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Financial Distress Risk and New CEO Compensation

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We examine how ex ante financial distress risk affects CEO compensation. To disentangle the joint effects of performance on compensation and distress risk, we focus our analyses on new CEOs. Our results indicate that financial distress risk affects compensation through two channels. First, new CEOs receive significantly more compensation when financial distress risk is higher. This finding is consistent with CEOs receiving a compensation premium for bearing this risk since CEOs experience large personal costs if their firms later become financially distressed. Second, financial distress risk is associated with the incentives provided to new CEOs; distress risk is positively associated with pay-performance sensitivity and equity-based compensation and is negatively associated with cash bonuses. Further, financial distress risk is positively associated with pay-risk sensitivity for new CEOs. These findings suggest that financial distress risk alters the nature of the agency relationship in ways that lead firms to provide CEOs with more equity-based incentives. We also build on research that finds a positive relation between forced turnover risk and CEO compensation. Our analyses suggest the compensation effects of forced turnover risk appear to be mainly attributable to financial distress risk. Overall, our results indicate financial distress risk is an economically important determinant of new CEO compensation packages.

Keywords: CEO compensation; compensation premium; CEO incentives; financial distress risk
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1. Introduction

A firm is financially distressed when it is no longer able to meet its financial obligations. Under such circumstances, the firm will have to undertake drastic actions to discharge its obligations, such as file for bankruptcy, undergo a troubled debt restructuring, sell assets at "fire-sale" prices, or be acquired by a financially stronger firm. In this study, we examine the effects of the ex ante risk of financial distress (but not ex post financial distress itself) on CEO compensation packages. Prior literature has examined the effects of general measures of risk on CEO compensation, primarily using risk measures based on equity volatility. Beyond these effects, we expect financial distress risk to affect compensation because it incrementally affects the agency relationship through two primary channels.

The first channel relates to the large costs CEOs incur if their firms eventually become financially distressed. Although this is generally a low-probability event, CEOs experience large financial losses because of the reduction in value of their equity-based holdings (stock, options, stock appreciation rights, etc.) and the value of their inside debt (pensions and other retirement benefits, deferred compensation) in the event of financial distress. In addition to these immediate financial losses, financial distress diminishes the CEO's managerial reputation, which in turn reduces his expected future compensation. When CEOs retain their positions, they often experience large salary and bonus reductions (Gilson and Vetsuypens 1993). However, CEOs are often replaced when their firms become financially distressed (Schwartz and Menon 1985, Gilson 1989). In such cases, replaced CEOs rarely receive another opportunity to become an executive at a public firm, and when they do, they usually receive only a small fraction of their previous compensation levels (Fee and Hadlock 2004). Given the large immediate and longer-term costs associated with ex post financial distress, we predict that CEOs will receive a compensation premium for bearing ex ante financial distress risk.

The second channel relates to how distress risk affects the nature of the agency relationship and the amount of incentives provided to CEOs. Higher distress risk will cause CEOs to invest less in firm-specific

human capital since the risk of financial distress reduces the expected value of these types of investments (Jaggia and Thakor 1994, Rose 1992). We also expect distress risk will lead CEOs to make more conservative operating and investing decisions to protect themselves from the personal costs they experience in the event their firms become distressed (Espen and Thorburn 2003, Fama 1980, Zwiebel 1995). To prevent excessive CEO conservatism at the expense of value maximization, we predict firms will provide additional equity-based incentives when distress risk is higher.

Empirically identifying the association between financial distress risk and CEO compensation is challenging because the variables that affect distress risk are also expected to affect compensation. For example, good firm performance leads to both higher CEO compensation and lower financial distress risk. This endogeneity problem is difficult to overcome in a panel or changes specification because of the difficulty in identifying exogenous instruments that are related to compensation only via their association with the risk of financial distress. A novel aspect of our study is that our primary analyses are based on newly appointed CEOs since their initial compensation packages are essentially determined before they take office. By comparing the compensation of new CEOs at firms with different levels of financial distress risk, we are better able to isolate the effect of distress risk on compensation.[1]

We find ex ante financial distress risk affects new CEO compensation through the two channels discussed above. Consistent with the first channel, the results indicate that new CEOs at firms with higher financial distress risk receive significantly higher initial levels of compensation compared to new CEOs at firms with lower financial distress risk. For example, a one-standard-deviation increase in one of our distress risk measures (*BSM-Rank*) is associated with 9.1% more in total compensation. Further, we find that the distress risk premium is greater for younger new CEOs, who arguably have greater financial distress-related career concerns since they have more potential future working years at risk. Our results for new CEO compensation are robust to using different measures of financial distress risk, controlling for the prior CEO's compensation, using numerous proxies for CEO ability, and conditioning on whether the prior turnover was forced or not. As an alternative methodological approach, we analyze a panel regression model that includes CEO fixed effects. These results indicate that differences in time-invariant CEO characteristics (such as ability, risk aversion, etc.) are unlikely to be driving our results as we continue to find ex ante financial distress risk is positively associated with the level of CEO compensation.

Consistent with the second channel, we find distress risk is significantly and positively associated with both higher pay-performance sensitivity (PPS) and higher pay-risk sensitivity (PRS), where PPS and PRS are based on the new CEO's stock and option holdings. Analyses of the structure of new CEO compensation packages provide supporting evidence. Distress risk is associated with a lesser (greater) reliance on short-term (longer-term) performance measures as firms provide more equity-based compensation and less in cash bonuses when distress risk is higher. The level of cash salaries is not associated with distress risk. Together, these findings suggest that the financial distress risk compensation premium is paid in the form of additional equity-based compensation that provides the CEO with greater shareholder wealth-increasing and risk-taking incentives. We note the positive association between financial distress risk and CEO wealth-increasing incentives is in contrast to the negative association between risk and incentives that is predicted by agency theory (Holmstrom 1979) and supported in some empirical work (Aggarwal and Samwick 1999).[2] Thus, our findings indicate distress risk affects the agency relationship in a substantially different manner than do equity-based risk measures.

Our results indicate that CEOs receive substantial compensation premiums for bearing ex ante financial distress risk. It is reasonable that other types of risk, such as the risk of forced turnover, may require similar compensation premiums.[3] Peters and Wagner (2014) explore this possibility using a two-stage panel regression approach where they model the probability of a forced turnover in the first stage and use the fitted value in the second-stage CEO compensation model. Like us, they find a risk-related compensation premium. Although they view the premium as compensation for bearing the risk of forced turnover, their results are difficult to interpret because of their use of (industry-level) distress risk measures (credit rating and equity volatility) as instrumental variables

[1] By analyzing the pay packages of a large group of new CEOs, we also contribute to the literature by providing evidence on how the determinants of new CEO compensation packages differ from those of continuing CEOs, who are the focus of most of the CEO compensation literature.

[2] As discussed in §2, the prior literature provides mixed evidence on the association between risk and the level of CEO compensation. We find consistent evidence of significantly positive association using an equity-based risk measure.

[3] Takeover risk, which Agrawal and Knoeber (1998) find to be positively associated with cash compensation, is another possibility. However, Bates and Wu (2011) find employment prospects for displaced CEOs following takeovers are not substantially impaired once age and prior firm performance are accounted for. Thus, we do not think takeovers impose the same type of costs on CEOs as does financial distress.

to identify forced turnover risk. To provide further evidence on this issue, we analyze the incremental roles of distress risk and forced turnover risk on the level of new CEO compensation. We find financial distress risk has incremental explanatory power for new CEO compensation when forced turnover risk is included in the model. However, forced turnover risk is not incrementally associated with new CEO compensation when any of our financial distress risk measures are included in the regression. Further, when we run the two-stage model excluding financial distress risk from the first-stage prediction of forced turnover risk, we do not find a significant association between forced turnover risk and new CEO compensation in the second stage. This lack of significance holds even when the distress risk variables are excluded from the second-stage regression. Overall, our evidence suggests the forced turnover pay premium documented in Peters and Wagner (2014) is likely a manifestation of the financial distress risk premium we document here.

We contribute to the literature in several ways. Our study is the first to empirically document the incremental influence that financial distress risk exerts on the contracting process. In particular, we show that despite the costs associated with supplying risky incentives, distress risk changes the agency relationship in ways that cause firms to provide more equity-based incentives when distress risk is higher. In showing that distress risk is positively associated with the level of CEO compensation, we provide evidence supporting the predictions in Berk et al. (2010), Berkovitch et al. (2000), and Rose (1992). They demonstrate analytically that firms with higher levels of distress risk pay higher wages to compensate workers for their expected costs if the firm later becomes financially distressed. We also contribute to the labor economics literature by providing additional evidence on the existence and magnitude of compensation premiums related to financial distress risk in a powerful setting. Prior studies, including Abowd and Ashenfelter (1981) and Hamermesh and Wolfe (1990), focus on lower-level workers and generally rely on aggregate, industry level measures of hourly wages. In contrast, we focus on CEOs and utilize precise information on compensation, firm and CEO characteristics, and firm-specific estimates of risk—attributes that increase the power and reliability of our tests. Finally, our analysis provides new insight into the compensation contracts of newly hired CEOs.

2. Development of Hypotheses

2.1. Financial Distress Risk and Reservation Wages

To attract and retain an agent, firms must provide a compensation package with an expected value that meets the agent's reservation wage. The agent's reservation wage is based on his next best employment alternative and includes adjustments (referred to as compensating wage differentials in the labor economics literature) to account for important differences among employment opportunities. Since agents are concerned about both their current and future compensation, differences in future expected compensation will be an important source of compensation adjustments (Abowd and Ashenfelter 1981). Financial distress risk is expected to be an important determinant of compensation adjustments. Berk et al. (2010) and Berkovitch et al. (2000) demonstrate analytically that firms with higher levels of ex ante distress risk pay higher current wages to compensate workers for their risk of lower future wages in settings with efficient labor markets.

The compensation adjustment for bearing ex ante financial distress risk is especially high for CEOs since they experience substantial short-term and longer-term costs if their firms eventually become financially distressed. These costs are incurred regardless of whether the CEO retains his position. When firms become financially distressed, equity returns are highly negative on average (Clark and Weinstein 1983, Lang and Stulz 1992). Since much of a CEO's wealth is related to their firm's equity value, ex post financial distress imposes large personal costs on the CEO. In a similar fashion, financial distress also reduces the value of inside debt holdings, including pensions, other retirement benefits, and deferred compensation. These unsecured claims will have low priority if the firm files for bankruptcy. Thus, the occurrence of ex post financial distress results in large immediate financial costs to the CEO. As such, CEOs demand an upward adjustment in current pay to compensate them for these expected financial distress costs, which are increasing in the ex ante risk of financial distress.[4]

CEOs of firms that become financially distressed are also likely to have reduced levels of future compensation (post-financial distress) even when they retain their current positions. These reductions occur to the extent the CEO's managerial reputation is

[4] If ex ante financial distress risk were a positively priced risk factor, then this would introduce a potentially offsetting effect as the higher future expected returns at higher-distress-risk firms could (partially) offset the need to provide a distress risk premium. However, we do not expect that ex ante financial distress risk is associated with expected stock returns because it can be diversified away by investors, and hence, this risk should not be priced. Although prior literature on this issue is mixed, recent analyses in Da and Gao (2010) and Kim (2013) do not find evidence of a significant association between ex ante financial distress risk and future returns.

impaired by having his firm become financially distressed.[5] A lower managerial reputation reduces the retained CEO's outside opportunities and, hence, his reservation wages. Thus, the distress-related reduction in managerial reputation reduces the CEO's expected future compensation at his current firm, further adding to the CEO's costs if financial distress occurs. Consistent with this idea, Gilson and Vetsuypens (1993) find that CEOs who retain their positions typically experience large salary and bonus reductions.

