Panel A: Probability of Using External Debt over CEO Tenure

This table reports the probability of loan initiation or bond issuance over CEO tenure. The dependent variables are indicator variables that equal to 1 if the firm issued bond(s) or took loan(s) in year t, and 0 otherwise. The firm level controls are measured in year (t-1). Columns (1) reports the results using a piecewise linear specification for all CEOs from year 0 to year 10. Column (2) reports the results for the first three years of CEOs who stay in office for at least three years. All variable definitions are in Appendix A. Standard errors are clustered at the firm level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	Dummy(Loan Initiation or Bond Issuance)	
	(1) Years [0,10]	(2) Years [0,2] Long-term CEOs
Year (0-2)	0.010** (0.005)	
Year (3-5)	-0.004 (0.004)	
Year (6-10)	0.002 (0.003)	
Tenure (in years)		0.013** (0.006)
Log(Assets)	0.013* (0.008)	0.027* (0.014)
Leverage	0.048* (0.029)	0.009 (0.050)
M/B	0.008*** (0.003)	0.010 (0.006)
ROA	0.082** (0.037)	0.060 (0.066)
Tangibility	-0.019 (0.059)	-0.072 (0.102)
CF Volatility	-0.003 (0.004)	-0.001 (0.007)
Payout Ratio	0.002 (0.010)	0.016 (0.017)
Firm and Year F.E.	x	x
Observations	23,129	9,020
Adjusted R-squared	0.191	0.203



Panel B: Cash Ratio over CEO Tenure

This table reports the change in cash ratio over CEO tenure. The dependent variable is the ratio of cash and cash equivalent to book assets in year t. The firm level controls are also measured in year t. Columns (1) reports the results using a piecewise linear specification for all CEOs from year 0 to year 10. Columns (2) and (3) report the results for the first three years of CEOs who stay in office for at least three years. The likely non-performance driven turnover sample includes turnovers that satisfy any of the criteria in rows (2)-(5) of Panel C of Table 1. All variable definitions are in Appendix A. Standard errors are clustered at the firm level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	Cash Ratio		
	(1)	(2)	(3) Likely non-performance driven turnovers
Year (0, 1, 2)	-0.003*** (0.001)		
Year (3, 4, 5)	-0.000 (0.001)		
Year (6, 7, 8, 9, 10)	0.001 (0.001)		
Tenure (in years)		-0.004*** (0.001)	-0.003** (0.001)
Log(Assets)	-0.025*** (0.003)	-0.024*** (0.005)	-0.023*** (0.005)
Q	0.007*** (0.001)	0.008*** (0.002)	-0.004* (0.002)
ROA	0.016 (0.025)	0.039 (0.028)	0.009 (0.042)
CF Volatility	0.003** (0.001)	0.002 (0.002)	0.002 (0.004)
Tangibility	-0.351*** (0.020)	-0.349*** (0.030)	-0.350*** (0.044)
Leverage	-0.110*** (0.013)	-0.121*** (0.024)	-0.089*** (0.031)
Capx	-0.121*** (0.023)	-0.183*** (0.043)	-0.227*** (0.060)
Acquisition	-0.078*** (0.012)	-0.087*** (0.020)	-0.084*** (0.033)
Change in NWC	-0.089*** (0.015)	-0.108*** (0.027)	-0.049 (0.046)
Payout Ratio	0.001 (0.002)	0.002 (0.002)	-0.006** (0.003)
Firm and Year F.E.	x	x	x
Observations	28,508	10,642	4,486
Adjusted R-squared	0.775	0.799	0.843

