THE UNIVERSITY OF TEXAS AT SAN ANTONIO, COLLEGE OF BUSINESS

Working Paper SERIES

WP # 0008FIN-452-2012

Date March 7, 2013

Severance Agreements, Incentives, and the Cost of Debt

Sattar Mansi, Anh Nguyen
Virginia Tech

John Wald
University of Texas at San Antonio

Severance Agreements, Incentives, and the Cost of Debt

Sattar Mansi, Anh Nguyen, and John Wald[§]

March 4, 2013

Abstract

Upon examining the language used in recent SEC filings, we find that severance agreements are often paid whether or not the CEO leaves the firm due to a change in control. We hypothesize that since severance agreements compensate CEOs in the event of termination, CEOs with these agreements will have an incentive to increase firm risk and decrease effort. Consistent with this hypothesis, we find that the adoption of a severance agreement is associated with an increase in firm risk, a higher likelihood of CEO turnover, and a lower operating performance. We also document a significant positive relation between the use of severance agreements and the cost of debt; firms in which the CEO has a severance agreement have yield spreads which are approximately 10% higher than firms without these agreements. The results hold after controlling for endogeneity, the probability of takeover, and whether the firm has investment or non-investment grade debt. Overall, the evidence suggests that the effects of severance agreements extend beyond takeovers, and that these additional implications are primarily negative for the firm and for debt holders in particular.

Key Words: severance agreements, cost of debt, takeover probability, firm risk, CEO turnover

JEL Classifications: G32, G34, G38, K22

[§] Mansi and Nguyen are from Virginia Tech and Wald is from the University of Texas at San Antonio. The authors would like to thank Natasha Burns, Ambrus Kecskes, Ugur Lel, Tatyana Sokolyk, and seminar participants at Virginia Tech and University of South Florida for comments and suggestions. Special thanks to Bill Maxwell at Southern Methodist University for providing debt data. The remaining errors are the sole responsibility of the authors.

I. Introduction

Senior executive compensation packages often contain large severance payouts that provide cash and non-cash compensation upon a triggering event such as demotion, termination, or forced resignation (Gompers, Ishii, and Metrick, 2003). These payouts have become increasingly popular in the last two decades with the RiskMetrics data set documenting an increase in adoptions from roughly 50% in 1990 to 82% in 2010.[1] While the existing literature (see, e.g., Bebchuk, Cohen, and Wang, 2010) focuses on compensation contracts which apply only when a change in control occurs (e.g., referred to as golden parachutes), upon examining a number of recent proxy filings we find that these contracts typically include a payout whenever the CEO is terminated.[2] In this paper, we examine the effect of severance agreements on CEO incentives with respect to risk and effort, and we show how the presence of these agreements in compensation contracts affects the firm's cost of debt capital.

In contrast to our focus on CEO incentives and the cost of debt, the existing literature on severance agreements mostly considers the effects of golden parachutes on takeovers and stock prices. For instance, Machlin, Choe, and Miles (1993), and Lambert and Larcker (1995) show that golden parachutes imply a greater takeover probability, while Hartzell, Ofek, and Yermack (2004) show that greater payouts to the CEO are associated with lower acquisition premia. An early event study by Lambert and Larcker (1985) finds a positive shareholder response to the adoption of golden parachutes; but a more recent study by Brusa, Lee, and Shook (2009) finds that golden parachute adoption is a negative event, and more negative for more generous agreements. Recently, Bebchuk, Cohen, and Wang (2010) document that golden parachutes are associated with a decrease in firm value, a greater likelihood of acquisition, and a lower acquisition premium. Overall, the literature finds mixed evidence on the relation between golden parachutes and shareholder wealth.

We hypothesize that since severance agreements provide a large payment in the event of termination, CEOs have an incentive to increase firm risk and decrease effort, and that these changes in risk and effort lead to an increase in CEO turnover. Lys, Rusticus, and Sletten (2007)

[1] Until recently, the adoption of severance agreements did not require shareholder approval, although under the Dodd-Frank Act of 2010, firms are now required to receive approval from their shareholders when adding a severance agreement to the executive's compensation contract.

[2] We collect a sample of recent proxy statements which are marked by RiskMetrics as having golden parachutes, and we find that in 86% of the sample there is a payout even if a change in control does not occur. Thus, we use the golden parachute indicator as a measure of whether a severance agreement exists.

argue that, when managers are risk averse, the use of large severance agreements provides downside protection in addition to rewards for exceptional stock performance. This downside protection induces managers to undertake risky projects. Yermack (2006) provides evidence that firms are motivated to adopt golden handshakes to mitigate managerial problems including inadequate risk-taking, shirking, entrenchment in office, and incomplete disclosure. Similarly, Rau and Xu (2010) find that contingent severance pay is promised in advance for managers to provide insurance for their human capital value and compensate them for the risks they undertake.

The literature also provides evidence about how the Gompers, Ishii, and Metrick (2003) governance index of shareholder rights is associated with decreased effort. Core, Guay, and Rusticus (2006) examine the association between corporate governance, as proxied by the Gompers et al. (2003) index of shareholder rights, and operating performance. Core et al. find a significant negative association between governance and return on assets, which suggests that badly governed firms have greater agency costs. Additionally, Bertrand and Mullainaithan (2003) find that managers who are more insulated from the takeover market are less likely to take risks and more likely to "enjoy the quiet life."

Using the RiskMetrics data set covering the period from 1990 through 2009, we examine the effect of severance agreements on firm risk, operating performance, and executive turnover. We find that firms which add a severance agreement in their CEO compensation contracts see a significant increase in idiosyncratic risk, and this holds when we control for endogeneity using an instrumental variable approach and if we exclude firms which later faced takeover attempts.[3] Similarly, we find some evidence that firms which remove severance agreements from their CEO compensation contracts see a decline in idiosyncratic risk. We also examine the relation between operating performance and severance agreements using the method in Core, Guay and Rusticus (2006) and find that firms with severance agreements have weaker industry-adjusted returns on assets. Moreover, we find that firms with severance agreements are more likely to have the CEO leave the firm, and again this holds even if we exclude firms which faced a takeover attempt. Overall, these findings are consistent with an increase in risk and a decrease in effort for CEOs with severance agreements.

[3] Takeovers often, but not always, have a negative impact for debt holders (see, e.g., Asquith and Wizman, 1990; and Billet, King, and Mauer, 2004).

Next, we examine the relation between the presence of severance agreements in CEO contracts and the cost of debt financing. We focus on the debt market because of its sheer size and its dissemination of information to the real economy.[4] We posit that the increase in risk and decrease in effort would lead to an increase in the firm's bond yield spreads, and that this relation would persist even after controlling for the probability of takeover. Using data from the Lehman Brothers Fixed Income database and the TRACE data set, we confirm our hypothesis. Specifically, we find a significant positive relation; firms in which the CEO has a severance agreement have yield spreads which are about 10% higher than similar firms without severance agreements. This result is robust to controlling for other governance characteristics, firm-specific fixed effects, the likelihood of acquisition, whether the severance agreement is new or old, and whether the firm has investment or non-investment grade debt.

Our paper contributes to the literature on the effect of severance agreements on security prices. We provide evidence that the use of severance agreements is associated with a higher cost of debt, and confirm our findings using several robustness tests.[5] Moreover, we show that the increase in the cost of debt associated with severance agreements coincides with an increase in firm risk, a decrease in profitability, and an increase in CEO turnover. Our finding that severance agreements increase the cost of borrowing complements the results of Bebchuk, Cohen, and Wang (2010), who find that firms whose CEOs have a golden parachutes also have a lower industry-adjusted Tobin's Q. Moreover, Bebchuk et al. find that firm value declines during the period of a golden parachute adoption and continues to erode subsequently.

The remainder of the paper is organized as follows. Section 2 develops our hypotheses and provides background literature of the relation between severance agreements and firm value. Section 3 discusses the data and variable measurements. Section 4 provides our multivariate analyses and empirical results. Section 5 concludes.

[4] In addition, for bonds causality is unlikely to be an issue. That is, a change in whether the firm has a severance agreement can cause yields to change, but it is less likely that changes in yield spreads will cause firms to adopt or remove severance agreements from their compensation contracts. Our econometric tests find no evidence of endogeneity in the yield spread specifications. A Durbin-Wu-Hausman test is unable to reject the null hypothesis that severance agreements are exogenous in the cost of debt specification (see the empirical analysis below).

[5] The evidence that severance agreements are not beneficial to bondholders contrasts with the prior findings that a higher value to the Gompers, Ishii, and Metrick (2003) governance index is associated with a decrease in the cost of debt (e.g., Klock, Mansi, and Maxwell, 2005, and Cremers, Nair, and Wei, 2007). However, as we explain below, the incentive effects of severance agreements differ from those of other components of the governance index.

2. Severance Agreements and Firm Behavior

We begin our analysis by providing an intuitive discussion of the implications of severance agreements for CEO behavior. More formal models of effort, risk-taking, and incentives exist (see, e.g., Holmstrom and Milgrom, 1987; Prendergast, 2002). A few papers also theoretically address how severance agreements are related to management compensation and effort (see, e.g., Lys, Rusticus, and Sletten, 2007; and Rau and Xu, 2010; or Lambert and Larcker, 1985; and Knoeber, 1986, for models about golden parachutes); however, we believe that the implications here are sufficiently straight-forward that a formal model is not necessary.

2.1 Severance Agreements, Takeovers, Risk, and Effort

The literature discusses two reasons for the perceived positive relation between compensation contracts such as golden parachutes and takeovers. The incentive alignment hypothesis states that golden parachutes help resolve the conflict of interest between shareholders and management with respect to takeovers, thereby increasing the likelihood of a takeover (see, e.g., Lambert and Larcker 1985; Harris 1990; Machlin, Choe, and Miles, 1993; Bebchuk, Cohen, and Wang, 2010). In contrast, the takeover signaling hypothesis predicts that the positive relation between golden parachutes and takeovers is due to the adoption of a golden parachute conveying management's private information regarding the likelihood of a takeover; the probability a firm will receive a bid is independent of the adoption of a golden parachute. These hypotheses are not mutually exclusive, and Bebchuk, Cohen, and Wang (2010) find evidence consistent with at least some incentive effect. We also find a positive relation between severance agreements and takeovers in our data in the empirical section below.

In a standard principal-agent model, the agent is risk-averse whereas the principal is not. As we show that the severance agreements we consider are paid whether or not there is a change of control event, this implies a new set of incentives for the CEO. Specifically, CEOs with severance agreements have an incentive to increase risk relative to those who do not have these provisions in their contracts. If the additional risk pays off, the CEO will be compensated for good performance. If the additional risk does not pay off, the firm is more likely to fire the CEO. With a severance agreement, this downside has fewer negative consequences for the CEO as he collects the severance. Thus, all else equal, we hypothesize that the adoption of a

severance agreement implies greater firm risk, and that this relation holds even when considering those firms that did not receive a takeover bid.

Similarly, a CEO with a severance agreement may have an incentive to reduce his/her effort. Again, if this lower effort implies that their employment is more likely to be terminated, they may still be able to receive a severance. We therefore hypothesize that severance agreements are associated with lower profitability and with the CEO leaving more often. Moreover, we hypothesize that this relation also holds when the firm does not receive a takeover bid.[6]

2.2 Severance Agreements and the Cost of Debt

The existing literature on the relation between severance agreements and equity value focuses on golden parachutes and provides mixed results. Lambert and Larcker (1985) find a positive shareholder response to the adoption of golden parachutes, while Brusa, Lee, and Shook (2009) and Bechuck, Cohen, and Wang (2010) find that golden parachutes are negatively associated with equity value. We instead focus on the effect of severance agreements on debt value. Given our hypotheses above, we discuss the effects of severance agreements on debt through takeovers, risk taking, and CEO effort.