The longer-term ex post costs of financial distress will be greater when the CEO is removed from office. This is a relatively common outcome, as estimates of CEO turnover rates at bankrupt firms range from 45% to 80% (Gilson 1989, Schwartz and Menon 1985). In such cases, CEOs lose their current incomes, the value of their firm-specific human capital, and any noncontractible private benefits of control.[6] Former CEOs of financially distressed firms are unlikely to find comparable employment again (Peters and Wagner 2014, Schwartz and Menon 1985). For example, Fee and Hadlock (2004) find that fewer than 12% of dismissed CEOs find new positions (at any level) at public firms afterward. When they do, their new firms tend to be much smaller, which suggests they experience large decreases in pay.

The existence and magnitude of these longer-run reputational costs depends on the extent to which boards and the executive labor market make reliable inferences about the CEO's ability following financial distress. For example, if they do not adjust appropriately for the firm's existing risk of financial distress when the CEO first assumed office, then the reputation costs of financial distress will be greatly increased. If labor market participants are aware of this behavior, then we expect CEOs will demand higher compensation accordingly and firms will meet CEOs' now-higher reservation constraints.

Prior research casts doubt on whether boards and the external labor market are fully efficient in this respect because the CEO's reputational loss does not appear to depend on the degree to which his performance is responsible for the firm's difficulties (Lang and Stulz 1992, Schwartz and Menon 1985). For example, Khanna and Poulsen (1995, p. 919) conclude that "when managers are blamed for financial distress, they are serving as scapegoats." Instead, external factors appear to be primarily responsible for distressed firms' troubles.[7] Thus, boards may not assess the CEO's performance accurately following financial distress.

Similarly, prior research does not support the idea that the executive labor market is particularly nuanced in assessing CEOs, especially after cases of poor performance. Based on his analysis of CEO hiring and firing decisions, Khurana (2002) concludes the market for CEOs frequently appears to be inefficient and is highly influenced by cultural factors. Khurana and Piskorski (2004) discuss how these types of inefficiencies can be sustainable in the external executive labor market. Acharya et al. (2012), Cannella et al. (1995), and Siegel et al. (2014) provide empirical evidence indicating labor markets are not fully efficient. One possible explanation is the available performance measures contain too much noise and measurement error to allow the effects of CEO performance to be disentangled from firm performance after a firm becomes financially distressed.[8] This noise increases the adverse selection problem for boards when they evaluate former CEOs of distressed firms (Zajac 1990). Accordingly, boards (and executive search firms) may prefer to avoid considering former CEOs who are tainted or stigmatized by their previous firm's financial distress. Thus, negative outcomes, such as financial distress, are expected to reduce the labor market's ability to assess the CEO's performance.

In summary, CEOs experience large costs if their firms become financially distressed, both in terms of immediate financial losses and reductions in future compensation. Furthermore, the extent of these losses does not appear to be moderated by external factors,

[5] The case of Gary Wendt is consistent with this idea. When the highly regarded former General Electric executive became CEO at financially troubled insurer Conseco, an analyst commented, "He's got his reputation on the line. Filing [for bankruptcy] is a failure. He'll do everything possible to avoid it" (Norris and Treaster 2002). Despite having "inherited a bad situation," the press reported that "The reputation of Gary Wendt, the celebrated ex-GE executive, now lies in tatters" after he failed to save Conseco from bankruptcy (Eavis 2002).

[6] Rose (1992) demonstrates that firms with higher distress risk pay their managers more because financial distress eliminates the value of firm-specific human capital. Jensen and Meckling (1976) make a similar argument.

[7] See also Jenter and Kanaan (2015) and Kaplan and Minton (2012). Schwartz and Menon (1985) discuss how CEOs take on symbolic roles at their firms and how they can serve as scapegoats and be fired when things go poorly. Replacing CEOs may help to change both internal and external perceptions of firms and help restore confidence in their futures. This type of scapegoating is consistent with the psychological theory of attribution. This effect is likely to be stronger in the presence of noisy performance signals, such as those related to CEOs of distressed firms.

[8] Kuhnen (2015) provides experimental evidence indicating that the ability to learn from financial information is worse in the case of negative outcomes. If applicable to the labor market, this finding suggests that the labor market's ability to assess the CEO's performance is inhibited following negative outcomes, such as financial distress.

such as the initial level of financial distress risk. Therefore, we make the following hypothesis:

Hypothesis 1 (H1). *New CEOs at firms with higher ex ante financial distress risk receive more in total compensation compared to new CEOs at firms with lower financial distress risk.*

As discussed above, we expect CEOs' future compensation levels to be lower if their firms become financially distressed because of reductions in their managerial reputations. If correct, then one implication of H1 is that the financial distress risk premium will vary with the expected magnitude of these reputation costs (or career concerns) following ex post financial distress. An important determinant of the magnitude of reputation costs will be the CEO's age. The magnitude of these financial distress costs is likely greater for younger CEOs since they have more potential working years that will be affected by the loss of reputation. Older CEOs will be less affected since they have fewer years remaining before they would voluntarily retire. Accordingly, all else equal, the ex ante financial distress risk premium is expected to decrease in the new CEO's age. A potentially offsetting effect occurs to the extent older CEOs tend to be more risk averse.[9] Accordingly, the expected premium per unit of financial distress risk is expected to increase with the age-related risk aversion. However, we expect the risk-aversion effect to be relatively small compared to the additional years of lower compensation younger CEOs potentially experience.[10] Therefore, we make the following additional prediction:

Hypothesis 1A (H1A). *The compensation premium received by new CEOs at firms with higher ex ante financial distress risk compared to new CEOs at firms with lower financial distress risk is greater for younger CEOs.*

2.2. Financial Distress Risk and CEO Incentives

A long line of literature has considered the effects of risk on the agency relationship. A central prediction of agency theory is that firms provide managers with fewer incentives when risk is higher as they trade off the benefits of incentives against the benefits of risk sharing (Holmstrom 1979). Aggarwal and Samwick (1999) and Jin (2002) provide empirical support for this central prediction because they find pay-performance sensitivity is decreasing in stock return volatility.[11]

Prior work has long argued that financial distress risk can alter the nature of the principal–agent relationship. One strand of literature argues financial distress risk reduces the need for firms to provide explicit incentives because it reduces the scope of potential CEO-shareholder agency conflicts. Grossman and Hart (1982) find that increased financial distress risk induces managers to avoid value-destroying policies they might personally prefer in order to avoid the potential loss of control if their firm enters bankruptcy. Similarly, Jensen (1986) argues that the reduced free cash flows associated with higher distress risk limit management's ability to use corporate resources in ways that do not benefit investors.

However, these arguments do not consider that other aspects of the agency problem are also likely to change when distress risk is higher. These changes will lead firms to offer more incentives when financial distress risk is higher despite the associated reduction in risk sharing. Rose (1992) argues the expected value of the CEO's investments in firm-specific human capital are negatively related to the level of financial distress risk since their value is greatly reduced, if not eliminated entirely, when firms become financially distressed. Consistent with this argument, Jaggia and Thakor (1994) find that managers optimally choose to invest less in firm-specific human capital when financial distress risk is higher. Consequently, financial distress risk is expected to change the nature of the agency problem in ways that cause firms to supply more incentives to motivate CEOs to invest in firm-specific human capital when distress risk is higher.

As discussed above, CEOs experience large financial costs and reductions in their managerial reputations if their firms become distressed. Accordingly, CEOs have strong incentives to prevent this from occurring. These incentives cause CEOs to become overly risk averse and short-term focused (from the perspective of shareholders) to reduce the risk of their firms becoming financially distressed (Espen and Thorburn 2003, Berk et al. 2010). For example, CEOs will be more reluctant to invest in risky projects, even when those projects have positive net present values. Consistent with this idea, prior theoretical work demonstrates that managerial concerns about the executive labor market reputations affect their

[9] Using survey evidence, Graham et al. (2012) find that among CEOs, risk aversion increases with age.

[10] In addition, if older CEO candidates tend to be wealthier, then the wealth effect will tend to offset the age-related risk-aversion effect.

[11] Prendergast (2002) notes that the predicted negative relation between risk and incentives has not been convincingly shown in much of the related empirical work. He argues delegation of responsibilities, and hence pay based on output, is more likely in uncertain environments, leading to the positive relation between risk and incentives that is sometimes observed empirically. A related argument could be made in the context of financial distress.

incentives and can induce conservatism in managers (Fama 1980, Zwiebel 1995).

In summary, financial distress risk is likely to cause the CEO to become overly conservative in terms of operating, financing, and investment decisions, as well as underinvest in firm-specific human capital relative to what shareholder value-maximization would dictate. Thus, we expect firms to provide more equity-based shareholder wealth increasing incentives and more risk-taking incentives when distress risk is higher. Consistent with these arguments, Berkovitch et al. (2000) demonstrate analytically that pay-performance sensitivity is positively correlated with financial distress risk. Therefore, we make the following hypotheses:

Hypothesis 2A (H2A). *New CEOs at firms with higher financial distress risk have higher pay-performance sensitivity compared to new CEOs at firms with lower financial distress risk.*

Hypothesis 2B (H2B). *New CEOs at firms with higher financial distress risk have higher pay-risk sensitivity compared to new CEOs at firms with lower financial distress risk.*

3. Methodology

We identify potential CEO turnovers as those firm-years where Standard & Poor's ExecuComp database lists a different CEO in year t than in year $t-1$. We identified the CEO's starting date using both the "becameceo" field in ExecuComp and the proxy statements. This process yielded 1,610 new-CEO observations from 1,116 unique firms between 1992 and 2007 with the required data in ExecuComp, CRSP, and Compustat. The number of observations varies across our specifications depending on the availability of data for additional control variables, such as credit ratings, CEO ability measures, and corporate governance variables.