Panel C: Uncertainty about the CEO and Cash-Tenure Sensitivity

This table reports the effect of prior uncertainty about the new CEO on the cash-tenure sensitivity over time during the first three years of the CEO's tenure. The dependent variable is the ratio of cash and cash equivalent to book assets in year  $t$ . All CEOs in our sample stay in office for at least three years. "Heir-apparent CEO" indicates that the CEO was the heir-apparent before becoming the CEO. "Outsider CEO" indicates that the CEO comes from outside the company. "Young CEO" is a CEO who is less than 50 years old when taking office. All variable definitions are in Appendix A. Standard errors are clustered at the firm level. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2) Cash Ratio	(3)
Tenure (in years)	-0.002** (0.001)	-0.004*** (0.001)	-0.002** (0.001)
Tenure (in years)*Young CEO	-0.005** (0.002)		
Young CEO	0.006 (0.005)		
Tenure (in years)*Heir-apparent CEO		0.004** (0.002)	
Heir-apparent CEO		-0.010* (0.006)	
Tenure (in years)*Outsider CEO			-0.004** (0.002)
Outsider CEO			0.002 (0.006)
Log(Assets)	-0.024*** (0.005)	-0.024*** (0.005)	-0.024*** (0.005)
ROA	0.035 (0.032)	0.039 (0.028)	0.035 (0.032)
Leverage	-0.122*** (0.024)	-0.121*** (0.024)	-0.121*** (0.024)
Tangibility	-0.349*** (0.030)	-0.350*** (0.030)	-0.351*** (0.030)
CF Volatility	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Q	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)
Payout Ratio	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Capx	-0.185*** (0.043)	-0.182*** (0.043)	-0.181*** (0.043)
Acquisition	-0.086*** (0.020)	-0.087*** (0.020)	-0.086*** (0.020)
Change in NWC	-0.106*** (0.028)	-0.108*** (0.027)	-0.106*** (0.028)
Firm and Year F.E.	x	x	x
Observations	10,447	10,642	10,494
Adjusted R-squared	0.795	0.799	0.796

**Table 8:** Acquisition Financing over CEO Tenure

This table reports the sources of acquisition funding in years 0 to 3. All CEOs in our sample stay in office for at least three years. To calculate the percentage of acquisitions funded by various sources, we first calculate firm-year level total transaction values of acquisitions. Acquisitions include completed deals covered in the SDC database, either acquisition of assets or equity interests. For each sample firm, we include both domestic and international acquisitions with disclosed transaction values above \$1 million over the sample period. We exclude leveraged buyouts, exchange offers, repurchases, spinoffs, minority stake purchases, recapitalizations, self-tenders, and privatizations. Then, we calculate the firm-year level transaction value funded by stock and cash, and calculate the firm-year level % of acquisitions funded by stock and by cash, respectively. Finally, we calculate the firm-year level amount of loans, for which the deal purpose is specified as either “Takeover” or “Acquisition Lines”, and calculate the firm-year level % of acquisitions funded by loans. We then tabulate the number of observations and the cross-sectional average of % funded by stock, by cash, and by loans, in each of the tenure years, with year 0 being the turnover year.

	Year 0		Year 1		Year 2		Year 3	
	Obs.	Mean	Obs.	Mean	Obs.	Mean	Obs.	Mean
% funded by stock	658	0.137	810	0.149	810	0.149	780	0.131
% funded by cash	658	0.863	810	0.851	810	0.851	780	0.869
---% funded by loan	658	0.057	810	0.112	810	0.112	780	0.148

**Figure 1: Average CDS Spreads at Key Events Related to CEO Turnovers**

The figures plot the average CDS spreads (measured in basis points) in each event period. In Panel A, the sequence of events starts from the 3 months before the departure announcement of the old CEO's, to the departure month, to the appointment announcement month of the new CEO, to the inauguration month, and then 36 months after the inauguration. The CDS spread for "within 3 months before departure" is the average CDS spread in month [-3,-1] before the departure announcement month. The turnover sample includes 112 CEO turnovers since 2001, for which the departure announcement, appointment announcement, and the inauguration occurred in different month. Panel B plots the CDS spread path for the 87 turnovers since 2001, for which the departure announcement and inauguration occurred in the same month.