Takeovers can decrease the value of the target firm's debt (see Asquith and Wizman, 1990), and this effect can be larger for high-grade bonds (see Billet, King, and Mauer, 2004). An increase in the probability of a takeover could therefore increase the firm's cost of debt. Moreover, Hartzell, Ofek, and Yermack (2004) show that golden parachutes are associated with a larger payout to the CEO and a smaller payout to shareholders. Thus, takeovers associated with golden parachutes may be less advantageous for the firm's other stakeholders. An increase in risk taking would also be associated with a decrease in debt value (Campbell and Taksler, 2003). Further, CEO turnover is associated with an increase in equity volatility (Clayton, Hartzell, and Rosenberg, 2005), and an increase in the cost of debt capital (Adams and Mansi, 2009). Lastly, if the CEO puts in less effort, this may decrease firm value, and this could

[6] An important related question is, given the negative incentive effects of severance agreements, and particularly ones that are payable without a change in control, why are severance agreements included in CEO compensation contracts? We do not address this question in this analysis. Instead, we focus on the implications of golden parachutes for CEO behavior and debt value. However, one possibility is that severance agreements are a case of faulty contract design that has spread through the marketplace for CEOs (see, e.g., Hillion and Vermaelen, 2004).

also imply an increase in the cost of debt. Thus, the theoretical implications of severance agreements on bond value are overwhelmingly negative.

In contrast, other components of the Gompers, Ishii, and Metrick (2003) governance index decrease the ease of hostile takeovers, and therefore they insulate management from the market for corporate control. Managers with more antitakeover protection may therefore decrease risk (Bertrand and Mullainathan, 2003), and this leads to a lower cost of debt (Klock, Mansi, and Maxwell, 2005; Cremers, Nair, and Wei, 2007).

3. Data and Variable Measurement

3.1 Data Sources and Sample

We use seven databases in our analysis of the effect of severance agreements on the cost of debt financing. These include: (i) Lehman Brothers (LBFI) and TRACE Fixed Income databases for bond characteristics and pricing information, (ii) RiskMetrics corporate governance database for antitakeover provisions including severance agreements, (iii) Compustat Industrial Annual database for financial information, (iv) executive compensation (Execucomp) database for information on top executives characteristics and compensation, (v) CRSP database for stock prices and returns information, (vi) Thomson Financial Institutional Ownership (13F) database for institutional ownership information, and (vii) SDC database for mergers and acquisitions information.

Up to the year 2006, RiskMetrics reported data on antitakeover provisions every two to three years (in the years 1990, 1993, 1995, 1998, 2000, 2002, 2004, and 2006). After 2006, the data were available annually. To construct a continuous dataset, we follow the prior literature (e.g., Bebchuk, Cohen and Wang, 2010) and fill the missing years by assuming that the provisions in any given year were in place in the years preceding the publication date. Our initial data sample extends to 2009 and consists of 33,340 firm-year observations. We exclude financial firms with SIC codes from 6000 to 6999 due to the unique structures in these industries and this leaves 28,286 firm year observations for 3,379 unique firms from 1990 to 2009.

For a firm-year observation to be included in our analysis, the firm must be present in the RiskMetrics database and must have a debt issue available in the bond (LBFI or TRACE) datasets. Financial information must also be available in the Compustat database and stock

pricing information in CRSP. Additional information on institutional and insider ownership is collected from the Execucomp and Thomson Financial databases for a subsample. Merging the databases and applying these requirements yields a data set of 8,345 firm-year observations for 1,571 firms for the years from 1990 to 2009.[7]

3.2 Measuring the Cost of Debt Financing

We use the LBFI database to measure a firm's cost of debt for the years 1990 to 2006 and the TRACE database for the years 2007 and onward. The final data set contains month-end security specific information such as bid price, coupon, yield, credit ratings from Moody's and S&P, duration, issue, and maturity dates on nonconvertible bonds that are used in the Lehman Brothers Bond Indexes and bonds that are traded in the Nasdaq market. Securities are included in the Lehman Brothers Bond Indexes based on firm size, liquidity, credit ratings, maturity, and trading frequency. Because the TRACE data set includes only pricing information, we merge the data set with the Fixed Income Securities Database (available from the Wharton Research Securities Database) to obtain debt specific characteristics. We limit our analysis to only the fiscal year-end prices and yields so as to coincide with firm accounting data.

The dependent variable, the log of the yield spread or bond risk premium, is used to measure the cost of debt financing. The yield spread is defined as the difference between the yield to maturity on a corporate bond and the yield to maturity on its duration equivalent Treasury security. For firms with multiple observations in the sample, a weighted average yield spread is computed, with the weight being the amount outstanding for each security divided by the total amount outstanding for all available publicly traded debt. In the cases where no corresponding Treasury yield is available for a given maturity, the yield spread is calculated using an interpolation based on the Svensson (1994) model (or the modified Nelson and Siegel, 1987, exponential functional form).

3.3 Measuring Other Key Variables

We measure severance agreements using a dummy variable that equals one if RiskMetrics reports that the firm has a golden parachute in the compensation contract for its CEO.

[7] To minimize survivorship bias, we allow firms to exit and reenter the data set.

RiskMetrics currently defines a golden parachute as a severance contract payable in the event of a change in control.[8] As mentioned above, when we examine golden parachutes, we find that they typically are not just payable in the event of a change of control. Appendix A provides data and descriptive statistics for 50 randomly chosen firms having golden parachutes in our 2009 sample. We document that 43 out of the 50 firms (or 86%) provide language in their SEC filings to indicate that a severance package will be paid whether or not there is a change in control. On average, the payout with a change in control is double the payout without a change in control, although both payouts are typically significant, and in some cases the regular termination payout is larger than that associated with a change in control. Appendix B provides an example of the language used in a typical proxy filing.

We utilize three additional variables to capture the firm's use of severance agreements: (i) a dummy variable that equals one if a severance agreement is adopted in the current year but is not in place in the previous year based on the filled dataset (Add Severance), and (ii) a dummy variable that equals one if a severance agreement is adopted in a previous year but is not in place in the current year based on the filled dataset (Remove Severance), and (iii) a dummy variable that equals one if a severance agreement is adopted in the current and previous year based on the filled dataset (Keep Severance).

We include the Gompers, Ishii, and Metrick (2003) governance index (GIndex) based on 24 antitakeover provisions from the RiskMetrics dataset for the years 1990 to 2006. RiskMetrics stopped collecting data on the GIndex after 2006, but continued collecting certain individual antitakeover provisions that are known to have an effect on firm value. To remedy this problem, we include a subset of the GIndex based on the Bebchuk, Cohen, and Ferrell (2009) entrenchment index of six antitakeover provisions (classified boards, golden parachutes, limits to amend charter, limits to amend bylaws, supermajority, and poison pill) for the entire data set covering the years 1990 to 2009. Bebchuk et al. (2009) find that the six variables in the entrenchment index are sufficient to capture the effect of all the antitakeover provisions on stock value. We exclude golden parachutes from these indices as they are considered separately.

We measure takeover attempts and completed acquisitions using two dummy variables. Takeover attempt is a dummy variable that equals one if a firm receives an initial bid (Attempt).

[8] RiskMetrics notes that for some years, their variable is either a payment due to a change in control, or a payment without a change in control but greater than three times the annual salary plus bonus.

Acquisition is a dummy variable that equals one if a firm is acquired (Completed Acquisition). For our analysis on takeover attempts and acquisitions, we obtain mergers and acquisitions data for the years 1988 to 2011 from the Securities Data Corporation (SDC Platinum). We extend the mergers and acquisitions data two years beyond our original sample period to ensure that initial bids and completed acquisitions are precisely defined. We include all acquisitions deals coded as "mergers, acquisitions, and acquisitions of majority interest" and exclude spinoff acquisitions. Following Bates and Lemmon (2003), we define a bid as an initial bid if there are no other bids for 365 days before the announcement date. The final sample contains 11,982 initial bids and 8,856 completed acquisitions from the years 1990 to 2009. This dataset is merged with our annual data from RiskMetrics resulting in 1,572 initial bids and 1,152 completed acquisitions.

For the firm risk analysis, we follow Low (2009) and compute idiosyncratic risk as the natural logarithm of the annualized variance of the residuals from the market model. Specifically, we obtain daily stock price from CRSP to calculate daily stock returns for each firm in the sample over the period 1990 to 2009. The firm's daily stock return is the dependent variable in the market model. We use the CRSP value weighted market portfolio as a proxy for market returns and adjust for non-synchronous trading by adding five leads and five lags of this proxy (Dimson, 1979). For the performance analysis, we follow Core, Guay, and Rusticus (2006) and use three measures: operating income before depreciation scaled by total assets (ROA1), operating income after depreciation scaled by total assets (ROA2), and firm annual sales growth (Sales Growth). All three measures are computed net of the industry median using the Fama and French (1997) industry classifications.

3.4 Control Variables

The remaining variables are firm and security specific controls. Firm-specific controls include firm size, leverage, profitability, market-to-book, capital expenditures, sales growth, and volatility. Firm size (Size), a proxy for economics of scale and a takeover deterrent, is measured as the natural log of total assets. Firm leverage (Leverage), a proxy for financial health, is measured as the ratio of total debt to total assets. Firm profitability (Profitability), a proxy for financial performance, is measured as the ratio of earnings before interest, taxes,

depreciation, and amortization scaled by total assets. Sales growth (SGrowth) is the firm's annual growth in revenue. Market-to-book ratio, a proxy for growth opportunities, is computed as the market value of assets (measured as the number of shares outstanding times share price plus the book value of debt) scaled by the book value of assets. Volatility is the square root of the annualized variance of the residuals from the market model. Given a small number of extreme observations and to ensure that outliers are not driving any of our results, the variables size, leverage, market to book, and profitability are winsorized at the 1% level.

Security specific variables include credit ratings, duration, convexity, and liquidity. Firm credit rating (Rating) is the average of Moody's and S&P bond ratings and represents the average firm credit rating at the date of the yield observation.[9] Bond ratings are computed using a conversion process in which AAA rated bonds are assigned a value of 22 and D rated bonds receive a value of 1.[10] One methodology used in the literature allows for the fact that the credit rating variable may incorporate part or all of the information from governance factors. As such, we estimate the impact of credit rating excluding the effect of severance. That is, we regress the rating variable on the severance variable, and the error term in this case incorporates the credit rating information without the influence or impact of severance agreements. In this first stage we find that severance agreements are negatively and significantly related to credit ratings. The error term from this regression is labeled (Credit Rating) and is our primary measure of credit ratings in the multivariate analysis (for a similar analysis, see Klock, Mansi, and Maxwell, 2005, or Qi, Roth, and Wald, 2010).[11]

We control for term structure effects using debt duration and convexity, and for liquidity effects using debt age. For an individual security, duration (Debt Duration) is defined as the discounted time weighted cash flow of the security divided by its price, and this captures the first derivative of price with respect to yield. Debt convexity is the rate of change (second derivative) in the price-yield relation and represents the non-linear portion of the term structure of interest rates. To proxy for liquidity, we use the log of bond age (Debt Age), where the age of the bond is the length of time (in years) that a bond has been outstanding. For firms with

[9] If only one rating is available from Moody's or S&P is available, we use that one in our analysis.

[10] For more information on the conversion numbers for both Moody's and S&P firm bond ratings used in this study, see Table 1 in Anderson, Mansi, and Reeb (2003).

[11] For robustness, we use the raw credit rating variable in our specifications and find similar results. We also allow for a non-linear relation between bond yield spreads and credit ratings by using a binary variable (HighYield) that takes a value of one when the debt is non-investment grade and find similar results.

multiple bonds, we compute weighted average durations, convexities, and age using the summation of the weighted durations, convexities, and debt ages of all bonds for each firm, with the weight being the amount outstanding for each debt issue divided by total amount outstanding for all publicly traded debt for the firm.

We also control for various governance structures that are known to effect takeovers and the cost of debt financing. These include institutional holdings, Delaware incorporation, and state laws restricting payouts. Institutional ownership is the ratio of shares owned by institutions divided by the total number of shares outstanding. Delaware incorporation is a dummy variable that equals one if the firm is incorporated in Delaware. Our variable for state laws restricting payouts is the total asset constraint, equal to the minimum asset to debt ratio for a payout to be made. The prior literature shows that these laws affect capital structure (Wald and Long, 2007) and the cost of debt (Mansi, Maxwell, and Wald, 2009). In states like New York and Texas, this variable equals 1, in California this variable equals 1.25, and in Delaware and a few other states this variable equals zero.

We also utilize CEO age, measured as the age of CEO at the year of observation while in office, in various specifications. We follow Jenter and Lewellen (2010) who find that retirement preferences of target CEOs have first-order effects on both bidder and target behavior, and use a dummy variable for the age of CEO in excess of 65 years (CEO Age > 65) as an additional control variable. CEO tenure is the number of years a CEO has been in office. We also consider two additional variables: a dummy variable that equals one if a CEO left the firm (CEO Leaves Firm), and a dummy variable that equals one if a CEO left her office (CEO Leaves Office). Finally, given that our variables are sensitive to both time periods and industry effects, we control for both effects using two-digits SIC code and year dummies. Table 1 provides a complete description of the variables used in the analysis.