Total direct compensation (*TDC*) is the natural logarithm of the *TDC*1 variable in ExecuComp. *TDC* consists of the sum of salary, bonus, other annual pay, long-term incentive payouts, the value of restricted stock and option grants, and all other compensation received during the CEO's first year. To assess the relation between financial distress risk and compensation, we estimate cross-sectional regressions using the new CEO's *TDC* as the dependent variable. Our primary regression equation is as follows:

$$\begin{aligned} TDC = {} & \alpha + \beta_1 * Distress\ Risk + \beta_2 * Media\ Hits \\ & + \beta_3 * Prior\ CEO's\ TDC + \beta_4 * Age \\ & + \beta_5 * External + \beta_6 * Chair + \beta_7 * Sales \\ & + \beta_8 * VarRank + \beta_9 * Leverage \\ & + \beta_{10} * B/M + \beta_{11} * SalesGr + \beta_{12} * Return \\ & + \beta_{13} * Lag\ Return + \beta_{14} * CEO\ Own \\ & + \beta_{15} * Block\ Holder + \beta_{16} * Cash/Emp \\ & + \gamma_I Industry_i + \gamma_Y Year_y + \varepsilon, \end{aligned} \tag{1}$$

where *Distress Risk* represents one of our four distress risk proxies. They, along with the other control variables, are discussed in §§3.1–3.3 below. Hypothesis 1 predicts that β_1 will be positive. Following Aggarwal and Samwick (1999), we use robust regressions using the M-estimation technique to reduce the influence of outliers, which are prevalent in executive compensation data. As alternatives, we also employed the MM-estimation technique, ordinary least squares (OLS) with firm-clustered standard errors, OLS with standard errors clustered by firm and by year, and OLS with White (1980) standard errors. The qualitative results and our inferences are essentially unchanged using these other methods.

We use a similar specification to examine the association between financial distress risk and the new CEO's pay-performance sensitivity, *PPS*, as well as the association between financial distress risk and the new CEO's pay-risk sensitivity, *PRS*. We measure *PPS* as the dollar change in CEO wealth for a \$1,000 change in shareholder wealth. We calculate *PPS* as the sum of the pay-performance sensitivity of stock (percentage ownership × 1,000) and the pay-performance sensitivity of options (the number of options divided by shares outstanding × 1,000 × Δ, where Δ measures the change in the value of the options for a small change in the stock price).[12] We measure *PRS* as the dollar change in the value of the new CEO's wealth for a 0.01 change in stock volatility and is estimated as in Core and Guay (2002).

3.1. Distress Risk Measures

We measure the firm's financial distress risk just prior to when the new CEO takes office. To ensure the robustness of our results, we use distress risk measures derived from both stock market and accounting data, as well as credit ratings. Our market-based measures are based on an estimate of the probability of bankruptcy, *BSM-Prob*, which is derived from the Black–Scholes–Merton (BSM) option pricing model. We estimate *BSM-Prob* at the beginning of the month

[12] We calculated Δ using the parameters of the Black–Scholes formula for each firm-year. Specifically, $\Delta = \exp(-\delta_E T_O N(Z))$, where N is the standard normal distribution, and $Z = [\ln(V_E/K) + (r - d_E + s_E^2/2)/)T_0]/s_E\sqrt{T_O}$, where V_E is the stock price, s_E^2 is equity volatility, r is the risk-free rate, K is the exercise price, T_O is the time to option maturity, and d_E is the expected common stock dividend rate. Parameter estimates come from Standard & Poor's ExecuComp database.

when the new CEO assumes office based on the method developed in Hillegeist et al. (2004).

In the BSM option pricing model, equity is modeled as a call option on the value of the firm's assets, V_A. The strike price equals the face value of the firm's liabilities, X, and the option expires at time T when the debt matures. At time T, equity holders exercise their option and pay off the debt holders if the value of the firm's assets is greater than the face value of its liabilities ($V_A > X$). Otherwise, equity holders let their option expire, in which case the firm files for bankruptcy and the debt holders take over. According to the BSM model, the probability that $V_A < X$ at time T is as follows:

$$\mathrm{N}\left[-\ln\frac{V_A}{X}+\left(\mu-\delta-\frac{\sigma+A^2}{2}\right)T\Big/\sigma_A\sqrt{T}\right] = \textit{BSM-Prob}, \quad (2)$$

where $\mathrm{N}(\cdot)$ is the standard normal distribution, σ_A is the standard deviation of asset returns, μ is the expected return on assets, and δ is the dividend rate.

The estimated values of *BSM-Prob* are close to 0 for roughly 75% of our observations, and the distribution is quite skewed. Accordingly, we use the natural logarithm of *BSM-Prob* in our regression analyses. We use an additional distress risk measure, *BSM-Rank*, derived from *BSM-Prob* since the precise relation between financial distress risk and CEO compensation is unknown. *BSM-Rank* is the rank of *BSM-Prob* normalized to lie between 0 and 1. Using ranks can provide more reliable estimates if the true relation between *TDC* and *BSM-Prob* is nonlinear. It also helps control for the influence of outliers given the skewness of the raw measure.

We also use two additional measures in our tests. *Credit Rating* is based on Standard and Poor's long-term issuer credit ratings obtained from Compustat. We convert letter ratings into numerical values by assigning a value of 2 to the highest credit rating (AAA), a value of 3 to the next highest rating (AA+), and so on. *O-Score* is an accounting-based bankruptcy measure derived from Ohlson (1980) and is estimated at the beginning of the fiscal year when the new CEO takes office.

3.2. Proxies for CEO Ability

The firm's financial distress risk could also affect which executive is chosen to be the new CEO. For example, more financially distressed firms may tend to hire higher-ability executives, and higher-ability executives command higher compensation. In this case, a positive association between compensation and distress risk could just reflect an ability premium rather than a distress risk premium. Thus, it is important to control for the new CEO's ability. CEO ability is a multidimensional construct that is difficult for researchers to measure empirically. Accordingly, we use 12 different empirical measures of ability based on the prior literature. Although we include several ex ante measures that are observable at the time the new CEO takes office, some of these measures are ex post proxies that are not observable at the time the new CEO was chosen. However, we expect they are positively correlated with the board's assessment of the CEO when the hiring decision was made.

Following prior literature, we use the extent of media coverage as our primary proxy for the executive labor market's assessment of the CEO's ability. Whereas some press coverage is undoubtedly negative, we expect coverage is predominantly positive when the CEO first takes office. Milbourn (2003) and Rajgopal et al. (2006) report that over 90% of CEO media mentions have nonnegative tones. We obtain from Factiva the number of times the executive and the firm are both mentioned in an article in a major U.S. newspaper during the period from six months before the CEO takes office to three months afterward. The untabulated mean (median) number of media hits is 35 (11) and the standard deviation is quite high (78.8). Consistent with Milbourn (2003) and Rajgopal et al. (2006), we define *Media Hits* as the cumulative density function of media hits normalized between 0 and 1. One advantage of doing so is that it reduces the influence of extreme values since the raw measure is highly skewed.[13]

Ability Score is a measure of managerial ability developed in Demerjian et al. (2012). It is the residual from a regression of total firm efficiency that controls for firm features beyond CEO ability that are expected to affect total firm efficiency. Following Milbourn (2003) and Rajgopal et al. (2006), respectively, we use *Future Return* and *Future ROA* as performance-based measures of CEO ability measured over the first full fiscal year after the CEO assumes office. *Future Return* is the average monthly stock return less the average monthly return on an equally weighted portfolio from firm's two-digit SIC industry scaled by the standard deviation of the average monthly industry returns. *Future ROA* is based on an accounting-based measure of performance, ROA, which equals income before extraordinary items scaled by average total assets. Following Rajgopal et al. (2006), we compute the cumulative distribution function of ROA by year and industry (two-digit SIC code) using the entire Compustat universe, and use this value in our tests.

Farrell and Whidbee (2003) find that CEO turnovers are associated with analyst forecast errors. These

[13] Untabulated results are qualitatively unchanged if (1) we use alternative time periods, such as from months −30 to −6 or from months +3 to +24 months or from months −30 to +24 to measure *Media Hits*; (2) if we use raw media hits; or (3) if we use the residual number of media hits after controlling for year, industry (and size).

results suggest that boards' perceptions of CEO ability are influenced by earnings surprises. *Forecast Error* and *Meet/Beat* are based on the firm's earnings performance relative to analyst expectations measured over the fiscal year after the CEO assumes office. *Forecast Error* equals the consensus annual analyst forecast error, measured as the actual earnings for the next fiscal year minus the median analyst earnings forecast (both reported in the Institutional Brokers' Estimate System), deflated by stock price, where earnings forecast and stock price are measured one month after the most recent annual earnings release. *Meet/Beat* is an indicator variable that equals 1 if *Forecast Error* ≥ 0. We use *Short Tenure* as an inverse measure of CEO ability. *Short Tenure* is an indicator variable that equals 1 when the new CEO remains in office for less than two years and 0 otherwise. A CEO who stays only a short time after being hired may be of low quality or a poor match for the firm.

The next five ability measures are based on CEO attributes that are observable when the new CEO takes office. These data come from BoardEx. *General Ability* is a measure of general management skills developed in Custodio et al. (2013). The measure is the first factor of the principal components analysis of five aspects of a new CEO's previous professional career: the past number of (1) positions, (2) firms, and (3) industries in which a CEO worked; (4) whether the new CEO has previous experience as a CEO; and (5) whether the new CEO has previous experience at a conglomerate. *Prior CEO Exp*, *No. of Years as CEO*, and *No. of Prior CEO Jobs* are based on the new CEO's previous experience (if any) as CEO of a public company. *Prior CEO Exp* is an indicator variable that equals 1 if the new CEO held a CEO position at another publicly traded firms. *No. of Years as CEO* is the number of years the new CEO had previously served as the CEO of a publicly traded firm. *No. of Prior CEO Jobs* is the number of different publicly traded firms the new CEO had previously served as CEO. Finally, *Recession Grad* is an indicator variable that equals 1 if the CEO's first academic degree was awarded during an a National Bureau of Economic Research (NBER) recession year (Custodio et al. 2013). Conditional on having become a CEO, managers who started their careers under tougher labor market conditions should be more talented than other managers. Finally, we create a single factor, *Ability Factor*, obtained from the first factor of the principal component analysis of the 12 ability measures.

3.3. Other Control Variables

We control for several other CEO- and firm-specific determinants of CEO compensation identified in the literature. A common concern with cross-sectional compensation regressions is that it is difficult to control for unobserved heterogeneity. To mitigate this concern, we include the natural logarithm of the prior CEO's total compensation from the prior fiscal year (*Prior CEO's TDC*). This variable is a powerful control for various firm-, industry-, and time-specific characteristics (i.e., unobserved heterogeneity) that affect both the new and prior CEO's compensation. Including this variable reduces the power of our tests to the extent that financial distress risk is correlated over time and affects the prior CEO's compensation. Thus, we view our results as conservative.

We include four CEO-specific variables. *Age* is the CEO's age at the time he becomes CEO less the sample median (51). *External* is an indicator variable that equals 1 if the new CEO was not a current employee of the firm for at least one year before becoming CEO and 0 otherwise.[14] We obtain the CEO's age and external status from Execucomp and confirm it using hand-collected data from the proxy statements and other data sources. *Chair* is an indicator variable that equals 1 if the CEO is also the chairperson of the board of directors as of the end of the first fiscal year in office. Holding a dual position may mean that the job is more difficult and complex, and hence requires additional compensation. In addition, CEOs holding both positions may exercise additional power over the board, which can allow them to extract additional rents (Core et al. 1999). *CEO Own* is the total number of shares held by the new CEO divided by the total number of shares outstanding as of the end of the first fiscal year in office. Core et al. (1999) find that CEO compensation is a decreasing function of the CEO's ownership stake.

We use nine firm-specific variables to control for other economic determinants of CEO compensation. Perhaps the most important are the controls for firm risk, *VarRank* and *Leverage*. Controlling for firm risk facilitates our interpretation that the distress risk coefficients capture the incremental effect of the CEO's financial distress risk on compensation, and not just compensation for bearing financial risk. Following Aggarwal and Samwick (1999), Milbourn (2003), and Rajgopal et al. (2006), *VarRank* is the rank of dollar return volatility, a measure that is consistent with standard agency theory (Garen 1994). We use total risk instead of idiosyncratic risk because new CEOs are less likely to be able to hedge the market risk of their holdings (Jin 2002). Dollar return volatility is calculated by multiplying the square of the firm's market capitalization at the beginning of the month the new CEO assumes office by the variance of the real

[14] We use a one-year cutoff since these firms likely hired the candidate to become the CEO after an adjustment period (Weisbach 1988, Fee and Hadlock 2003). Our results are qualitatively unchanged if we either allow a two-year adjustment period or only include "pure" outsiders whose first position at the firm is as CEO.

monthly total percentage returns to shareholders over the prior 60 months (if available). *VarRank* is the rank of dollar return volatility normalized to lie between 0 and 1. We use the rank of dollar volatility since the raw measure is extremely right skewed and fat tailed. We also include *Leverage*, the ratio of long-term debt to total assets measured as of the beginning of the fiscal year when the new CEO assumes office, as an additional risk control.

Larger firms and firms with greater growth opportunities will require higher-quality managers (Smith and Watts 1992). We use the natural logarithm of sales, *Sales*, to proxy for firm size. We proxy for the firm's investment opportunity set using the book-to-market ratio, B/M, and the lagged annual growth in sales, *SalesGr*. To capture the effect of the new CEO's performance during the first fiscal year in office, we include *Return*, the total return to shareholders starting on the day the new CEO assumes office until the end of the fiscal year. We also include *Lag Return*, the stock return measured over the trailing 12 month period ending at the beginning of the month when the new CEO takes office. Following Core et al. (1999), we control for the presence of an outside block holder. *Block Holder* is an indicator variable that equals 1 if there is an external block holder who owns at least 5% of the outstanding shares. Following Ittner et al. (2003), we include *Cash/Emp* as a measure of cash constraints that may affect compensation levels. *Cash/Emp* is cash and cash equivalents divided by number of employees. All of the accounting-based variables are measured as of the beginning of the fiscal year when the new CEO takes office. Finally, we include year and industry fixed effects (Barth et al. 1998).

4. Descriptive Statistics, Analysis, and Results

4.1. Descriptive Statistics

Table 1 presents summary statistics for the firm-specific variables in our sample. For the overall sample, the mean (median) probability of bankruptcy is 1.4% (0.00%). As the median value indicates, the majority of the sample has a probability of bankruptcy that is extremely small (mean < 0.0005). To provide insights regarding how the variables of interest vary with the level of financial distress, we partition

Table 1 Summary Statistics of Firm Variables

	BSM-Prob	*BSM-Rank*	*Credit Rating*	*O-Score*	*Sales* (000,000)	*VarRank*	*Leverage*	*B/M*	*SalesGr*	*Return*	*Lag Return*	*Block Holder*	*Cash/Emp*
						All firms							
Mean	0.014	0.50	9.60	−1.12	4,851	0.50	0.20	0.51	0.13	0.10	0.09	0.53	0.06
Median	0.000	0.50	9.0	−1.11	1,273	0.50	0.18	0.44	0.07	0.05	0.02	1.00	0.01
Std. dev.	0.060	0.29	3.22	2.82	13,785	0.29	0.20	0.51	0.47	0.46	0.62	0.50	0.20
N	1,610	1,610	879	1,559	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610
						Firms with low financial distress risk (*BSM-Prob* < 0.0025)							
Mean	0.000	0.39	9.06	−1.48	5,230	0.57	0.19	0.44	0.14	0.08	0.19	0.54	0.06
Median	0.000	0.39	9.0	−1.40	1,439	0.59	0.17	0.40	0.08	0.05	0.10	1.00	0.01
Std. dev.	0.000	0.23	3.06	2.57	14,631	0.27	0.17	0.31	0.45	0.32	0.59	0.5	0.16
N	1,262	1,262	715	1,216	1,262	1,262	1,262	1,262	1,262	1,262	1,262	1,262	1,262
						Firms with moderate financial distress risk (0.0025 ≤ *BSM-Prob* < 0.025)							
Mean	0.010	0.85	11.02	−0.53	3,993	0.40	0.21	0.64	0.09	0.12	−0.20	0.57	0.08
Median	0.008	0.89	10.5	−0.48	872	0.37	0.18	0.56	0.05	0.00	−0.32	1.00	0.01
Std. dev.	0.006	0.04	2.90	3.41	12,128	0.27	0.28	0.42	0.28	0.64	0.58	0.50	0.41
N	199	199	90	195	199	199	199	199	199	199	199	199	199
						Firms with higher financial distress risk (*BSM-Prob* ≥ 0.025)							
Mean	0.142	0.95	13.05	1.02	2,791	0.28	0.27	0.88	0.13	0.26	−0.40	0.46	0.06
Median	0.076	0.95	13.0	0.63	590	0.19	0.27	0.70	0.01	0.06	−0.55	0.00	0.01
Std. dev.	0.143	0.03	2.30	2.80	6,212	0.27	0.27	1.25	0.76	0.91	0.56	0.50	0.10
N	149	149	74	148	149	149	149	149	149	149	149	149	149

Notes. The sample is based on 1,610 new CEOs obtained from ExecuComp between 1992 and 2007. *BSM-Prob* is the Black–Scholes–Merton measure of the probability of bankruptcy (Hillegeist et al. 2004); *BSM-Rank* is the ranked value of *BSM-Prob*, normalized between 0 and 1; *Credit Rating* is Standard and Poor's long-term issuer credit ratings where an AAA rating takes on a value of 2, AA+ a value of 3, and so on; *O-Score* is the financial distress measure from Ohlson (1980); *Sales* (000,000) is the annual sales in millions; *VarRank* is the rank of dollar return volatility normalized between 0 and 1; *Leverage* is the long-term debt divided by total assets; *B/M* is the book to market ratio; *SalesGr* is the annual sales growth; *Return* is the stock return from the day the new CEO takes office to the end of the fiscal year; *Lag Return* is the lagged 12 month stock return; *Block Holder* = 1 if an outside block holder owns 5% or more of shares outstanding; *Cash/Emp* is the cash and cash equivalents divided by the number of employees, in millions. All variables are measured immediately prior to when the new CEO takes office.

the sample into low-, moderate-, and higher-distress-risk groups based on their *BSM-Prob* values. Low-risk firms (*BSM-Prob* < 0.25%) compose 78% of the sample, with moderate-distress-risk (0.25% ≤ *BSM-Prob* < 2.5%) and higher-distress-risk (*BSM-Prob* ≥ 2.5%) firms comprising 12% and 9%, respectively. For the higher-risk partition, the median probability of bankruptcy is still relatively low at 7.6%. As expected, the values of the other distress risk measures, *BSM-Rank*, *Credit Rating*, and *O-Score*, are consistent with the partitions based on *BSM-Prob*.

Mean and median firm size, as measured by sales, decrease in financial distress risk as expected. Mean sales in the year prior to the new CEO assuming office are \$5.230 billion for the low-risk firms, \$3.993 billion for the moderate-risk firms, and \$2.791 billion for the higher-risk firms. As expected, *VarRank* is decreasing and *Leverage* is increasing across our financial distress partitions, although the difference in *Leverage* between the low and moderate partitions is relatively small.[15] Whereas lagged returns (*Lag Return*) for the low-distress-risk firms are generally positive (mean = 19%; median = 10%), moderate- and higher-distress-risk firms have highly negative returns on average: the mean (median) return for the moderate-distress-risk group is −20% (−32%) and −40% (−55%) for the higher-distress-risk group. These results highlight the inherent connection between firm performance and distress risk and support our choice to focus our analyses on new CEOs. Interestingly, returns after the new CEO takes office (*Return*) are generally positive and mean returns are actually increasing across the distress risk partitions. This finding is consistent with Huson et al. (2004). *B/M* is increasing with financial distress risk, whereas median sales growth is decreasing with distress risk. There are no consistent differences for *Block Holder* and *Cash/Emp* across the distress risk partitions.

We present summary statistics for the CEO-specific variables for the entire sample as well as for each of the three financial distress risk partitions in Table 2. The mean (median) total CEO compensation in our sample is \$5,326,000 (\$2,501,000). Both mean and median total compensation are decreasing across the financial distress risk partitions. The inverse relation between CEO compensation and financial distress risk is likely driven by the negative relation between size and distress risk and the strong positive association between firm size and CEO compensation (the untabulated correlation is 0.48). In contrast, mean and median *PPS* are increases from 10.8 (4.1) for low-distress-risk firms to 20.2 (7.4) for moderate-risk firms to 21.6 (11.4) for higher-distress-risk firms. The relation between distress risk and *PRS* is nonlinear, with the mean value highest for moderate-risk firms and lowest for low-risk firms. Overall, 35% of new CEOs are classified as *External*. The majority of these (73.2%) were hired directly from outside the firm.

An examination of how the CEO ability measures vary across the distress risk partitions yields two distinct observations. First, most of the measures (*Media Hits*, *Ability Score*, *Future ROA*, *Forecast Error*, *Meet/Beat*, *Short Tenure*, and *Recession Grad*) indicate that new CEO ability decreases as distress risk increases. These results suggest that higher-quality CEOs tend to take positions at less distressed (and larger) firms. Second, more distressed firms are more likely to hire candidates who have had prior experience as CEOs; *Prior CEO Exp*, *No. of Years as CEO*, and *No. of Prior CEO Jobs* increase across the distress risk partitions. Similarly, more distressed firms tend to hire new CEOs with higher *General Ability* scores, which reflect the diversity of previous work experience. In addition, the likelihood of an external hire is greater at firms with higher levels of distress risk; whereas 50% (49%) of moderate (higher) risk firms hire an external CEO, only 31% of low-risk firms do so.

4.2. Financial Distress Risk and the Level of Compensation for New CEOs

Table 3 presents the results of estimating Equation (1). Each column presents the results when using an alternative distress risk measure. The sample size varies depending on the data availability for the distress risk measures. Data availability is most restricted for *Credit Rating*. The results show that total CEO compensation is positively associated with financial distress risk. The distress risk coefficients are significantly positive in all four of the specifications (*p*-values range from <0.0001 to 0.037). Overall, these results provide strong empirical support for H1. The magnitudes of the coefficients indicate that CEOs receive economically important compensation adjustments when they bear financial distress risk. For example, the magnitude of the *BSM-Rank* coefficient in column (2) indicates that a one-standard-deviation increase in the rank of distress risk is associated with 9.1% more in total compensation (0.29 ∗ 0.313 = 0.091). This magnitude is economically significant: 9.1% of the mean (median) CEO's total compensation is \$485,000 (\$228,000). The magnitude of the *Credit Rating* coefficient indicates that CEOs earn 4.8% more in total compensation for each downward increment in their firms' credit rating. This percentage represents \$256,000 (\$120,000) of the sample mean (median) level of compensation.