[Insert Table 1 about here]

3.5. Descriptive Statistics

3.5.1 Incidence of Severance Agreements, Takeover attempts, and Acquisitions

We begin the analysis by considering how the incidence of severance agreements changes over time. Panel A of Table 2 reports the incidence of severance agreements from 1990 to 2009 using the RiskMetrics database. Panel A shows that during the period from 1990 to 2006, the percentage of firms with severance agreements increased monotonically from 50% in 1990 to 78% in 2006. After 2006, the number of severance agreements fell to 51% in 2007 and 33% in 2008 but increased dramatically to 80% in 2009, possibly due to the financial crisis which started in 2007 and subsided in late 2008 and early 2009.

[Insert Panel A of Table 2 about here]

Panel B of Table 2 examines the annual frequency of takeover attempts and completed acquisitions. For the overall sample, there are 5.5% takeover attempts and 4.1% completed acquisitions. The largest number of takeover attempts and acquisitions occurred during the periods 1998 to 2000 and 2005 to 2006 (just before the internet bubble burst in March 2000 and the financial crises of 2007). The smallest number of attempts and acquisitions occurred in the years 1992, 2002, and 2008.

[Insert Panel B of Table 2 about here]

3.5.2 Sample Statistics

Panel C of Table 2 reports summary statistics for the overall sample as well as statistics segmented based on whether a firm has adopted a severance agreement or not. Included are the mean, median, and standard deviation for the overall sample and for the segmented samples. In the cost of debt analysis we consider the yield spread which has a mean, median, and standard deviation in the overall sample of 316, 187, and 472 basis points, respectively. Firms with severance contracts have higher yield spreads (mean and median values 318, and 196 basis points) than those without severance contracts (mean and median values of 312 and 175 basis points). Moreover, the mean differences between the two groups are statistically significant at the 1% level. Since the mean and median values deviate largely from one another, the yield spread variable is highly skewed. Therefore, we use the log of the yield rather than

the level yield spread value in our multivariate analysis to provide a better fit and to insure that any fitted values remain positive.[12]

[Insert Panel C of Table 2 about here]

For the overall sample, firm size has a mean of $5.6 billion, a median of $1.3 billion, and a standard deviation of $21.8 billion, respectively. The median leverage (short term plus long term debt) ratio is 44.7% with a standard deviation of 22.4%, which indicates that a large portion of the sample consist of firms that have significant liabilities in their capital structure. The firms are profitable with a mean and median profitability ratio of 13.1%. Firms on average, have a market-to-book ratio of 1.77. Firms in the sample have idiosyncratic risk of 49.1%. Institutions, on average, owned 63.9% of the shares outstanding with a standard deviation of 24.4%. Firms have a mean and median governance index of 9 provisions and a median entrenchment index of 2 provisions. CEOs, on average, own 2.5% of the firm's shares, have tenure of 7.4 years, and are 56 years old. The remaining variables are security specific. The mean bond rating variable for the full sample roughly equates to an S&P rating of BBB- and the median equates to a rating of BBB, which indicates a mean rating just above non-investment grade debt. Bond ratings are lower for the sample with severance agreements than for the sample without these agreements, and the difference between the two samples is statistically significant. The mean traded debt has duration of 6.15 years and has been outstanding for 3.6 years.

In terms of takeover variables, 5.6% of firms in the overall sample experience a takeover attempt in a given year with 4.1% completing the acquisitions. In the segmented sample, 6.4% of firms with severance agreements experience a takeover attempt compared to 4.3% of firms without severance agreements, and 4.9% of firms with severance agreements complete an acquisition compared to 2.8% of firms without severance agreements. This difference in takeover frequencies is statistically significant at the 1% level and it is consistent with the findings in the literature reporting a positive association between the presence of severance agreements and the incidence of takeover attempts and completed acquisitions (Machlin, Choe, and Miles, 1993; Bebchuk, Cohen, and Wang, 2010).

[12] Rerunning our specifications without taking the log of the yield spread does not materially change the statistical or economic significance of the results.

Panel D of Table 2 describes the industry distribution of the sample using the Security Industry Classification (SIC) codes for the overall sample and segmented by firms that adopt golden parachutes and those who do not. Although we use two digit SIC codes to control for industry effects in our empirical analysis, for brevity we only report one digit SIC codes in our descriptive analysis. Based on our segmentation, it seems that there are no majors differences in the concentration of industries between the two samples. Most of the firms in the overall sample are in manufacturing (52%), transportation and communications (15%), services (14%), and whole trade sectors (13%). The smallest concentrations of firms occur in the agriculture and forestry and public administration sectors.

[Insert Panel D of Table 2 about here]

Panel E of Table 2 provides the Pearson correlation coefficients between the golden parachute variable, yield spreads, and selected control measures. In general, the yield spread is positively correlated with the severance agreement variable, entrenchment index, firm leverage, and idiosyncratic risk. Yield spreads are negatively related to firm size, governance index, institutional ownership, profitability, credit ratings, and debt duration. The analysis also indicates that firms that adopt severance agreements have a have higher cost of borrowing. However, because of possible confounding effects by other variables, we use a multivariate framework to fully explore our hypotheses.

[Insert Panel E of Table 2 about here]

4. Empirical Results

4.1 Evidence on the Relation between Severance Agreements and Takeovers

We provide a probit analysis to examine the relation between severance agreements and the likelihood of takeovers (attempts and completed acquisitions) while controlling for firm characteristics, industry (using 2 digit SIC codes), and year effects. This verifies the prior findings that the presence of golden parachutes is positively related to the incidence of

takeovers. We apply the following Probit model and compute firm clustered errors as in Petersen (2009). That is

$$E(Takeovers_{i,t}) = \Phi\begin{pmatrix} \beta_0 + \beta_1(SeveranceAgreements_{i,t}) \\ + \beta_2(EIndex_{i,t} - GP_{i,t}) + \beta_3(FirmSize_{i,t-1}) \\ + \beta_4(Leverage_{i,t-1}) + \beta_5(Market - to - Book_{i,t-1}) \\ + \beta_6(ASR_{i,t-1}) + \beta_7(Delaware_{i,t-1}) \\ + \beta_8(CEOAge > 65_{i,t}) + \sum \beta(Year_{i,t}) + \sum \beta(Industry_{i,t}) \end{pmatrix} \quad (1)$$

Where Φ is the normal c.d.f. The primary variable of interest in the analysis is the coefficient on severance agreements. A positive value on β_1 indicates a higher probability of takeover attempts / acquisitions if a severance agreement is in place.

Table 3 presents the estimation results. Models 1 and 2 provide the results on takeover attempts and completed acquisitions, respectively. We utilize two different sets of control variables from Bebchuk, Cohen and Wang (2010). We also control for whether the firm is incorporated in Delaware as Delaware state laws are often perceived as being management friendly. We use a dummy variable that equals one if the CEO's age is greater than 65 to control of the CEO's retirement preferences.

[Insert Table 3 about here]

Overall, the results indicate a positive and significant relation between severance agreements and the likelihood of takeover attempts / acquisitions. Across the two models the likelihood of a firm receiving an initial bid increases by 16% and the likelihood of a firm getting acquired increases by 17% when the firm adopts a severance agreement.[13] This evidence is consistent with the hypothesis that severance agreements provide incentive for managers to engage in acquisitions. The remaining control variables applicable to the two models have their expected signs. The entrenchment index less severance variable has a negative and significant coefficient. Firm size acts as a takeover deterrent as larger firms have a lower probability of takeover. A higher level of leverage increases the likelihood of receiving an initial bid but

[13] In the takeover attempt model, with the exception of the findings for firm size, the results on the other coefficients largely replicate the results reported in Bates, Becher, and Lemmon (2008).

decrease the likelihood of being acquired. The coefficient on pre-bid target abnormal returns is negative and significant at the 5% level in the takeover attempt regressions; however this coefficient is positive and insignificant in the likelihood of completed acquisition regressions. Interestingly, the coefficients on both Delaware incorporation and CEO age greater than 65 are both positive and significant in all models.

4.2 Evidence on Firm Risk, Operating Performance, and CEO Turnover

4.2.1 Severance Agreements and Idiosyncratic Risk

Table 4 presents our results of different specifications with idiosyncratic risk as a function of whether the firm has a severance agreement. We include the entrenchment index without severance agreements, market-to-book, firm size, and leverage as firm specific control variables. As in Brick, Palmon, and Wald (2012) we use lagged firm idiosyncratic risk to control for autocorrelation. Model 1 summarizes the result of the idiosyncratic risk regression including the Add Severance variable. Low (2009) finds that managers change firm idiosyncratic risk in responses to a takeover regime shift, in her case, the Delaware takeover regime of the mid-1990s. Similarly, we hypothesize that a CEO has an incentive to increase firm risk if the firm adds a severance agreement and decrease firm risk if the firm removes an existing severance.

[Insert Table 4 about here]

The coefficient on Add Severance in Model 1 of Table 4 is positive and significant at the 1% level. This regression implies that on average a firm which adopts a severance agreement increases the annualized idiosyncratic variance of its stock return by about 7.3%. The set of other entrenchment antitakeover provisions also has a significant impact on idiosyncratic risks, however, in the opposite direction. In particular, if a firm adopts one more entrenchment antitakeover provision, aside from severance, the annualized idiosyncratic variance of its stock returns decreases by 3%. We also examine the relation between severance agreements and systematic risk and in general do not find significant results.

One alternative reason that severance agreements imply greater stock volatility is that they lead to more takeovers, not because they lead to more risk taking by the manager. We therefore explicitly consider the subsample of firm-year observations where there is no takeover attempt.

Model 2 reports the results for the subsample where no takeover attempts took place, and the results are unchanged for our coefficients of interest. Model 3 reports the results from a model where the firm changes its governance policy by removing a severance agreement. We find weak support for the hypothesis that managers decrease idiosyncratic risks when a firm removes a severance agreement. The coefficient on the Remove Severance variable is negative and significant at the 10% level.

Endogeneity is a possible concern in this analysis, as firms with higher volatility may be more likely to adopt severance agreements.[14] We therefore consider several potential instruments for severance agreements and test their validity using a difference-in-Sargan test statistic. We find that whether the CEO is younger than 51 (as in Jenter and Lewellen, 2010) and whether the firm was incorporated in Delaware in the prior year are both potentially valid instruments.[15] We then perform a Durbin-Wu-Hausman test for whether the severance agreement variable is endogenous and find evidence that it is. We therefore re-estimate our primary specification using an instrumental variable method, and we report the results in Model 4 of Table 4.[16] The coefficient on Add Severance is again positive and significant, and the magnitude is much larger than without using instrumental variables. That said, the coefficient here is surprisingly large, implying an idiosyncratic risk increase of almost 150%. This large coefficient may be due to a bias from using instrumental variables with weak instruments in finite samples (see, for instance, Hahn and Hausman, 2003), and given the magnitude of this coefficient, these results should be interpreted with caution.

An alternative hypothesis is that CEOs have an incentive to reduce effort if a severance agreement is in place, and this leads to greater turnover. The increase we find in stock volatility could then be due to changes in CEO turnover as Clayton, Hartzell, and Rosenberg (2005) show that CEO turnover implies greater stock return variability. We therefore repeat our analyses in Models 5 through 7 excluding any firm-years in which the CEO left the firm. The results are similar across the models with the addition of a severance agreement implying an increase in

[14] However, controlling for lagged firm idiosyncratic risk reduces potential concerns about causality. That is, even if past volatility leads to an increase in the use of severance agreements, the marginal effect we capture here is the increase in volatility due to a change in the use of severance agreements.

[15] Neither the Hansen J nor C test rejects the null that these variables are orthogonal to the error process.