[15] Recall that *VarRank* is based on the distribution of the dollar return volatility, and not percentage return volatility. As such, it is highly correlated with market capitalization. In untabulated results, percentage return volatility increases with distress risk across the three partitions, as expected.

Table 2 Summary Statistics of CEO Variables

	TDC	*Prior CEO's TDC*	*PPS*	*PRS*	*External*	*Chair*	*Age*	*CEO Own*	*Media Hits*	*Ability Score*	*Future ROA*	*Forecast Error*	*Meet/ Beat*	*Short Tenure*	*General Ability*	*Prior CEO Exp*	*No. of Years as CEO*	*No. of Prior CEO Jobs*	*Recession Grad*
								All firms											
Mean	5,326	3,532	13.0	4,354	0.35	0.58	51.0	0.004	0.50	0.01	0.62	−0.016	0.47	0.08	0.01	0.38	4.12	0.53	0.30
Median	2,501	1,651	4.8	2.546	0	1	51	0	0.50	−0.01	0.66	−0.001	0	0	−0.2	0	0	0	0
Std. dev.	9,853	6,999	33.0	37,346	0.48	0.49	7.0	0.024	0.29	0.13	0.24	0.112	0.50	0.27	0.93	0.49	6.56	0.82	0.46
N	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,610	1,442	1,540	1,370	1,371	1,610	965	965	965	965	965
								Firms with low financial distress risk (*BSM-Prob* < 0.0025)											
Mean	5,650	3,505	10.8	3,740	0.31	0.60	51.1	0.004	0.51	0.02	0.65	−0.007	0.49	0.07	−0.02	0.35	3.90	0.50	0.31
Median	2,656	1,746	4.1	5.801	0	1	51	0	0.52	0.01	0.69	0	0	0	−0.18	0	0	0	0
Std. dev.	10,586	5,787	37.4	39,072	0.46	0.49	6.8	0.023	0.29	0.13	0.23	0.045	0.50	0.25	0.88	0.48	6.54	0.78	0.46
N	1,262	1,262	1,262	1,262	1,262	1,262	1,262	1,262	1,262	1,115	1,208	1,103	1,104	1,262	778	778	778	778	778
								Firms with moderate financial distress risk ($0.0025 \leq$ |it BSM-Prob < 0.025)											
Mean	4,411	4,016	20.2	7,701	0.50	0.51	50.7	0.006	0.47	−0.02	0.53	−0.033	0.37	0.10	0.10	0.48	4.83	0.66	0.28
Median	2,330	1,520	7.4	0	0	1	50	0	0.45	−0.03	0.55	−0.009	0	0	0.01	0	0	0	0
Std. dev.	6,391	12,153	54.2	33,550	0.50	0.50	7.6	0.031	0.28	0.12	0.22	0.123	0.483	0.30	1.10	0.50	6.48	1.01	0.45
N	199	199	199	199	199	199	199	199	199	189	189	159	159	199	111	111	111	111	111
								Firms with higher financial distress risk (*BSM-Prob* ≥ 0.025)											
Mean	3,805	3,115	21.6	5,081	0.49	0.58	51.0	0.002	0.43	−0.06	0.42	−0.08	0.38	0.15	0.23	0.51	5.34	0.75	0.22
Median	1,591	1,173	11.4	0	0	1	51	0	0.37	−0.07	0.36	−0.011	0	0	−0.12	1	2.50	1	0
Std. dev.	6,449	7,016	36.3	25,122	0.50	0.50	7.8	0.005	0.30	0.12	0.24	0.334	0.49	0.36	1.08	0.50	6.76	0.90	0.42
N	149	149	149	149	149	149	149	149	149	138	143	108	108	149	76	76	76	76	76

Notes. TDC is the total direct compensation of the new CEO in thousands; *Prior CEO's TDC* is the prior CEO's TDC during the last full year in office in thousands; *PPS* is new CEO's pay-performance sensitivity; *PRS* is new CEO's pay-risk sensitivity; *External* = 1 if the new CEO had worked for the firm less than one year; *Chair* = 1 if the new CEO is also chair; *Age* is the age of the new CEO; *CEO Own* is the fraction of total shares outstanding held by the new CEO; *Media Hits* is the value of the normalized cumulative density function of the number of times the CEO and firm are mentioned in press articles between six months before and three months after assuming office; *Ability Score* is the CEO's ability score from Demerjian et al. (2012); *Future ROA* is the value of the normalized cumulative density function of the industry-adjusted return on assets during the second fiscal year in office; *Forecast Error* is the consensus analyst annual earnings forecast error for the second fiscal year in office, deflated by stock price; *Meet/Beat* = 1 if *Forecast Error* ≥ 0; *Short Tenure* = 1 if the new CEO remains in office for less than two years; *General Ability* is the new CEO's general management ability score from Custodio et al. (2013); *Prior CEO Exp* = 1 if the new CEO had previously been a CEO; *No. of Years as CEO* is the number of years of prior CEO experience; *No. of Prior CEO Jobs* is the number of prior CEO positions held; *Recession Grad* = 1 if the CEO's first academic degree was awarded in an NBER recession year.

Table 3 Association Between Financial Distress Risk and New CEO Compensation

	(1) *BSM-Prob*	(2) *BSM-Rank*	(3) *Credit Rating*	(4) *O-Score*
Distress Risk	**0.011**	**0.313**	**0.048**	**0.024**
	0.037	0.002	<0.0001	0.007
Media Hits	**0.451**	**0.442**	**0.512**	**0.454**
	<0.0001	<0.0001	<0.0001	<0.0001
Prior CEO's TDC	**0.165**	**0.162**	**0.129**	**0.154**
	<0.0001	<0.0001	<0.0001	<0.0001
Age	**−0.011**	**−0.011**	**−0.011**	**−0.011**
	<0.0001	0.0001	0.007	0.0001
External	**0.616**	**0.604**	**0.596**	**0.620**
	<0.0001	<0.0001	<0.0001	<0.0001
Chair	**0.126**	**0.134**	**0.126**	**0.131**
	0.003	0.002	0.024	0.002
Sales	−0.015	−0.018	0.027	−0.007
	0.532	0.458	0.423	0.765
VarRank	**2.164**	**2.223**	**2.145**	**2.173**
	<0.0001	<0.0001	<0.0001	<0.0001
Leverage	0.113	0.079	−0.178	−0.018
	0.309	0.480	0.353	0.887
B/M	−0.043	−0.050	−0.004	−0.023
	0.326	0.248	0.934	0.590
SalesGr	−0.033	−0.033	**0.137**	0.061
	0.428	0.421	0.006	0.169
Return	**0.201**	**0.203**	**0.259**	**0.186**
	<0.0001	<0.0001	<0.0001	<0.0001
Lag Return	**0.124**	**0.133**	0.081	**0.094**
	0.0004	0.0002	0.162	0.005
CEO Own	**−3.324**	**−3.348**	−1.65	**−3.393**
	<0.0001	<0.0001	0.213	<0.0001
Block Holder	0.039	0.035	−0.026	0.031
	0.339	0.385	0.619	0.442
Cash/Emp	**0.318**	**0.316**	0.277	**0.571**
	0.002	0.002	0.200	<0.0001
Pseudo R^2 (%)	48.6	48.7	48.9	49.2
Observations	1,610	1,610	879	1,559

Notes. The dependent variable is *TDC*, the natural log of the new CEO's total direct compensation during the first fiscal year in office. *Distress Risk* refers to the measure in the column heading. Robust regressions are estimated using the M-estimation technique. One-sided *p*-values for the distress risk coefficients and two-sided *p*-values for the remaining variables are provided below each coefficient. All coefficients with *p*-values < 0.05 are bolded. Independent variables are measured just prior to when the new CEO takes office. *BSM-Prob* is the natural logarithm of the Black–Scholes–Merton probability of bankruptcy (Hillegeist et al. 2004). Industry and year fixed effects are included in the model but are not tabulated. Other variable definitions are provided in Tables 1 and 2.

The signs, magnitudes, and significance levels of the control variables are generally similar across the four columns in Table 3. Consistent with our expectations, the coefficients on our proxy for CEO ability, *Media Hits*, are positive and strongly significant (all *p*-values <0.0001). The magnitudes of the coefficients indicate that a one-standard-deviation increase in the ranked number of concurrent media hits is associated with approximately 13.1% (= $\sim 0.45 * 0.29$) more in total compensation. The total compensation received by the prior CEO is also a strong predictor of the new CEO's compensation; the *Prior CEO's TDC* coefficients are positive and highly significant (all *p*-values < 0.0001). As discussed earlier, we expect this variable captures various firm-, industry-, and time-specific characteristics (i.e., unobserved heterogeneity) that affect both the new and prior CEO's compensation in a similar manner.

Compensation for new CEOs is significantly decreasing in the CEO's age (all *p*-values ≤ 0.007). Other studies generally find a positive association between CEO age and compensation. However, samples examined in prior work are dominated by continuing CEOs. Thus, one explanation for the positive association documented in prior studies is the fact that compensation increases over the CEO's tenure, and tenure is positively correlated with age (Milbourn 2003).[16]

Consistent with Fee and Hadlock (2003), new externally hired CEOs receive roughly 60% more in total compensation compared to their internally promoted counterparts (all *p*-values < 0.0001). If external candidates have higher bargaining power relative to internal, potentially tainted candidates, then we would expect the distress risk premium to be higher for external candidates. To test this idea, we estimate regressions where *External* is interacted with the distress risk measures. The untabulated results for the *Distress Risk* and *External* coefficients are very similar to those reported in Table 3. However, none of the interaction coefficients are significantly positive.[17] In addition, we analyze a sample that excludes externally hired CEOs. The untabulated results show that the signs, magnitudes, and significance levels of the distress risk coefficients are quite similar to those reported in Table 3. Thus, we find no evidence suggesting that the magnitude of the distress risk premium is higher for externally hired CEOs.

As Aggarwal and Samwick (1999) note, the principal–agent model does not give an unambiguous prediction as to whether the level of compensation is increasing with the firm's dollar return variance. Perhaps consistent with this theoretical ambiguity, prior evidence on the association between total CEO compensation and measures of risk based on equity volatility is mixed. Bertrand and Mullainathan (2000) and Garen (1994) find some evidence of a negative

[16] Table 5 (see §4.2.2) presents the results of a panel regression that is dominated by continuing CEOs. All of the *Age* coefficients are positive and significant in that specification.