[16] For convenience, we use a linear specification to test the validity of the instruments and whether severance agreements are endogenous, but we use a probit in the first stage of the IV estimation to generate the estimated coefficient in Model 4. The standard errors in this model are calculated by bootstrapping the first and second stage together while clustering by firm.

firm risk in the range of 7% to 8%. The decrease in firm risk after the deletion of a severance agreement is no longer significant for this sample; however, the estimated coefficient on the Remove Severance variable is effectively unchanged.[17]

4.2.2 Severance Agreements and Operating Performance

Recent research by Gompers, Ishii, and Metrick (2003) and Core, Guay, and Rusticus (2006) suggests that weak governance gives rise to agency costs which in turn lower operating performance. Consistent with this hypothesis, these authors document that weak governance is associated with lower operating performance. We extend their analysis by examining the relation between the adoption of a severance agreement (as a measure of poor incentives) and operating performance (as a proxy for CEO effort). That is, we measure whether firms whose CEOs have severance agreements have weaker cash flows than firms whose CEOs do not. We follow Core et al. and regress three measures of futures operating performance on severance agreements using the Newey-West procedure with one lag to adjust for serial correlation. That is

$$Performance_{i,t} = a + b_1 SeveranceAgreements_{i,t-1} + b_2 \log MVE_{i,t-1} + b_3 \log BME_{i,t-1} + b_4 Eindex - Severance_{i,t-1} + e \quad (2)$$

where performance is one of three measures: (i) industry adjusted ROA before depreciation (ROA1), (ii) industry adjusted ROA after depreciation (ROA2), and (iii) industry adjusted annual sales growth (Ind. Adj. Sales Growth). The independent variables (all lagged one period) include SeveranceAgreement, a dummy variable that equals one if the firm has a severance agreement in the current period, EIndex-Severance is the entrenchment index less severance agreement, logMVE is the log of market value of equity, and logBME is the log of book to market value of equity. A negative value on β_1 indicates that the presence of a severance agreement is associated with lower operating performance.

[17] In unreported regressions, we also control for pay performance sensitivity and the Vega (change in wealth for a change in stock volatility) of the CEO's stock and option holdings as in Brick et al. (2012), and these additional controls do not significantly change our results.

We utilize the methodology in Fama and McBeth (1973) and Core et al. (2006) and estimate the regressions by year and report mean and standard deviation of the time series as well as t-statistics of the overall regressions. The results for our three measure of operating performance are provided in Table 5. In all three models we find a negative and significant relation between the use of severance agreements and firm performance. The evidence shows that the use of severance agreements in the current period is associated with lower operating performance in the subsequent period, and this is consistent with severance agreements implying decreased CEO effort.

[Insert Table 5 about here]

4.2.2 Severance Agreements and CEO Turnover

We next consider whether severance agreements impact the frequency of CEO turnover. Table 6 summarizes the results of probit regressions where CEO turnover is the dependent variable. Model 1 is our basic specification and includes the effect of severance agreements on CEO turnover. Model 2 is similar to Model 1 but only consider a subsample with no takeover attempts. Model 3 provides results where the dependent variable is whether the CEO left her office, rather than leaving the firm. Model 4 is similar to Model 3 but again only considers the subsample with no takeover attempts.

[Insert Table 6 about here]

The results in Model 1 confirm the effect of a severance agreement in the previous year on the likelihood of CEO turnover in the current year. In particular, if a severance agreement is in effect in the prior year, the likelihood that the CEO leaves the firm this year will increase by 13%. In Model 2, the coefficient of a golden parachute is generally the same in both its magnitude and significance. The results from Models 3 and 4 which examine whether the CEO left their position (rather than leaving the firm) are also similar; if a severance agreement is adopted last year, the likelihood of CEOs leaving their position this year will increase by about 10%, and this finding is significant at the 5% or 10% level depending on specification. Overall,

across all models the results indicate a higher likelihood of CEO departure if a severance agreement is in place.

4.3 Evidence on the Relation between Severance Agreements and the Cost of Debt

Next, we examine the relation between the presence of severance agreements and bond yield spreads while controlling for other factors that are known to influence yield spreads. We perform multivariate regressions using a variety of pooled cross-section and time-series as well as firm fixed effects regressions. We use clustered standard errors at the firm level as in Petersen (2009) to compute the *t*-statistics. Our primary regression model is

$$\begin{aligned} Ln(Spread_{i,t}) = {} & B_0 + B_1 (SeveranceAgreements_{i,t}) + B_2 (EIndex - Severance_{i,t}) + B_{3\text{-}8} (FirmSpecific_{i,t}) \\ & + B_{9\text{-}12} (Security\ Specific_{i,t}) + B_{13} (TA\ Constraint_{i,t}) \\ & + B_{14\text{-}32} (Time\_Dum_{i,t}) + B_{33\text{-}40} (Industry\_Dum_{i,t}) + e_{i,t} \end{aligned} \quad (2)$$

Our principal concern in the analysis is the severance agreement coefficient estimate, B_1. A significant and positive coefficient would provide support for the hypothesis that severance agreements are value decreasing to bondholders.

For our control variables, we expect both firm size and firm age to be negatively related to yield spread as larger firms enjoy economies of scale and greater stability. Leverage should be positively related to yield spreads, as higher debt capacity is associated with a higher probability of default. The market-to-book ratio should be negatively associated with yield spreads as firms with higher growth opportunities utilize less debt and therefore lower probability of default. We expect sales growth and firm profitability to be negatively related to the cost of debt financing, as more profitable firms have a lower probability of default. We expect credit ratings to be negatively associated with yield spreads as firms with better ratings have a lower probability of default and therefore lower cost of borrowing. We expect debt age to be positively related to yield spreads as bonds that are less liquid require higher rate of return. We also include institutional ownership as a control for the governance structure of the firm and expect institutional ownership to be associated with a lower cost of borrowing due to increased monitoring (Bhojraj and Sengupta, 2003).

Table 7 summarizes the results of our regressions of the impact of severance agreements on the cost of debt financing. Model 1 provides our primary specification. Model 2 considers whether the severance agreement provision was recently adopted or was previously in existence. Model 3 is similar to Model 1 but includes the Gompers, Ishii, and Metrick (2003) governance index instead of the entrenchment index of Bebchuk, Cohen, and Ferrell (2009). Model 4 reports the primary specification with firm fixed effects similar to that in Coles, Lemmon, and Meschke (2003). Model 5 utilizes an unfilled sample as in Bebchuk et al. (2010), where we do not replace years without governance data by the governance data in the last available year.

[Insert Table 7 about here]

Across all specifications, we find a positive and significant relation (at the 1%level) between severance agreements and the cost of debt financing, indicating that bondholders view a severance agreement as a device that does not protect their interests. The coefficients across models vary from 0.089 for the unfilled sample to 0.127 for the GIndex specification. This translates to an increase in bond yield spreads of about 9% to 13%, on average, across models. As an average firm in our sample has a spread of 316 basis points, these estimates imply an increase of 28 to 40 basis points in spread with the adoption of a severance agreement. Note that Model 2 shows that the coefficients on the add and keep severance agreements are positively related to the cost of debt, with a magnitude of 12.3% for the add severance agreement and 10.2% for the keep severance agreement. We cannot reject the hypothesis that the coefficients on these two variables are equal. Overall, the results indicate that severance agreements are not beneficial to bondholders, and this is reflected in lower pricing of corporate debt.

Although severance agreements have been increasing steadily from 1990 to 2006, there has been considerable variability in the rate of reporting from 2007 to 2009 according to RiskMetrics. Therefore, to insure that our results are robust to this reporting variability, we also reran the cost of debt regressions for a sub-sample of firms for the period from 1990 through 2006.[18] The results for this sub-sample, provided in Appendix C, are similar to the overall sample and

[18] Prior to 2007, the governance data was provided by the Investor Responsibility Research Center (IRRC). This data has been collected by RiskMetrics in 2007 and thereafter.

confirm our finding of a positive and significant relation between severance agreements and the cost of debt financing.

We do not expect endogeneity to be a concern in this analysis as we do not expect bond spreads to impact the use severance agreements. However, in order to test this assumption, we again consider an instrumental variable approach using CEO age and Delaware incorporation as instruments. A Durbin-Wu-Hausman test is unable to reject the null hypothesis that severance agreements are exogenous in the cost of debt specification.

The control variables across all models have their theoretically predicted signs, and in general, are statistically significant. We find that firm size, sales growth, profitability, growth opportunities, and the total asset constraint are negatively associated with yield spreads, while firm leverage and stock volatility are positively related to bond yield spreads. Our debt specific variables (credit ratings, debt convexity, debt age) are all positively related to spreads. Similar to the results of Bohjraj and Sengupta (2005), we find that institutional ownership is negatively related to yield spreads, and this evidence is consistent with monitoring.

We also provide additional robustness tests in Table 8. We are particularly concerned with whether severance agreements affect bond spreads purely because of the increase in takeover probability, or whether severance agreements impact bond spreads because of changes in risk and CEO effort. If the effect of severance agreements is purely due to takeovers, we would expect to estimate a more positive coefficient when considering yields of high-grade debt, whereas the estimated coefficient for a sample of low-grade or junk debt might be negative or insignificant (Billet, King, and Mauer, 2004, show the differential impacts of takeovers on differently rated bonds). Models 1 and 2 therefore segment the sample into investment and non-investment grade debt. Similar to our level specification, we find a positive and significant association between the adoption of severance agreements and the cost of debt financing, albeit slightly lower economic results for the investment sample of about 7% vs. 11% for the non-investment sample. These results suggest that the effect of severance agreements on yield spreads is not due to takeover risk.

[Insert Table 8 about here]

Next, we directly control for the probability of takeover by first using the estimated

probability of a takeover attempt or acquisition as an additional control variable. Models 3 and 4 add these additional estimated probabilities.[19] As in our other specifications, the estimated coefficients on severance agreement continue to be positive and significant after controlling for the predicted probability of takeovers, although the estimated coefficient is slightly lower. A higher probability of takeover also implies a slightly higher spread, although this result is not significant. Again, the results show that severance agreements are associated with higher yield spreads, and that this relation cannot be explained purely by an increase in takeover risk.

We note that in this analysis the overall effect of severance agreements on spreads may be understated since severance agreements also imply higher volatility and more takeovers. That is, as the regressions control for past volatility and perceived takeover risk, the marginal effect of severance agreements that we capture in the regressions provided in Table 8 is due only to perceived future incentives. As both volatility and takeovers are positively related to spreads, this potentially underestimates the full magnitude of severance agreements on yield spreads.

5. Conclusion

Recently, under the Dodd-Frank Act of 2010, a great deal of attention has been given to provisions in compensation contracts. Severance agreements are payments assigned to senior executives upon a triggering event such as termination, demotion, or resignation. In this paper, we examine the effect of severance agreements on CEO incentives with respect to risk and effort and show how severance agreements affect the firm's cost of debt capital.

Using governance data from RiskMetrics, we document that firms whose CEOs are given severance agreements become riskier, have worse operating performance, and that these firms are more likely to replace the CEO. These changes are consistent with severance agreements leading to an increase in risk taking and a decrease in effort by the CEO. Using bond market data, we also show that the adoption of a severance agreement in compensation contracts is associated with an increase in the cost of debt capital, and again this is consistent with greater risk taking and a decrease in CEO effort. Thus, this study provides evidence that the adoption of severance agreements leads not only to an increase in takeovers but also extends to other firm

[19] As these probabilities are estimated from a prior regression, we are careful to correct the estimated standard errors for this two-stage procedure. Specifically, we bootstrap the standard errors while clustering by firm, where each bootstrap estimates both the first and second stage regressions.

behavior. Moreover, the results suggest that bondholders are sensitive to governance mechanisms which change managerial incentives.

References

Adam, J. and S. Mansi, 2009. CEO turnover and bondholder wealth. Journal of Banking and Finance 33, 522-533.

Anderson, R., S. Mansi, and D. Reeb, 2003. Founding family ownership and the agency cost of debt. Journal of Financial Economics 68, 263-285.

Asquith, P., and T. Wizman, 1990. Event risk, covenants, and bondholder returns in leveraged Buyouts. Journal of Financial Economics 27,195–213.

Bates, T. and M. Lemmon, 2003. Breaking up is hard to do? An analysis of termination fee provisions and merger outcomes. Journal of Financial Economics 69, 469-504.

Bates, T., D. Becher, and M. Lemmon, 2008. Board classification and managerial entrenchment: Evidence from the market for corporate control. Journal of Financial Economics 87, 656-677.

Bebchuk, L., A. Cohen, and J. Ferrell, 2009. What matters in corporate governance? Review of Financial Studies 22, 783-827.

Bebchuk, L., A. Cohen, and C. Wang, 2010. Golden parachutes and the wealth of shareholders. Working Paper, Harvard University.

Bertrand, M. and S. Mullainathan, 2003. Enjoying the Quiet Life? Corporate Governance and Managerial Preferences. Journal of Political Economy 111, 1043-1075.

Bhojraj, S., and P. Sengupta, 2003. Effect of corporate governance on bond ratings and yields: The role of institutional investors and outside directors. Journal of Business 76, 455-475.

Billett, M., D. King, and D. Mauer, 2004. Bondholders wealth effects in mergers and acquisitions: New evidence from the 1980s and 1990s. Journal of Finance 59, 107-135.

Brick, I., O. Palmon, and J. Wald, 2012. Too much pay performance sensitivity? Review of Economics and Statistics 94, 287-303.

Brusa, J., W. Lee, and C. Shook, 2009. Golden parachutes, managerial incentives and shareholders' wealth. Managerial Economics 35, 346-356.

Campbell, J. and G. Taksler, 2003. Equity volatility and corporate bond yields. Journal of Finance 58, 2321-2349.

Clayton, M., J. Hartzell, and J. Rosenberg, 2005. The impact of CEO turnover on equity volatility. Journal of Business 78, 1779-1808.

Coles, J., M. Lemmon, and F. Meschke, 2003. Structural models and endogeneity in corporate finance. Working Paper, University of Utah and Arizona State University.

Core, J., W. Guay, and T. Rusticus, 2006. Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations. Journal of Finance 61, 655-687.

Cremers, K., V. Nair, and C. Wei, 2007. Governance mechanisms and bond prices. Review of Financial Studies 20, 1359-1388.

Dimson, E. 1979. Risk measurement when shares are subject to infrequent trading. Journal of Financial Economics 7, 197–226.

Fama, E., and K. French, 1997. Industry costs of equity. Journal of Financial Economics 63, 153-194

Gompers, P., J. Ishii, and A. Metrick, 2003. Corporate governance and equity prices. Quarterly Journal of Economics 119, 107-155.

Hahn, J, Hausman, J., 2003. Weak instruments: Diagnosis and cures in empirical econometrics, American Economic Review 93, 118-125.

Harris, E., 1990. Antitakoever measures, golden parachutes, and target firm shareholder welfare 21, 614-625.

Hartzell, J., E. Ofek, and D. Yermack, 2004. What's in it for me? CEOs whose firms are acquired. Review of Financial Studies 17, 37-61.

Hillion, P. and T. Vermaelen, 2004. Death spiral convertibles. Journal of Financial Economics 71, 381-415.

Holmstrom, B. and P. Milgrom, 1987. Aggregation and linearity in the provision of intertemporal incentives. Econometrica 55, 303-328.

Jenter, D. and K. Lewellen, 2010. CEO preferences and acquisitions. Working Paper, Stanford University and National Bureau of Economic Research.

Klock, M., S. Mansi, and W. Maxwell, 2005. Does corporate governance matter to bondholders? Journal of Financial and Quantitative Analysis 40, 693–719.

Knoeber, C., 1986. Golden parachutes, shark repellents, and hostile tender offers. American Economic Review 76, 155-167.

Lambert, R. and D. Larcker, 1985. Golden parachutes, executive decision-making, and shareholder wealth. Journal of Accounting and Economics 7, 179-203.

Low, A., 2009. Managerial risk-taking behavior and equity-based compensation. Journal of Financial Economics 92, 470-490.

Lys, T., T. Rusticus, and E. Sletten, 2007. Are large CEOs severance packages justified? The underlying factors of CEO severance. Kellogg Insight, Kellogg School of Management, Northwestern University.

Machlin, J., H. Choe, and J. Miles, 1993. The effects of golden parachutes on takeover activity. Journal of Law and Economics 36, 861-876.

Mansi, S., W. Maxwell, and J. Wald, 2009. Creditor protection laws and the cost of debt. Journal of Law and Economics 52, 701-726.

Nelson, C., and A. Siegel, 1987. Parsimonious modeling of yield curves. Journal of Business 6, 473-489.

Petersen, M. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. Review of Financial Studies 22, 435-480.

Predergast, C., 2002. The tenuous trade-off between risk and incentives. Journal of Political Economy 110, 1071-1102.

Qi, Y., L. Roth, and J. Wald, 2010. Political Rights and the Cost of Debt. Journal of Financial Economics 95, 202-226.

Rau, R. and J. Xu, 2009. Getting rich by getting fired? An analysis of severance pay contracts. Working Paper, Purdue University.

Svensson, L., 1994. Estimating and interpreting forward interest rates: Sweden 1992-1994. Working Paper, International Monetary Fund.

Wald, J. and M. Long, 2007. The effect of state laws on capital structure. Journal of Financial Economics 83, 297-319.

Yermack, D., 2006. Golden handshakes: Separation pay for retired and dismissed CEOs. Journal of Accounting and Economics 41, 237-256.

Table 1. Variable Definitions

Variable	Description	Database
Yield Spread	Difference between the yield to maturity on a corporate bond and the yield to maturity on its duration equivalent Treasury security	LBFI
Severance Agreement	Dummy variable that equals one if RiskMetrics reports that the firm's CEO has a golden parachute.	RiskMetrics
	Firm-Specific Variables	
Firm Size	Log of book value of assets (in $millions)	Compustat
Leverage	Long-term debt scaled by book value assets	Compustat
Profitability	Earnings before interest, tax, depreciation and amortization scaled by total assets	Compustat
Market-to-Book	The market value of assets scaled by the book value of assets	Compustat
Sales Growth	Annual sales growth in the firm's total revenue	Compustat
Volatility	Square root of the annualized variance of the residuals from the market model	CRSP
Idiosyncratic Risk	The natural logarithm of the annualized variance of the residuals from the market model	CRSP
Abnormal Stock Returns	The rolling mean monthly abnormal stock return over the 12 months	CRSP
Acquisition	Dummy variable that equals one if a firm is acquired	SDC
Attempt	Dummy variable that equals one if a firm receives an initial bid	SDC
	Security-Specific Variables	
Rating	Average of Moody's and S&P ratings, computed using a scale between 22 and 1	LBFI
Credit Rating	Orthogonalized credit rating variable	LBFI
Bond Age	Log of number of years since bond issuance	LBFI
Duration	Macaulay duration or security's effective maturity	LBFI
Convexity	Second derivative of price with respect to yield	LBFI
	Governance Variables	
EIndex	Entrenchment index of antitakeover rights	RiskMetrics
EIndex – Severance	Entrenchment index less severance agreements	RiskMetrics
GIndex	Gompers et al. (2003) index of antitakeover rights	RiskMetrics
GIndex – Severance	Gompers et al. (2003) index of antitakeover rights less severance agreements	RiskMetrics
Add Severance	Dummy variable that equals one if a severance is adopted in current year but not in prior year	RiskMetrics
Remove Severance	Dummy variable that equals one if a severance is adopted in prior year but not in current year	RiskMetrics
Keep Severance	Dummy variable that equals one if a severance is adopted in current and prior years	RiskMetrics
CEO Age	CEO age while CEOs stays in the office	Execucomp
CEO 65	Dummy variable that equals one if CEO age is greater than 65	Execucomp
CEO Tenure	Number of years a CEO stays in the office	Execucomp

CEO Leaves Firms	Dummy variable that equals one if a CEO left the firm	Execucomp
CEO Leaves Office	Dummy variable that equals one if a CEO left her office	Execucomp
CEO Ownership	Number of shares held by CEO scaled by common shares outstanding	Execucomp
Institutional Ownership	Number of shares held by institutions scaled by common shares outstanding	Thomson
Delaware Incorporation	Dummy variable that equals one if the firm is incorporated in the state of Delaware	Risk Metrics

Note: Table 1 provides definitions for the variables used in the analysis along with their data sources. LBFI is the Lehman Brothers Fixed Income database, CRSP is the Center of Research in Security Pricing database, SDC is the Securities Data Company's financial transaction database (primarily for mergers and acquistions), Compustat is the financial information database, Execucomp is the executive compensation database, Thomson is the Thomson Financial 13F database, and RiskMetrics is the IRRC / ISS database.

Table 2. Sample Statistics

Panel A. Incidence of severance agreements (by volume)

Year	Obs.	Severance	Severance Additions	Severance Deletions	Severance (%)
1990	1,167	581	n/a	n/a	49.79
1993	1,221	641	83	47	52.50
1995	1,276	685	68	35	53.68
1998	1,671	915	115	35	54.76
2000	1,643	1,059	193	25	64.46
2002	1,649	1,104	149	13	66.95
2004	1,645	1,206	121	25	73.31
2006	1,565	1,218	90	13	77.83
2007	1,174	593	56	322	50.51
2008	1,189	389	59	244	32.72
2009	1,210	973	557	4	80.41

Note: This panel provides information regarding the incidence of 28,286 severance agreements over the period from 1990 through 2009. The table presents the frequency, percentage of severance agreement adoptions, and percentage of firms with severance agreements. The data is presented on a volume-by-volume basis (i.e., without filled years).

Panel B. Incidence of takeover attempts and completed acquisitions (by year)

Year	Obs.	Takeover Attempts	Attempts (%)	Completed Acquisitions	Acquisitions (%)
1990	1,167	62	5.31	25	2.14
1991	1,182	54	4.57	34	2.88
1992	1,194	30	2.51	29	2.43
1993	1,221	37	3.03	22	1.80
1994	1,235	53	4.29	33	2.67
1995	1,276	82	6.43	34	2.66
1996	1,289	75	5.82	61	4.73
1997	1,314	92	7.00	88	6.70
1998	1,671	160	9.58	120	7.18
1999	1,692	169	9.99	146	8.63
2000	1,643	136	8.28	141	8.58
2001	1,654	73	4.41	79	4.78
2002	1,649	41	2.49	35	2.12
2003	1,656	61	3.68	45	2.72
2004	1,645	82	4.98	69	4.19
2005	1,660	106	6.39	76	4.58
2006	1,565	152	9.71	110	7.03
2007	1,174	38	3.24	2	0.17
2008	1,189	26	2.19	1	0.08
2009	1,210	39	3.22	2	0.17
Total	28,286	1,568	5.54	1,152	4.07

Note: This panel provides information regarding the incidence of takeover attempts and completed acquisitions over the period from 1990 through 2009 for the full sample of 28,286 firm-year observations.

Panel C. Descriptive statistics

	All Sample			Severance Agreement Firms			Non-Severance Agr. Firms			
Variable	Mean	Median	Std Dev.	Mean	Median	Std Dev.	Mean	Median	Std Dev.	Diff.
Yield Spread	316.01	186.88	472.63	318.08	195.63	474.88	312.41	175.26	468.75	3.67[c]
Firm Specific										
Total Assets	5,600.30	1,256.27	21,766.54	4,570.64	1,362.37	11,460.53	7,074.01	1,103.48	30,988.25	-9.08[c]
Leverage	0.447	0.439	0.224	0.459	0.450	0.207	0.429	0.419	0.245	10.65[c]
Profitability	0.131	0.131	0.127	0.128	0.127	0.107	0.135	0.136	0.150	-4.53[c]
Volatility	0.491	0.350	1.382	0.460	0.340	0.954	0.537	0.370	1.838	-4.39[c]
Market-to-Book	1.777	1.389	1.301	1.689	1.358	1.134	1.903	1.439	1.500	-12.42[c]
Acquisition Ratio	0.025	0.000	0.062	0.026	0.000	0.064	0.023	0.000	0.059	3.33[c]
ROA1	0.053	0.033	0.113	0.050	0.030	0.112	0.057	0.037	0.114	-4.60[c]
ROA2	0.050	0.031	0.113	0.047	0.028	0.112	0.054	0.035	0.115	-4.55[c]
Ind Adj Sales Growth	-0.013	-0.010	0.189	-0.019	-0.014	0.190	-0.005	-0.004	0.188	-5.54[c]
Debt Specific										
Rating	BBB-	BBB	A / B+	BBB-	BBB	A / B+	BBB	BBB	AA- / B+	-7.35[c]
Debt Age	3.610	2.992	3.015	3.599	2.992	2.957	3.629	2.993	3.114	-0.40
Debt Duration	6.154	5.770	2.739	6.030	5.681	2.592	6.371	5.919	2.967	-4.89[c]
Debt Convexity	15.247	0.486	58.200	12.701	0.457	48.764	19.687	0.530	71.540	-4.72[c]
Governance										
EIndex	2.280	2.000	1.389	2.875	3.000	1.150	1.394	1.000	1.234	100.00[c]
EIndex-Severance	1.682	2.000	1.208	1.875	2.000	1.150	1.394	1.000	1.234	33.52[c]
GIndex - Eindex	6.936	7.000	1.990	7.159	7.000	1.938	6.594	6.000	2.021	22.03[c]
GIndex	9.032	9.000	2.719	9.877	10.000	2.459	7.731	8.000	2.584	65.70[c]
Inst. Ownership	0.639	0.664	0.244	0.673	0.703	0.235	0.591	0.600	0.250	24.99[c]
CEO Ownership	0.024	0.003	0.164	0.016	0.002	0.200	0.036	0.004	0.076	-7.99[c]
CEO Age	55.754	56.000	7.452	55.592	56.000	6.975	56.010	56.000	8.138	-3.80[c]
CEO Tenure	7.425	5.000	7.017	6.713	5.000	6.076	8.542	6.000	8.158	-17.79[c]
CEO Leaves Position	0.091	0.000	0.288	0.098	0.000	0.297	0.081	0.000	0.273	3.89[c]
CEO Leaves Firm	0.045	0.000	0.206	0.049	0.000	0.217	0.037	0.000	0.189	3.99[c]
Takeover										
Attempt	0.056	0.000	0.229	0.064	0.000	0.245	0.043	0.000	0.202	7.84[c]
Acquisition	0.041	0.000	0.198	0.049	0.000	0.216	0.028	0.000	0.165	8.81[c]

Note: This panel provides summary statistics sorted by firms with severance agreements. The dataset is comprised of 28,286 firm-year observations on 3,379 firms for the years from 1990 to 2009. Variable definitions are provided in the Appendix. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively.