[17] We find qualitatively similar results when alternative definitions of *External* are used. One explanation is that internal candidates remain untainted until firms actually become financially distressed, as in Gilson and Vetsuypens (1993). The evidence in Semadeni et al. (2008) is consistent with this idea. In this case, internal candidates would have similar outside opportunities and bargaining power as do equally qualified external candidates.

association between risk and CEO compensation. In contrast, Custodio et al. (2013) and Graham et al. (2012) find evidence of a positive association when firm-fixed effects are excluded from the model; when firm-fixed effects are included, the risk coefficients are insignificant. Core et al. (1999) find no significant association between risk and the level of total compensation. Empirically, we find that *VarRank* is strongly and positively associated with total new CEO compensation in all of our specifications.

Consistent with Core et al. (1999), new CEOs who are also board chairs receive roughly 13% more compensation than do their single role counterparts. We do not find a significant association between total compensation and sales. This result is due to our inclusion of *Prior CEO's TDC* and *VarRank*. Both variables are highly correlated with *Sales* (untabulated correlations are 0.58 and 0.77, respectively). When either (or both) of these variables are excluded from the model, the *Sales* coefficients are positive and significant, as expected.

The results indicate that compensation is generally higher for new CEOs who are hired at more successful firms, as characterized by higher current and lagged stock returns. Consistent with Core et al. (1999), we generally find that new CEO compensation is negatively associated with the new CEO's stock ownership. In addition, we find that cash holdings per employee are positively associated with total compensation. We find only limited evidence at best of a significant association between either sales growth, book-to-market, or the presence of an outside block holder and total compensation. None of the *Leverage* coefficients are significantly different from zero. These results are somewhat surprising given that leverage is sometimes used as a proxy for financial risk. However, since we include several other proxies for risk, including *VarRisk*, distress risk measures, and *B/M*, the incremental ability of *Leverage* to capture risk is likely to be limited.[18]

Both *BSM-Prob* and the value of a single stock option are based on the Black–Scholes–Merton option pricing model, and thus both values are increasing in equity return volatility. One concern may be that the positive association between distress risk and compensation is merely a mechanical one. We think this is unlikely for two reasons. First, we find evidence of a distress risk premium when using credit ratings and an accounting-based distress risk measure (*O-Score*)—measures that are not mechanically related to equity volatility. Second, although the value of a single option is increasing in volatility, the value of the portfolio of stock options granted to the executive is not mechanically correlated with equity volatility. The option pricing parameters (including volatility) are known at the time the new CEO's compensation package is being negotiated. Effectively, the value of a grant of stock options is determined by the number of (at the money) options granted, and not the underlying option parameters.

4.2.1. CEO Age and the Financial Distress Risk Premium. Hypothesis 1A predicts that the distress risk premium will cross sectionally vary with the CEO's age. Specifically, older CEOs require a smaller compensation premium since their financial distress-related career concerns will be smaller. To test this prediction, we include an *Age* ∗ *Distress Risk* interaction in Equation (1) and present results in Table 4. For brevity, we only tabulate the results for the variables of interest. The results for the distress risk variables are qualitatively similar to those reported in Table 3. Specifically, all of the *Distress Risk* coefficients are positive and significant (p-values range between < 0.0001 and 0.032). The *Age* coefficients are significantly negative for *BSM-Prob* and *O-Score*, and insignificant for *Credit Rating* and *BSM-Rank*.

The results for the interaction variables generally support H1A. The *Age* ∗ *Distress Risk* coefficients are negative and highly significant (p-values < 0.0003) when *BSM-Rank* and *BSM-Prob* are the distress risk variables, and are negative but not statistically significant at conventional levels when *Credit Rating* or

Table 4 Association Between Financial Distress Risk, Age, and Compensation for New CEOs

	(1) *Distress Risk*	(2) *Distress Risk* ∗ *Age*	(3) *Age*	Observations
BSM-Prob	**0.010**	**−0.002**	**−0.036**	1,610
	0.032	<0.0001	<0.0001	
BSM-Rank	**0.307**	**−0.034**	0.006	1,610
	0.001	0.0003	0.283	
Credit Rating	**0.048**	−0.001	−0.001	879
	<0.0001	0.218	0.916	
O-Score	**0.021**	−0.001	**−0.012**	1,559
	0.012	0.148	<0.0001	

Notes. The dependent variable is *TDC*, the natural log of the CEO's total direct compensation during the first fiscal year in office. Robust regressions are estimated using the M-estimation technique. One (two)-sided p-values are provided below each coefficient in columns (1) and (2) (column (3)). Independent variables are measured just prior to when the CEO takes office. All coefficients with p-values < 0.05 are bolded. Each regression includes the independent variables in Equation (1) plus the financial distress risk measure in the row heading. Other variable definitions are provided in Tables 1 and 2.

[18] Chemmanur et al. (2013) use leverage as their measure of distress risk and find a positive association between leverage and CEO compensation using a sample of new, externally hired CEOs. Our specification includes several important control variables for volatility, CEO ability, and the prior CEO's compensation that are not included in Chemmanur et al. (2013). In untabulated tests, we do not find significantly positive coefficients on *Leverage* when using a comparable sample of new external CEOs, even when our distress risk measures are excluded from the regression.

O-Score is the distress risk variable.[19] The results indicate that compared to their younger counterparts, older new CEOs receive a smaller compensation premium for a given level of financial distress risk. Our evidence indicates that the magnitude of the compensation premium varies predictably with a CEO characteristic (age) that captures cross-sectional differences in expected costs of the distress-related reduction in managerial reputations. These cross-sectional results are important because they reduce the set of alternative explanations that are consistent with all of our findings.

4.2.2. Financial Distress Risk and the Level of CEO Compensation—A Panel Regression Approach. As discussed above, our primary tests examine new CEOs to control for the effect of firm performance on both distress risk and CEO compensation. Although this approach has some important advantages, one potential drawback is that it does not allow us to effectively control for unobserved heterogeneity across CEOs (and firms). In particular, analyzing new CEOs does not allow us to control for CEO characteristics such as risk aversion. As an alternative approach to avoid this limitation, we estimate the following panel regression model that includes CEO fixed effects to control for unobserved heterogeneity across CEOs:

$$\begin{aligned} TDC = {} & \alpha + \beta_1 * Distress\ Risk + \beta_2 * Media\ Value \\ & + \beta_3 * Age + \beta_4 * VarRank + \beta_5 * Leverage \\ & + \beta_6 * B/M + \beta_7 * SalesGr \\ & + \beta_8 * Market\ Return + \beta_9 * Industry\ Return \\ & + \beta_{10} * Idiosyncratic\ Return \\ & + \beta_{11} * Lag\ Market\ Return \\ & + \beta_{12} * Lag\ Industry\ Return \\ & + \beta_{13} * Lag\ Idiosyncratic\ Return \\ & + \beta_{14} * Block\ Holder \\ & + \beta_{15} * Cash/Emp + \gamma_j CEO_j + \varepsilon. \end{aligned} \quad (3)$$

We include several of the explanatory variables from Equation (1).[20] In addition, we allow for relative performance evaluation by breaking up the firm's total return into three components: market return, industry specific return (industry return minus market return), and idiosyncratic return (firm return minus industry return), where we use the value-weighted market and industry returns (Jenter and Kanaan 2015). *Lag* refers to the prior fiscal year. We estimate Equation (3) using all available CEO-year observations from Execucomp during our sample period. The number of observations varies from 24,417 to 13,341 depending on the availability of the financial distress measures.

The results from estimating Equation (3) are presented in Table 5. Each column presents the results when using an alternative distress risk measure. The

Table 5 Association Between Financial Distress Risk and CEO Compensation

	(1) *BSM-Prob*	(2) *BSM-Rank*	(3) *Credit Rating*	(4) *O-Score*
Distress Risk	**0.004**	**0.185**	**0.013**	−0.002
	<0.0001	<0.0001	0.028	0.739
Market Value	**0.292**	**0.289**	**0.346**	**0.333**
	<0.0001	<0.0001	<0.0001	<0.0001
Age	**0.147**	**0.146**	**0.170**	**0.158**
	<0.0001	<0.0001	<0.0001	<0.0001
VarRank	**1.079**	**1.102**	**1.219**	**0.778**
	<0.0001	<0.0001	<0.0001	<0.0001
Leverage	−0.000	−0.000	0.000	−0.000
	0.741	0.718	0.985	0.905
B/M	**−0.062**	**−0.064**	**−0.062**	**−0.027**
	<0.0001	<0.0001	<0.0001	0.040
SalesGr	0.000	0.000	0.000	0.000
	0.872	0.865	0.841	0.864
Market Return	**0.120**	**0.119**	**0.099**	**0.087**
	<0.0001	<0.0001	0.001	0.0004
Industry Return	**0.271**	**0.272**	**0.250**	**0.270**
	<0.0001	<0.0001	<0.0001	<0.0001
Idiosyncratic Return	**0.202**	**0.201**	**0.254**	**0.191**
	<0.0001	<0.0001	<0.0001	<0.0001
Lag Market Return	**0.110**	**0.121**	0.028	0.012
	<0.0001	0.0004	0.417	0.662
Lag Industry Return	**0.158**	**0.162**	0.055	**0.135**
	<0.0001	<0.0001	0.219	<0.0001
Lag Idiosyncratic Return	**0.047**	**0.049**	**0.055**	**0.034**
	<0.0001	<0.0001	0.0005	<0.0001
Cash/Emp	−0.005	−0.005	−0.0309	0.020
	0.799	0.811	0.300	0.446
Block Holder	**0.084**	**0.084**	**0.098**	**0.088**
	<0.0001	0.0001	0.001	0.0003
Pseudo R^2 (%)	76.6	76.6	76.9	76.1
CEO fixed effects	Included	Included	Included	Included
Observations	25,417	25,417	13,341	21,859

Notes. The dependent variable is *TDC*, the natural log of the CEO's total direct compensation. *Distress Risk* refers to the measure in the column heading. *Market Return* is the value-weighed annual market return. *Industry Return* is the value-weighted annual industry return minus *Market Return*. *Idiosyncratic Return* is the annual firm return minus *Industry Return*. *Lag* refers to the value from the prior fiscal year. Robust regressions are estimated using the M-estimation technique. One-sided *p*-values for the distress risk coefficients and two-sided *p*-values for the remaining variables are provided below each coefficient. All coefficients with *p*-values < 0.05 are bolded. Other variable definitions are provided in Tables 1 and 2.

[19] The lack of significance for *Credit Rating* could be due to a lack of power stemming from the smaller sample size. In addition, Hillegeist et al. (2004) find that the ability of *O-Score* to predict financial distress is significantly lower than that of *BSM-Prob*.

[20] We exclude certain variables, such as *Media Hits*, because of data limitations, and others, such as *Prior CEO's TDC*, which do not make sense in the panel regressions.

results show that total CEO compensation is positively associated with distress risk even when controlling for CEO fixed effects. The distress risk coefficients are significantly positive in three of the four specifications (p-values range between < 0.0001 and 0.028); only the *O-Score* coefficient is not significant. These results are unlikely to be caused by a failure to control adequately for performance because good performance will lead to both higher pay and lower distress risk. To the extent the distress risk coefficients are picking up a performance effect, it will cause the distress risk coefficients to be more negative.[21] These results provide further support for H1.

4.3. Financial Distress Risk and the Structure of Compensation for New CEOs

Hypothesis 1 does not specify whether the distress risk premium will take the form of additional cash or equity-based compensation or both. We provide evidence on this issue by analyzing the association between financial distress risk and five variables related to the structure of the new CEO's pay package: (1) the ratio of cash compensation to total compensation, *Cash Comp/TDC*; (2) *Salary*, the natural logarithm of the new CEO's annualized Salary; (3) *Bonus*, the natural logarithm of Bonus + 1; (4) *Option*, the natural logarithm of the value of option grants + 1; and (5) *Equity Comp*, the natural logarithm of the value of stock and option grants + 1.[22] We use specifications similar to Equation (1) to analyze these associations, where one of the five compensation structure variables is the dependent variable and *Prior CEO's TDC* is replaced with the corresponding value of the prior CEO's compensation structure variable.

The results are presented in Table 6. For brevity, we only report the results for the distress risk coefficients. Significance levels are based on two-sided p-values since we do not make directional predictions for each component. Column (1) presents the results where the ratio of cash to total compensation, *Cash Comp/TDC*, is the dependent variable. The results generally indicate that financial distress risk is negatively associated with the percentage of cash compensation; all of the *Cash Comp/TDC* coefficients are negative, and three of the four are significant at the 2.3% level or better. These results indicate a reduced emphasis on cash compensation among firms with higher financial distress risk.

Table 6 Association Between Financial Distress Risk and the Structure of New CEO Compensation

	(1) (*Total Cash Comp/TDC*)	(2) *Salary*	(3) *Bonus*	(4) *Option*	(5) *Equity Comp*
BSM-Prob	**−0.005**	**−0.005**	**−0.053**	**0.035**	**0.032**
	0.0007	0.015	0.001	<0.0001	<0.0001
Observations	1,610	1,610	1,610	1,610	1,610
BSM-Rank	**−0.120**	−0.042	**−0.880**	**0.737**	**0.695**
	<0.0001	0.164	0.003	<0.0001	<0.0001
Observations	1,610	1,610	1,610	1,610	1,610
Credit Rating	**−0.018**	**0.009**	0.007	**0.081**	**0.091**
	<0.0001	0.039	0.293	<0.0001	<0.0001
Observations	879	879	879	879	879
O-Score	−0.001	0.003	0.003	0.021	0.022
	0.0372	0.196	0.454	0.148	0.053
Observations	1,559	1,559	1,559	1,559	1,559

Notes. The dependent variable in column (1) is (*Total Cash Comp*)/*TDC*, the new CEO's *Salary* plus *Bonus* divided by *TDC*. The dependent variable in column (2) is *Salary*, the natural logarithm of the new CEO's annualized salary. The dependent variable in column (3) is *Bonus*, the natural logarithm of the new CEO's bonus plus 1. The dependent variable in column (4) is *Option*, the natural logarithm of the new CEO's option-based compensation. The dependent variable in column (5) is *Equity Comp*, the natural logarithm of the new CEO's equity based compensation. Independent variables are measured just prior to when the new CEO takes office. Robust regressions are estimated using the M-estimation technique. Two-sided p-values are provided below each coefficient. All coefficients with p-values < 0.05 are bolded. Each regression includes the financial distress risk measure in the row heading and the untabulated independent variables in Equation (1). Other variable definitions are provided in Tables 1 and 2.

The evidence in column (1) does not indicate whether the greater emphasis on equity-based compensation occurs because of changes in equity-based compensation or cash compensation or both. To investigate this issue, we next examine the associations between financial distress risk and the four primary components of total compensation. Column (2) presents the results when *Salary* is the dependent variable. The results do not provide much support for an association between distress and salaries for new CEOs. Whereas the *Credit Rating* coefficient is significantly positive, the *BSM-Prob* coefficient is significantly negative, and the other two distress risk coefficients are not significant. Column (3) presents the results when *Bonus* is the dependent variable. The *BSM-Prob* and *BSM-Rank* coefficients are negative and significant (p-values = 0.001 and 0.003, respectively), whereas the other two distress risk coefficients are not significant. These results suggest that firms with higher distress risk likely reduce their reliance on short-term cash-based bonuses. The results in column (4) (column (5)) show a generally positive association between distress risk and options-based (total equity-based) compensation. All of the column (4)

[21] As a robustness test, we replace the actual value of the distress risk measures with the industry-year median value of the respective distress risk measure in Equation (3). The industry-year median value serves as an instrumental variable since it is unlikely to be directly associated with CEO compensation other than through financial distress risk. Our inferences from these untabulated analyses are the same as those reported in Table 5.

[22] We annualize the CEO's salary (reported salary/days as CEO × 365) for external hires to control for differences in time in office during the first fiscal year.

(column (5)) coefficients are positive, three are significant at the 0.001 (0.001) level or better, and the *p*-value of the remaining coefficient is 0.148 (0.053). In summary, we find that the positive association between financial distress risk and total compensation is mainly driven by a strong positive relation between financial distress risk and the equity-based components of compensation. As such, our results are consistent with Gilson and Vetsuypens (1993), who find that firms that filed for bankruptcy or privately restructured their debt tend to provide more equity-based compensation to their new CEOs.[23]

One interpretation of these findings is that cash constraints are causing higher-distress-risk firms to substitute away from cash-based incentives to equity-based incentives. To investigate this issue, we performed several additional analyses to determine whether this explanation is likely to be descriptive. For example, we included a low cash indicator variable that equals 1 if the observation has a cash balance in the bottom quartile of the sample distribution and interacted this indicator with the distress risk measures. We also created a negative operating cash flow indicator and interacted it with the distress risk measures. In both cases, none of the interaction terms were significant. These results indicate that cash constraints are unlikely to be a factor in explaining differences in compensation structure. Instead, the greater (lesser) emphasis on longer-term (shorter-term) incentives suggests distress risk affects the nature of the agency problem. We investigate this issue in the next section.

An alternative explanation for our results is a selection effect whereby firms with higher distress risk tend to hire less-risk-averse CEOs. Since it is less costly for firms to provide risky incentives to CEOs who are less risk averse, this selection effect is consistent with financial distress risk being positively associated with more equity-based compensation and higher total compensation. However, we do not think this alternative explanation is likely to hold for two main reasons. First, we continue to find a positive association between distress risk and CEO compensation in our panel regressions where we control for CEO fixed effects. As the CEO fixed effects control for differences in innate characteristics such as risk aversion and ability, we would not expect to find significantly positive distress risk coefficients if this omitted selection effect was driving our results for new CEOs.[24]

Second, the results in Graham et al. (2013) suggest that less-risk-averse CEOs will be matched with lower-distress risk firms. Using a survey approach that allows them to measure risk aversion, they find that less-risk-averse CEOs are more likely to be employed at high growth firms. However, high-growth firms tend to have lower distress risk. For example, Table 1 shows that mean and median B/M ratios increase and median sales growth decreases across the distress risk partitions. Thus, we think it is unlikely that higher-distress risk firms are systematically hiring more risk-tolerant CEOs. Graham et al. (2013) also find that CEO risk aversion increases with CEO age. In that case, we would expect age to be decreasing in distress risk. In contrast, Table 1 shows that CEO age is essentially unrelated to distress risk. Thus, it does not appear that higher-distress-risk firms are systematically hiring younger (and more risk tolerant) CEOs on average.

4.4. Financial Distress Risk and PPS and PRS

In this section, we first examine the relation between financial distress risk and the equity-based incentives (PPS) provided to new CEOs and then the relation between distress risk and risk-taking incentives (PRS). We define pay-performance sensitivity as the derivative of CEO wealth with respect to shareholder wealth, expressed in terms of the dollar change in CEO wealth associated with a \$1,000 change in shareholder wealth. We examine the relation between financial distress risk and PPS using a variation of Equation (1) where *PPS* is the dependent variable and we replace *Prior CEO's TDC* with *Prior CEO's PPS*, which is the prior CEO's PPS during the last full fiscal year in office. Hypothesis 2A predicts a positive association between financial distress risk and PPS.

The results presented in Table 7 indicate that equity-based incentives for new CEOs are stronger at firms with higher levels of financial distress risk. Specifically, all of the distress risk coefficients are positive and significant (*p*-values between 0.023 and < 0.0001). The magnitudes of the coefficients suggest that the effect of distress risk on incentives is economically meaningful. For example, the magnitude of the *BSM-Rank* coefficient in column (2) (1.507) indicates that a one-standard-deviation increase in the rank of distress risk is associated with pay-performance sensitivity that is higher by 0.435 on

[23] The results show that the *External* coefficients are all positive and highly significant (*p*-values < 0.0001), which is consistent with Gilson and Vetsuypens (1993). However, in untabulated analyses, we do not find evidence suggesting that the associations reported in Table 3 vary between internal and external new CEOs. Thus, the result in Gilson and Vetsuypens (1993) that externally hired CEOs receive more equity-based compensation at highly distressed firms appears to be generally true of all externally hired CEOs, even those at low-distress-risk firms.

[24] In addition, if higher-distress-risk firms systematically hired less risk-averse CEOs, then we would expect salaries to be negatively associated with financial distress risk. The fact that salaries are not associated with distress risk is inconsistent with this alternative explanation.

Table 7 Association Between Financial Distress Risk and New CEO Pay-Performance Sensitivity

	(1) *BSM-Prob*	(2) *BSM-Rank*	(3) *Credit Rating*	(4) *O-Score*
Distress Risk	**0.104**	**1.507**	**0.172**	**0.109**
	0.0003	0.004	<0.0001	0.023
Media Hits	0.405	0.408	0.446	0.479
	0.376	0.371	0.262	0.308
Prior CEO's PPS	**−0.0001**	**−0.0001**	0.000	**−0.0001**
	0.024	0.035	0.594	0.047
Age	**−0.047**	**−0.047**	**−0.034**	**−0.046**
	0.002	0.002	0.020	0.003
External	**0.568**	**0.534**	−0.203	**0.601**
	0.011	0.017	0.321	0.008
Chair	**0.454**	**0.457**	**0.597**	0.427
	0.043	0.041	0.003	0.062
Sales	**−0.821**	**−0.809**	**−0.413**	**−0.775**
	<0.0001	<0.0001	0.0006	<0.0001
VarRank	**−1.931**	**−1.956**	**−1.896**	**−2.409**
	0.012	0.011	0.006	0.002
Leverage	0.478	0.569	0.905	0.188
	0.414	0.332	0.196	0.781
B/M	−0.143	−0.102	−0.014	−0.011
	0.535	0.658	0.940	0.962
SalesGr	0.350	0.337	**0.436**	0.021
	0.114	0.128	0.016	0.932
Return	**0.538**	**0.523**	0.358	**0.552**
	0.021	0.024	0.130	0.019
Lag Return	**0.491**	**0.443**	0.291	0.298
	0.008	0.015	0.165	0.094
CEO own	**966**	**966**	**969**	**966**
	<0.0001	<0.0001	<0.0001	<0.0001
Block Holder	**0.440**	0.408	0.305	**0.492**
	0.041	0.057	0.114	0.024
Cash/Emp	**−1.141**	**−1.090**	0.921	**1.472**
	0.038	0.047	0.240	0.016
Pseudo R^2 (%)	29.7	29.7	31.9	29.7
Observations	1,610	1,610	879	1,559

Notes. The dependent variable is *PPS*, new CEO's pay-performance sensitivity measured as the dollar change in CEO wealth for a $1,000 change in shareholder wealth. *Prior CEO's PPS* is the prior CEO's pay-performance sensitivity. *Distress Risk* refers to the measure in the column heading. Robust regressions are estimated using the M-estimation technique. Independent variables are measured just prior to when the new CEO takes office. Industry and year fixed effects are included in the model but are not tabulated. Two-sided *p*-values are provided below the coefficients. All coefficients with *p*-values < 0.05 are bolded. Other variable definitions are provided in Tables 1 and 2.

average. This magnitude is economically significant, because it represents 9.13% (3.35%) of the median (mean) value of *PPS* for the entire sample. Similarly, the magnitude of the *Credit Rating* coefficient indicates that, on average, CEOs receive 0.172 more in total PPS for each downward increment in their firms' credit rating, which represents 3.58% (1.32%) of the sample median (mean) *PPS*.