Panel D. Industry classifications

SIC Code	Industry Classifications	All Sample		Severance Firms		Non-Severance Firms	
		Obs.	(%)	Obs.	(%)	Obs.	(%)
0	Agriculture and Forestry	71	0.28	38	0.25	33	0.31
1	Mining and Construction	1,386	5.39	893	5.90	493	4.67
2	Manufacturing (Food-Petroleum)	5,332	20.75	3,073	20.30	2,259	21.38
3	Manufacturing (Plastics-Electronics)	7,912	30.78	4,680	30.92	3,232	30.59
4	Transportation and Communication	3,870	15.06	2,410	15.92	1,460	13.82
5	Wholesale Trade	3,305	12.86	1,877	12.40	1,428	13.52
7	Services (Hotels-Recreation)	2,829	11.01	1,574	10.40	1,255	11.88
8	Services (Health-Private Household)	852	3.31	529	3.49	323	3.06
9	Public Administration and Other	145	0.56	62	0.41	83	0.79
	Total	25,702	100	15,136	100	10,566	100

Note: This panel provides industry classification for the sample based on 1-digit SIC code. The data comprised of 28,286 firm year observations on 3,379 non-financial firms covering the period from 1990 through 2005.

Panel E. Selected correlations

	Yield Spread	Severance Agreement	GIndex - Severance	EIndex – Severance	Inst-Own	Size	Leverage	Profit.	Idiosync Risk	Ratings
Severance Agreement	0.045[c]									
GIndex - Severance	-0.146[c]	0.218[c]								
EIndex - Severance	0.075[c]	0.196[c]	0.683[c]							
Inst. Ownership	-0.006	0.165[c]	0.109[c]	0.255[c]						
Firm Size	-0.122[c]	-0.057[c]	-0.013[a]	-0.058[c]	-0.012[a]					
Leverage	0.331[c]	0.068[c]	0.039[c]	-0.018[c]	-0.107[c]	0.019[c]				
Profitability	-0.345[c]	-0.028[c]	0.044[c]	0.011[a]	0.143[c]	0.001	-0.239[c]			
Idiosyncratic Risk	0.064[c]	-0.027[c]	-0.036[c]	-0.043[c]	-0.085[c]	0.150[c]	0.047[c]	-0.061[c]		
Credit Rating	-0.661[c]	-0.090[c]	0.161[c]	-0.069[c]	-0.110[c]	0.214[c]	-0.347[c]	0.323[c]	-0.020[c]	
Debt Duration	-0.165[c]	-0.060[c]	0.114[c]	0.159[c]	0.104[c]	0.134[c]	-0.134[c]	0.050[c]	-0.045[c]	0.178[c]

Note: This panel provides data on the correlations between selected variable measures. The data set is comprised of 28,286 firm year observations covering the period from 1990 to 2009. Variables definitions are included in the Appendix. The notation [a,b,c] denotes significance at the 10%, 5%, and 1% levels, respectively.

Table 3. Severance Agreements and Takeover Attempts

	Takeover Attempt	Completed Acquisition
	(1)	(2)
Severance Agreement$_t$	0.159[c]	0.170[c]
	(4.08)	(2.63)
	[0.010]	**[0.002]**
(EIndex – Severance)$_t$	-0.033[b]	0.004
	(-2.23)	(0.15)
Firm Size$_{t-1}$	-0.004	0.021
	(-0.30)	(0.98)
Leverage$_{t-1}$	0.160[b]	-0.265[a]
	(1.97)	(-1.83)
Market to Book $_{t-1}$	-0.037[b]	-0.032
	(-2.23)	(-1.20)
Abnormal Stock Returns$_{t-1}$	-1.154[b]	1.044
	(-2.50)	(1.44)
Delaware Incorporation$_{t-1}$	0.164[c]	0.138[b]
	(4.38)	(2.33)
(CEO Age > 65)$_t$	0.340[c]	0.676[c]
	(7.58)	(8.55)
Pseudo R-squared	0.284	0.629
Observations	20,123	17,315

Note: This table provides probit regressions on the likelihood of takeover (attempts and complete acquisitions). The data set covers the period from 1990 to 2009. In Columns 1 the dependent variable is dummy variable that equals one if a firm receives an initial bid. In Columns 2 the dependent variable is dummy variable that equals one if a firm is acquired. Independent variables include dummy variable that equals one if a CEO has a severance agreement (Severance Agreement), Bebchuk, Cohen, and Ferrell (2009) entrenchment index less severance agreement (EIndex-Severance), log of book value of assets (Firm Size), long-term debt scaled by book value assets (Leverage), the market value of assets divided by their book value (Market-to-Book), rolling mean monthly abnormal stock return over the 12 months (Abnormal Stock Returns), dummy variable that equals one if the firm is incorporated in Delaware (Delaware Incorporation), and a dummy variable that equals one if CEO age is greater than 65 (CEO Age > 65). Year and 2-digit SIC code dummies are included in all regressions. T-statistics from White heteroskedastic-consistent standard errors adjusted for clustering by firm are included in parentheses. The marginal effects of severance agreements on takeover probability are provided in bold square brackets. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively.

Table 4. Severance Agreements and Firm Risk (Incentives)

	Primary Specification				CEOs Not Leaving Firms		
	Current Severance	Current Severance & Attempt=0	Prior Severance	Instrumental Variables	Current Severance	Current Severance & Attempt=0	Prior Severance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Add Severance	0.073[c]	0.074[c]		1.498[c]	0.081[c]	0.073[c]	
	(2.61)	(2.56)		(2.94)	(3.03)	(2.67)	
Remove Severance			-0.053[a]				-0.050
			(-1.65)				(-1.49)
$(EIndex - Severance)_t$	-0.030[c]	-0.031[c]	-0.030[c]	-0.023[c]	-0.029[c]	-0.028[c]	-0.029[c]
	(-4.49)	(-4.74)	(-4.54)	(-2.71)	(-4.04)	(-3.85)	(-4.09)
$Idiosyncratic\ Risk_{t-1}$	0.518[c]	0.512[c]	0.518[c]	0.459[c]	0.483[c]	0.478[c]	0.483[c]
	(30.17)	(29.40)	(30.24)	(19.84)	(23.57)	(23.38)	(23.61)
$Market\ to\ Book_{t-1}$	-0.007	-0.004	-0.007	-0.001	0.002	0.003	0.002
	(-1.24)	(-0.67)	(-1.29)	(-0.09	(0.35)	(0.46)	(0.28)
$Firm\ Size_{t-1}$	-0.106[c]	-0.106[c]	-0.106[c]	-0.112[c]	-0.108[c]	-0.110[c]	-0.109[c]
	(-13.71)	(-13.90)	(-13.74)	(-11.70)	(-13.96)	(-14.05)	(-13.97)
$Leverage_{t-1}$	0.296[c]	0.285[c]	0.295[c]	0.328[c]	0.275[c]	0.258[c]	0.274[c]
	(3.48)	(3.14)	(3.48)	(4.86)	(5.25)	(4.96)	(5.26)
R-squared	0.374	0.372	0.374	0.522	0.508	0.507	0.508
Observations	19,921	18,891	19,921	8,472	14,524	14,192	14,524

Note: This table provides OLS regressions on firm volatility. The data set covers the period from 1990 to 2009. The dependent variable is natural logarithm of the annualized variance of the residuals from the market model (Idiosyncratic Risk). Independent variables include dummy variable that equals one if the company adopted a severance agreement in the current year only (Add Severance), whether the firm removed a severance agreement in the current year (Remove Severance), Bebchuk,Cohen and Ferrell (2009) entrenchment index less severance agreements (EIndex-Severance), natural logarithm of the annualized variance of the residuals from the market model (Idiosyncratic Risk), the market value of assets divided by their book value (Market-to-Book), log of book value of assets (Firm Size), and long-term debt scaled by book value assets (Leverage). Year and 2-digit SIC code dummies are included in all regressions. T-statistics from White heteroskedastic-consistent standard errors adjusted for clustering by firm are included in parentheses. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively.

Table 5. Severance Agreements and Operating Performance

Year	Operating Income Before Depreciation Scaled by Total Assets (ROA1)	Operating Income After Depreciation Scaled by Total Assets (ROA2)	Industry Adjusted Annual Sales Growth
1991	-0.597	-0.447	-1.498
1992	-0.391	-0.239	-1.239
1993	-0.241	-0.162	-0.720
1994	-0.556	-0.629	-0.132
1995	-0.001	-0.202	-0.828
1996	-0.275	-0.673	-1.233
1997	-0.278	-0.413	-0.932
1998	-0.493	-0.528	-0.208
1999	-1.167[a]	-1.111[a]	-2.499[b]
2000	-0.689	-0.688	0.563
2001	-1.259[a]	-1.103	-0.883
2002	-1.339[a]	-1.341[a]	-4.600[c]
2003	-0.036	0.067	-0.918
2004	0.071	0.190	1.003
2005	-0.924	-0.845	-1.024
2006	0.019	0.311	0.327
2007	0.500	1.058	0.772
2008	-0.292	-0.367	0.509
2009	0.310	0.508	0.755
Time Series Mean	-0.402[c]	-0.348[b]	-0.673[b]
Time Series Std. Dev.	0.512	0.597	1.328
T-Statistics	-3.425	-2.540	-2.208

Note. This table provides results from regressing the severance agreement variable on the median industry-adjusted ROA and Sales Growth. ROA is the ratio of operating income scaled by total assets. We measure operating income in two ways: before and after depreciation (ROA1 and ROA2). Sales Growth is annual sale growth in the firm's total revenue. Control variables include entrenchment index less severance, log of book-to-market equity, and log of market value of equity. All control variables are lagged one year. We use the Newey-West procedure with one lag to adjust for serial correlation and compute the time-series mean of coefficients and standard deviation and *t*-statistics for the average of the coefficients. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively. All coefficents are multiplied by 100.

Table 6. Severance Agreements and CEO Turnover

	CEO Leaves Firm	CEO Leaves Firm & Attempt=0	CEO Leaves Position	CEO Position & Attempt=0
	(1)	(2)	(3)	(4)
Severance Agreement$_{t-1}$	0.074[a]	0.078[a]	0.062[a]	0.063[a]
	(1.71)	(1.78)	(1.88)	(1.90)
	[0.006]	**[0.006]**	[**0.009]**	**[0.009]**
(EIndex – Severance)$_{t-1}$	0.036[b]	0.040[b]	0.013	0.014
	(2.01)	(2.17)	(0.95)	(1.00)
Firm Size$_{t-1}$	-0.010	-0.011	0.026[b]	0.027[b]
	(-0.64)	(-0.71)	(2.33)	(2.35)
Leverage$_{t-1}$	0.268[b]	0.310[b]	0.225[b]	0.215[b]
	(2.20)	(2.50)	(2.47)	(2.32)
Market to Book$_{t-1}$	-0.037[a]	-0.036[a]	-0.007	-0.007
	(-1.94)	(-1.85)	(-0.63)	(-0.65)
Abnormal Stock Returns$_{t-1}$	-3.739[c]	-3.684[c]	-2.865[c]	-2.828[c]
	(-6.60)	(-6.24)	(-6.22)	(-6.00)
Institutional Ownership$_{t-1}$	0.146	0.195	0.204[b]	0.240[c]
	(1.24)	(1.61)	(2.35)	(2.74)
(CEO Age > 65)$_t$	0.479[c]	0.489[c]	0.688[c]	0.703[c]
	(7.65)	(7.69)	(13.86)	(14.00)
Pseudo R-squared	0.060	0.062	0.051	0.052
Observations	13,447	13,130	13,680	13,358

Note: This table provides probit regressions on the likelihood of CEO turnover. The dataset covers the period from 1990 to 2009. For Columns 1 and 2 the dependent variable is dummy variable that equals one if a CEO left the firm. For Columns 3 and 4 the dependent variable is dummy variable that equals one if a CEO left the office. Independent variables include dummy variable that equals one if a CEO has a severance agreement (Severance Agreement), Bebchuk, Cohen, and Ferrell (2009) entrenchment index less severance agreements (EIndex-Severance), log of book value of assets (Firm Size), long-term debt scaled by book value assets (Leverage), the market value of assets divided by their book value (Market-to-Book), rolling mean monthly abnormal stock return over the 12 months (Abnormal Stock Returns), number of shares held by institutions scaled by common shares outstanding (Institutional Ownership), and a dummy variable that equals one if CEO age is greater than 65 (CEO Age > 65). Year and 2-digit SIC code dummies are included in all regressions. T-statistics from White heteroskedastic-consistent standard errors adjusted for clustering by firm are included in parentheses. The marginal effects of golden parachutes on the probability of CEO turnover are provided in bold square brackets. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively.

Table 7. Severance Agreements and the Cost of Debt Financing

	Severance	Add & Keep Severance	Governance Index	Fixed Effects	Unfilled Sample
	(1)	(2)	(3)	(4)	(5)
Severance Agreement	0.105[c]		0.127[c]	0.122[c]	0.089[c]
	(4.48)		(6.31)	(3.67)	(2.92)
Add Severance		0.123[c]			
		(2.75)			
Keep Severance		0.102[c]			
		(4.13)			
GIndex – EIndex			-0.012[b]		
			(-2.19)		
EIndex – Severance	0.008	0.006	0.029[c]	0.011	0.004
	(0.81)	(0.54)	(3.25)	(0.51)	(0.29)
Firm Size	-0.052[c]	-0.054[c]	-0.044[c]	-0.045	-0.047[c]
	(-4.27)	(-4.34)	(-3.99)	(-1.28)	(-2.81)
Leverage	0.693[c]	0.701[c]	0.324[c]	0.470[c]	0.846[c]
	(9.16)	(8.68)	(5.71)	(4.57)	(8.78)
Profitability	-1.228[c]	-1.249[c]	-1.011[c]	-1.077[c]	-1.227[c]
	(-6.61)	(-6.03)	(-6.02)	(-5.77)	(-5.53)
Sales Growth	-0.077[a]	-0.085[a]	-0.151[c]	-0.094[b]	-0.012
	(-1.76)	(-1.88)	(-3.81)	(-2.26)	(0.18)
Volatility	0.064[b]	0.060[b]	0.045[b]	0.037[a]	0.077[a]
	(2.31)	(2.30)	(2.39)	(1.81)	(1.86)
Credit Rating	-0.087[c]	-0.085[c]	-0.139[c]	-0.092[c]	-0.067[c]
	(-14.68)	(-14.07)	(-29.87)	(-9.73)	(-9.27)
Market to Book	-0.072[c]	-0.070[c]	-0.034[b]	-0.072[c]	-0.100[c]
	(-4.12)	(-3.83)	(-2.29)	(-3.30)	(-4.64)
Debt Duration	0.002	0.003	0.019	0.006	-0.004
	(0.35)	(0.59)	(1.31)	(0.84)	(-0.46)
Debt Convexity	-0.002[c]	-0.002[c]	0.028	-0.001[c]	-0.002[c]
	(-5.64)	(-5.80)	(0.45)	(-4.30)	(-5.46)
Debt Age	0.057[c]	0.062[c]	0.073[c]	0.060[c]	0.042[c]
	(5.74)	(6.16)	(7.47)	(5.33)	(3.41)
TA Constraint	-0.094[a]	-0.090[a]	-0.105[c]		-0.087[c]
	(-4.11)	(-3.84)	(-4.96)		(-2.91)
Institutional Ownership	-0.378[c]	-0.364[c]	-0.230[c]	-0.419[c]	-0.403[c]
	(-5.97)	(-5.53)	(-4.13)	(-3.59)	(-4.90)
R-squared	0.653	0.648	0.766	0.516	0.578
Observations	5,429	5,222	4,670	5,429	2,897

Note: This table provides estimated coefficients from regressing the log of corporate yield spreads (or the difference between the weighted average yield on the firm's outstanding debt and the yield on a treasure security with a similar duration) on severance agreements and various control variables. The data covers the period from 1990 to 2009. Control variables include dummy variable that equals one if a CEO has a severance agreement (Severance), Bebchuk, Cohen, and Ferrell (2009) **e**ntrenchment index less severance agreements (EIndex-Severance), Gompers et al. (2003) index of antitakeover rights less Entrenchment index (GIndex-EIndex), log of book value of assets (Firm Size), long-term debt scaled by book value assets (Leverage), the market value of assets divided by their book value (Market-to-Book), earnings before interest, tax, depreciation and amortization scaled by total assets (Profitability), Annual sales growth (Sales Growth), square root of the annualized variance of the residuals from the market model (Volatility), number of shares held by institutions scaled by common shares outstanding (Institutional Ownership), orthogonalized ratings variable (Credit Rating), log of number of years since bond issuance (Debt Age), Macaulay

duration or security's effective maturity (Debt Duration), second derivative of price with respect to yield (Debt Convexity), and total asset constraint based in the Wald and Long (2007) study (TA Constraint). Year and 2-digit SIC code dummies are included in all regressions. T-statistics from White heteroskedastic-consistent standard errors adjusted for clustering by firm are included in parentheses. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively.

Table 8. Alternative Specifications: Severance Agreements, Takeovers, and the Cost of Debt

	Investment Grade	Noninvestment Grade	Predicted Takeover	Predicted Acquisition
	(1)	(2)	(3)	(4)
Severance Agreement	0.068[c]	0.106[c]	0.094[c]	0.089[c]
	(3.25)	(2.87)	(3.45)	(2.65)
Predicted Takeover			1.067	
			(1.32)	
Predicted Acquisition				1.812
				(1.61)
EIndex – Severance	0.014	0.030[a]	0.011	0.012
	(1.60)	(1.91)	(0.92)	(0.87)
Firm Size	-0.068[c]	-0.002	-0.052[c]	-0.050[c]
	(-6.06)	(-0.14)	(-3.94)	(-3.09)
Leverage	0.283[c]	0.646[c]	0.708[c]	0.804[c]
	(3.27)	(7.24)	(7.55)	(4.69)
Profitability	-0.787[c]	-1.427[c]	-1.134[c]	-1.243[c]
	(-3.65)	(-5.93)	(-5.09)	(-4.25)
Sales Growth	-0.122[c]	0.027	-0.073	-0.089
	(-3.12)	(0.40)	(-1.59)	(-1.37)
Market to Book	-0.046[c]	-0.089[b]	-0.073[c]	-0.073[c]
	(-3.08)	(-2.18)	(-3.59)	(-2.90)
Volatility	0.022	0.077	0.062	0.054
	(1.15)	(1.41)	(0.94)	(0.69)
Credit Rating	-0.093[c]	-0.041[c]	-0.085[c]	-0.081[c]
	(-15.83)	(-4.15)	(-12.72)	(-4.71)
Debt Duration	0.041[c]	-0.075[c]	0.007	0.006
	(7.66)	(-5.11)	(1.14)	(0.45)
Debt Convexity	-0.002[c]	-0.002	-0.002[c]	-0.002
	(-6.14)	(-1.68)	(-4.94)	(-0.07)
Debt Age	0.084[c]	0.017	0.064[c]	0.069[c]
	(8.33)	(0.92)	(5.91)	(5.05)
TA Constraint	-0.061[c]	-0.121	-0.078[c]	-0.094[c]
	(-2.79)	(-3.22)	(-2.81)	(-2.83)
Institutional Ownership	0.007	-0.460[c]	-0.320[c]	-0.365[c]
	(0.11)	(-4.76)	(-4.33)	(-3.90)
R-squared	0.668	0.461	0.643	0.631
Observations	3,380	2,049	4,905	4,052

Note: This table provides estimated coefficients from regressing the log of corporate yield spreads (or the difference between the weighted average yield on the firm's outstanding debt and the yield on a treasure security with a similar duration) on severance agreements and various control variables. The data covers the period from 1990 to 2009. Control variables include dummy variable that equals one if a CEO has a severance agreement (Severance Agreement), Bebchuk, Cohen, and Ferrell (2009) **e**ntrenchment index less severance agreements (EIndex-Severance), Gompers et al. (2003) index of antitakeover rights less Entrenchment index (GIndex-EIndex), log of book value of assets (Firm Size), long-term debt scaled by book value assets (Leverage), the market value of assets divided by their book value (Market-to-Book), earnings before interest, tax, depreciation and amortization scaled by total assets (Profitability), Annual sales growth (Sales Growth), square root of the annualized variance of the residuals from the market model (Volatility), number of shares held by institutions scaled by common shares outstanding (Institutional Ownership), average of Moody's and S&P ratings, computed using a scale between 22 and 1 (Rating), orthogonalized ratings variable (Credit Rating), log of number of years since bond issuance (Bond Age), Macaulay duration or security's effective maturity (Debt Duration), second derivative of price with respect to yield (Debt Convexity), and

total asset constraint based in the Wald and Long (2007) study (TA Constraint). Year and 2-digit SIC code dummies are included in all regressions. T-statistics from White heteroskedastic-consistent standard errors adjusted for clustering by firm are included in parentheses. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively.

Appendix A. Golden Parachute Data from Recent SEC Filings

Company	Date	Is There A Payout Without a Change in Control (Y/N)	Golden Parachute Value ($)	Ratio of Payout without A Change in Control to Payout with a Change in Control (%)
Akamai Technologies Inc.	5/19/2009	Y	2,100,000	50.00
Bill Barrett Corp.	5/14/2009	N	3,755,910	0.00
Blackbaud Inc.	6/16/2009	Y	2,334,214	100.00
Brink's Home Security Holdings Inc.	5/8/2009	N	1,724,269	0.00
Broadbridge Financial Soutions Inc.	11/17/2010	Y	10,477,888	18.32
Buffalo Wild Wings Inc.	5/21/2009	Y	2,441,351	100.00
Burger King Holdings Inc.	11/19/2009	Y	13,904,176	31.25
Capella Educations Co.	5/11/2010	Y	3,988,896	44.44
Cbeyond Inc.	6/12/2009	Y	2,825,407	33.78
Cimarex Energy Co.	5/20/2009	Y	5,543,358	43.48
Clearwater Paper Corp.	5/11/2010	Y	12,795,131	41.67
Commvault Systems Inc.	8/26/2009	Y	2,219,576	28.57
Computer Programs & Systems Inc.	5/7/2009	Y	374,637	100.00
Dealertrack Holdings Inc.	6/17/2009	Y	4,252,265	36.63
Diamond Foods Inc.	1/15/2010	Y	8,597,278	7.41
Dreamworks Animation SKG Inc.	5/12/2010	Y	46,424,751	131.58
First Solar Inc.	6/4/2009	Y	9,214,635	16.95
Genoptix Inc.	6/2/2009	Y	4,448,338	110.99
Geo Group Inc.	4/29/2009	Y	4,686,220	100.00
Hanesbrands Inc.	4/28/2009	Y	10,042,242	16.03
Harley Davidson Inc.	4/25/2009	Y	11,603,542	8.83
Hillenbrand Inc.	2/24/2010	Y	11,992,274	15.60
Hornbeck Offshore Services Inc. LA	5/26/2009	Y	7,254,454	78.74
Hospira Inc.	5/14/2009	Y	12,347,578	14.31
HSN Inc.	5/19/2009	Y	1,212,345	100.00
Interval Leisure Group Inc.	6/10/2009	Y	4,526,876	86.96
Iowa Telecommunications Services Inc.	6/11/2009	Y	3,552,192	53.76
IPC the Hospitalist Company Inc.	5/28/2009	Y	796,799	85.47
John Bean Technologies Corp.	5/5/2010	Y	12,761,991	17.01
Life Time Fitness Inc.	4/23/2009	N	2,644,649	0.00
Maidenform Brands Inc.	5/21/2009	Y	1,984,366	75.76
Masimo Corp.	6/2/2010	Y	25,505,424	100.00
Metropcs Communications Inc.	5/21/2009	N	4,124,881	0.00
Neenah Paper Inc.	5/20/2009	N	4,263,215	0.00
Netgear Inc.	6/2/2009	Y	600,000	125.00
Peets Coffee and Tea Inc.	5/20/2009	Y	6,060,409	100.00
Quanex Building Products Corp.	2/26/2009	Y	7,246,180	26.32
Salesforce Com. Inc.	6/10/2010	N	19,016,447	0.00
Scripps Networks Interactive Inc.	4/29/2009	Y	19,508,845	86.96
Spectra Energy Corp.	5/7/2009	Y	3,815,858	14.64
Stanely Inc.	8/7/2009	N	11,886,215	0.00
Superior Well Services Inc.	5/5/2009	Y	1,621,399	78.74
Synnex Corp.	3/24/2009	Y	5,430,329	100.00

Texas Roadhouse Inc.	5/21/2009	Y	4,163,538	42.02
Textron Inc.	4/22/2009	Y	16,582,594	73.74
Theragentics Corp.	5/14/2009	Y	3,663,912	100.00
Treehouse Foods Inc.	4/30/2009	Y	34,397,433	14.73
True Religion Apparel Inc.	5/20/2009	Y	20,411,975	80.65
Windstream Corp.	5/6/2009	Y	12,913,633	23.04
Winnbago Industries Inc.	12/15/2009	Y	4,181,270	80.69

Notes. The data is based on 50 randomly chosen firms with golden parachutes in either 2009 or 2010 in our sample. Information is from Proxy Statement (DEF 14A). If the Document is filed in year 2009, the value in the table is the potential payment for CEOs in 2008.

Descriptive Statistics

Variable	Mean	Median	Standard Deviation	Third Quartile	First Quartile	N
Golden Parachute Value	8,564,423	4,606,548	8,869,323	11,992,274	2,825,407	50
Non-Change in Control to Change in Control Payout Ratio (%)	51.88	42.75	40.44	86.96	15.60	50
Golden Parachute to CEO compensation	2.44	1.95	2.14	3.01	1.15	40

Notes. This table provides descriptive statistics for the sample of 50 firms above. Variables include: the value of the golden parachute reported in the proxy statement, the ratio of the non-change in control payout to the change in control payout, and the ratio of golden parachute to total CEO compensation.

Appendix B. An Example of A Golden Parachute and A Severance Payout

BURGER KING HOLDINGS INC

FORM TYPE: DEF 14A
DOCUMENT DATE: November 19, 2009
FILING DATE: October 8, 2009

* * * * * * * * * COMPANY INFORMATION * * * * * * * * * *
ADDRESS: MIAMI, Florida, 33126
CIK: 0001352801
TICKER: BKC
EXCHANGE: NYSE
SIC CODES:
5812 - Eating places
INDUSTRY TYPE: Restaurants
SECTOR ID: Services

* * * * * * * * * * CONTENTS * * * * * * * * * *

Employment Agreement with Mr. Chidsey

We initially entered into an employment agreement with Mr. Chidsey to serve as our Chief Executive Officer on April 6, 2006, which was amended on December 16, 2008. The initial term of the agreement ended on April 6, 2009. Consequently, on April 7, 2009, the agreement automatically extended for a period of three years. The current term of the agreement ends on April 6, 2012.

2009 POTENTIAL PAYMENTS UPON TERMINATION OR CHANGE IN CONTROL TABLE

Calculations for this table are based on the assumption that the termination took place on June 30, 2009. The employment agreements define "cause," "good reason" and "change in control" for purposes of determining severance payments and benefits.

		Termination w/o Cause or for Good Reason	Termination w/o Cause or for Good Reason After Change in Control	Death and Disability
Name	Benefit	($)(1)(2)	($)(3)(4)(5)	($)(6)
John W. Chidsey	Severance(7)	2,085,750	3,128,625	2,085,750
	Bonus	2,085,750	3,128,625	2,085,750
	Accelerated Vesting(8)	N/A	7,386,696	7,386,696
	Value of Benefits Continuation(9)	73,486	110,230	73,486
	Perquisite Allowance(10)	100,000	150,000	100,000
	Outplacement Services(11)	N/A	N/A	N/A
	Total	4,344,986	13,904,176	11,731,682

(1) If Mr. Chidsey's employment is terminated without cause or for good reason or due to his death or disability (as such terms are defined in his employment agreement), he will be entitled to receive (i) an amount equal to

two times his annual base salary, annual perquisite allowance and target annual bonus payable over six months commencing on the first business day following the six month anniversary of termination, and (ii) continued coverage under our medical, dental and life insurance plans for him and his eligible dependents during the two-year period following termination.

(2) If any of the NEOs, other than Mr. Chidsey, is terminated without cause (as such term is defined in the relevant employment agreement), he will be entitled to receive (i) his then current base salary and his perquisite allowance for one year. Additionally, each of the NEOs will receive these benefits if his employment is terminated for good reason (as such term is defined in the relevant employment agreement).

(3) A change in control, without a termination of employment, will not in itself trigger any severance payments or vesting of equity. Any payments or equity due upon a change in control and subsequent termination of employment, either without cause or for good reason (as defined in the relevant employment agreement) is included in the "Termination w / o Cause or for Good Reason After Change in Control" column of this table.

(4) If Mr. Chidsey's employment is terminated without cause or he terminates his employment with good reason after a change in control (as defined in his employment agreement), he will be entitled to receive an amount equal to three times his annual base salary, annual perquisite allowance and target annual bonus. He also will be entitled to continued coverage under our medical, dental and life insurance plans for him and his eligible dependents during the three-year period following termination. Additionally, if Mr. Chidsey's employment is terminated during the 24-month period after a change in control of the Company either without cause or for good reason, all options and other equity awards held by him will vest in full. If Mr. Chidsey resigns for any reason within the 30-day period immediately following the one-year anniversary of a change in control involving a strategic buyer (as determined by the Board), his resignation would constitute a termination by us without cause under his employment agreement.

(5) All equity granted to each of Messrs. Wells, Klein, Fallon and Robinson will fully vest upon termination if his employment is terminated at any time within 24 months after a change in control either without cause or by him for good reason.

(6) If an NEO dies or becomes disabled (as such term is defined in the relevant employment agreement), the NEO is entitled to receive his target bonus, as if he had been employed for the entire fiscal year. For Mr. Chidsey, any severance payments made by BKC as a result of his termination upon his death or disability will be reduced by the value of any BKC paid life and disability benefits he or his family are entitled to receive.

(7) Pursuant to the terms of the respective NEO's employment agreement, each NEO has agreed to non-competition, non-solicitation and confidentiality restrictions that last for one year after termination. If the NEO breaches any of these covenants, we will cease providing any severance and other benefits to him, and we have the right to require him to repay any severance amounts already paid. In addition, as a condition to receiving the separation benefits, each NEO must sign a separation agreement and release in a form approved by us, which includes a waiver of all potential claims. Mr. Chidsey, unlike the other NEOs, is entitled to receive severance upon his death. In the case of his death, his estate must sign the release in order to receive severance benefits.

(8) The amounts in this table represent the fair market value on June 30, 2009 of the unvested portion of the NEO's equity that would vest upon the occurrence of a triggering event. The fair market value of the Company's common stock on June 30, 2009 was $17.27 per share.

(9) The NEOs are entitled to continued participation in the Executive Health Plan for the relevant severance period specified in Footnotes 1, 2 and 4 above.

(10) The perquisites allowance will be paid to the NEO during the relevant severance period specified in Footnotes 1 and 2 above.

(11) Each NEO, other than Mr. Chidsey, is entitled to receive outplacement services upon termination of employment without cause or for good reason. As of June 30, 2009, eligible NEOs are entitled to receive outplacement services from our third party service provider for up to one year, which is currently valued at $28,500.

Appendix C. Severance Agreements and the Cost of Debt (Subsample Years 1990 to 2006)

	Severance Agreement	Add & Keep Severance	Governance Index	Fixed Effects	Unfilled Sample
	(1)	(2)	(3)	(4)	(5)
Severance Agreement	0.119[c]		0.121[c]	0.157[c]	0.127[c]
	(5.75)		(5.88)	(4.62)	(5.00)
Add Severance		0.090[b]			
		(2.40)			
Keep Severance		0.122[c]			
		(5.66)			
GIndex – EIndex			0.024[c]		
			(2.71)		
EIndex – Severance	0.019[b]	0.017[a]	-0.047[c]	0.058[b]	0.022[b]
	(2.21)	(1.88)	(-4.17)	(2.51)	(2.29)
Firm Size	-0.048[c]	-0.049[c]	0.379[c]	-0.074[b]	-0.036[c]
	(-4.32)	(-4.41)	(5.46)	(-2.05)	(-2.63)
Leverage	0.375[c]	0.352[c]	-1.167[c]	0.488[c]	0.371[c]
	(5.38)	(4.80)	(-6.21)	(4.74)	(4.31)
Profitability	-1.175[c]	-1.086[c]	-0.162[c]	-1.273[c]	-1.169[c]
	(-6.21)	(-5.23)	(-4.23)	(-5.31)	(-5.46)
Sales Growth	-0.157[c]	-0.169[c]	0.260[c]	-0.129[c]	-0.195[c]
	(-4.13)	(-4.32)	(5.96)	(-3.27)	(-3.83)
Volatility	0.263[c]	0.241[c]	-0.131[c]	0.242[c]	0.349[c]
	(5.99)	(5.54)	(-27.34)	(6.90)	(6.39)
Credit Rating	-0.132[c]	-0.133[c]	-0.041[b]	-0.124[c]	-0.140[c]
	(-27.39)	(-26.86)	(-2.56)	(-12.16)	(-25.49)
Market to Book	-0.039[b]	-0.039[b]	0.022	-0.076[c]	-0.042[b]
	(-2.43)	(-2.37)	(1.53)	(-3.28)	(-2.48)
Debt Duration	0.022	0.025[a]	0.020	0.029	0.033
	(1.54)	(1.74)	(0.33)	(1.64)	(1.64)
Debt Convexity	0.020	0.014	0.073[c]	-0.041	0.007
	(0.32)	(0.22)	(7.50)	(-0.54)	(0.09)
Debt Age	0.072[c]	0.077[c]	-0.092[c]	0.083[c]	0.061[c]
	(7.39)	(7.63)	(-4.35)	(7.54)	(5.27)
TA Constraint	-0.097[c]	-0.095[c]	-0.174[c]		-0.110[c]
	(-4.66)	(-4.49)	(-3.20)		(-4.50)
Institutional Ownership	-0.180[c]	-0.177[c]	0.024[c]	-0.288[c]	-0.176[c]
	(-3.36)	(-3.18)	(2.71)	(-2.68)	(-2.59)
R-Squared	0.770	0.766	0.771	0.558	0.763
Observations	4,614	4,416	4,614	4,614	2,109

Note: This table provides estimated coefficients from regressing the log of corporate yield spreads (or the difference between the weighted average yield on the firm's outstanding debt and the yield on a treasure security with a similar duration) on the severance agreement and various control variables. The data covers the period from 1990 to 2006. Variable definitions are provided in Table 1. Year and 2-digit SIC code dummies are included in all regressions. T-statistics from White heteroskedastic-consistent standard errors adjusted for clustering by firm are included in parentheses. The notations [a],[b],[c] denote significance at the 10%, 5%, and 1% levels, respectively.