Consistent with Aggarwal and Samwick (1999) and Jin (2002), we find a strong negative association between *PPS* and *VarRank*. Our distress risk measures and *VarRank* are obviously related as they both capture aspects of firm risk (and indeed, *BSM-Prob* and *BSM-Rank* are increasing functions of return volatility). However, they have opposite associations with pay-performance sensitivity. This suggests that distress risk is fundamentally related to the firm's agency problems in a different manner compared to the riskiness of the firm as captured by equity variance. Whereas the negative relation between equity variance and *PPS* likely reflects the trade-off between risk and incentives (e.g., Holmstrom 1979), the positive association between distress risk and *PPS* is consistent with the hypothesis that firms provide greater equity incentives to counteract CEOs' reluctance to invest in firm-specific capital and the conservatism induced by higher distress risk (Rose 1992, Fama 1980, Zwiebel 1995).

The results for the control variables are relatively stable in terms of magnitude and significance levels across the different specifications and are generally consistent with those in the prior literature. Consistent with Milbourn (2003) and others, we find that pay-performance sensitivity is positively associated with lagged (as well as current) returns, is generally higher for externally hired CEOs, and decreases with firm size and CEO age. In addition, we generally find a positive association between *PPS* and the presence of a large block holder. Finally, we do not find significant associations between the level of PPS and book-to-market, sales growth, and media hits.

We next examine the relation between financial distress risk and the risk-taking incentives provided to new CEOs. We define pay-risk sensitivity as the derivative of CEO wealth with respect to stock volatility, expressed in terms of the dollar change in CEO wealth associated with a 0.01 change in stock volatility. We examine the relation between financial distress risk and PRS using a variation of Equation (1) where *PRS* is the dependent variable and we replace *Prior CEO's TDC* with *Prior CEO's PRS*, which is the prior CEO's PRS during the last full fiscal year in office. Hypothesis 2B predicts a positive association between financial distress risk and PRS.

The results for the distress risk measures are presented in Table 8. The results indicate that risk-taking incentives for new CEOs are stronger at firms with higher levels of financial distress risk. Specifically, all of the distress risk coefficients are positive and highly significant (*p*-values between 0.008 and < 0.0001). The magnitudes of the coefficients suggest that the effect of distress risk on risk-taking incentives is economically meaningful. For example, the magnitude of the *BSM-Rank* coefficient in column (2) (4.086) indicates that a one-standard-deviation increase in the rank of distress risk is associated with pay-risk sensitivity that

Table 8 Association Between Financial Distress Risk and New CEO Pay-Risk Sensitivity

	(1) *BSM-Prob*	(2) *BSM-Rank*	(3) *Credit Rating*	(4) *O-Score*
Distress Risk	**0.131**	**4.086**	**0.156**	**0.064**
	<0.0001	<0.0001	<0.001	0.008
Pseudo R^2 (%)	74.0	75.1	75.2	73.3
Observations	1,610	1,610	879	1,559

Notes. The dependent variable is *PRS*, new CEO's pay-risk sensitivity measured as the dollar change in the value of the new CEO's wealth for a 0.01 change in stock volatility. *Distress Risk* refers to the measure in the column heading. Each regression includes the (untabulated) independent variables from Equation (1) except that *Prior CEO's PRS* replaces *Prior CEO's TDC*, where *Prior CEO's PRS* equals the prior CEO's pay-risk sensitivity. Robust regressions are estimated using the M-estimation technique. Independent variables are measured just prior to when the new CEO takes office. One-sided *p*-values are provided below the coefficients. All coefficients with *p*-values < 0.05 are bolded. Other variable definitions are provided in Tables 1 and 2.

is higher by 3.25 on average. This magnitude represents 128% of the median value of *PRS* for the entire sample. Similarly, the magnitude of the *Credit Rating* coefficient indicates that, on average, CEOs receive 0.156 more in total PRS for each downward increment in their firms' credit rating, which represents 3.34% of the sample median *PRS*. Overall, the results in Tables 7 and 8 provide strong support for H2A and H2B. Our findings are consistent with firms providing new CEOs with additional wealth- and risk-increasing incentives when distress risk is higher in order to counteract CEOs' incentives to be overly conservative.

4.5. Distress Risk, Forced Turnover Risk, and CEO Compensation

Financial distress increases the likelihood of a forced CEO turnover (Gilson 1989). Peters and Wagner (2014) examine the link between CEO compensation and forced turnover risk and find evidence of a positive association. Facing the same endogeneity issue as in this paper, they elect to use industry-level credit ratings and equity volatility to identify the relation between forced turnover risk and CEO pay. However, credit ratings are financial distress risk measures (and indeed, one of the measures used in this paper), and equity volatility is one of the most important determinants of distress risk, both theoretically and empirically.[25] Therefore, an interesting question is to what extent is the forced turnover risk premium just an indirect manifestation of the financial distress risk premium, or vice versa.

To investigate this issue, we estimate a first-stage forced CEO turnover model using the panel of all CEOs. We include *BSM-Prob* in the first-stage model to control for the effects of distress risk on turnover risk.[26] We use the fitted values from this model to calculate the probability of forced turnover, *Forced Turnover Risk*, for each observation. Second, we run augmented versions of Equation (1) on our sample of new CEOs where *Forced Turnover Risk* is included in the model.[27]

We use the following logit model to estimate the probability of forced turnover in the first stage:

$$\begin{aligned} &Prob(Forced\ Turnover) \\ &\quad = G(BSM-Prob;\ Size;\ Age;\ VarRank;\ Leverage; \\ &\qquad B/M;\ Sales\ Growth;\ Market\ Return; \\ &\qquad Industry\ Return;\ Idiosyncratic\ Return; \\ &\qquad Lag\ Market\ Return;\ Lag\ Industry\ Return; \\ &\qquad Lag\ Idiosyncratic\ Return; \\ &\qquad Industry\ Adjusted\ ROA;\ Block\ Holder; \\ &\qquad Cash/Emp;\ Industry;\ Year). \end{aligned} \tag{4}$$

Forced Turnover is an indicator variable that equals 1 when there was a forced change in CEO during the year and 0 otherwise. The data on the nature of the prior turnover come from Jenter and Kanaan (2015). Following Parrino (1997), they used information in contemporaneous news articles to classify each turnover as forced or voluntary.[28] See Jenter and Kanaan (2015) for the details of the classification methodology. As their turnover data ends in 2001, we only include observations through 2001. The sample consists of 15,155 firm-year observations, including 252 turnovers classified as forced. *Industry Adjusted ROA* is equal to the firm's return on assets less the industry median return on assets. Other variables are as defined previously.

For the sake of brevity, we do not tabulate the first-stage results. We note the *BSM-Prob* coefficient

[25] Peters and Wagner (2014) state that their results suggest that "turnover risk driven by industry [credit] ratings is compensated more strongly than turnover risk driven by industry volatility." Because credit ratings are a stronger and more direct measure of financial distress risk than is volatility, these findings further indicate that distress risk may be driving their empirical results.

[26] In prior working paper versions, Peters and Wagner (2014) find similar results using firm-specific credit ratings and volatility. Here, we use firm-specific variables as they should arguably lead to more precise forced turnover probability estimates.

[27] As an alternative specification, we used a panel regression based on Equation (3) in the second-stage analysis. Our inferences from these untabulated analyses are the same as those discussed in the text.

[28] Kaplan and Minton (2012) argue that difficulties in determining which turnovers were actually forced cause these determinations to be quite noisy. As an alternative, they suggest considering all turnovers to be forced. Accordingly, we analyze a specification where we treat all CEO turnovers during our sample period as forced in the first-stage model. The untabulated results from the second-stage models are qualitatively the same as those in Table 9.

Table 9 Association Between Financial Distress Risk, Forced Turnover Risk, and New CEO Compensation

	(1) *BSM-Prob*	(2) *BSM-Rank*	(3) *Credit Rating*	(4) *O-Score*	(5) Without *Distress Risk*
Forced Turnover Risk	1.066 0.206	0.939 0.265	−0.655 0.603	0.955 0.265	**1.50** 0.035
Distress Risk	**0.017** 0.025	**0.405** 0.003	**0.048** 0.002	0.029 0.062	— —
Pseudo R^2 (%)	52.1	51.8	53.7	52.6	52.1
Observations	945	945	517	908	945

Notes. The dependent variable is *TDC*, the natural log of the new CEO's total direct compensation during the first fiscal year in office. Since the forced turnover sample used to estimate the first-stage regression ends in 2001, the sample of new CEOs for these regressions also ends in 2001. *Distress Risk* refers to the measure in the column heading. Each regression includes the (untabulated) independent variables from Equation (1) plus *Forced Turnover Risk*, which is the fitted probability of forced turnover from the untabulated first-stage forced turnover logistic model (Equation (4)). Independent variables are measured just prior to when the new CEO takes office. Robust regressions are estimated using the M-estimation technique. One-sided *p*-values are provided below each coefficient. All coefficients with *p*-values < 0.05 are bolded. Other variable definitions are provided in Tables 1 and 2.

is positive and highly significant (p-value < 0.0001), as expected. The other results are also as expected based on prior literature. For example, several of the firm performance measures are significantly negatively associated with the likelihood of a forced turnover, as one would expect.

Consistent with the sample used in the first-stage analysis, we only include new CEO observations through 2001. Doing so reduces our sample size to a maximum of 945 observations. Results for the variables of interest from the second-stage estimation of Equation (1) where *Forced Turnover Risk* is included in the model are presented in Table 9. The coefficients on the four distress risk variables are all positive and significant (p-values range from 0.002 to 0.062) when *Forced Turnover Risk* is included in the model.[29] In contrast, none of the *Forced Turnover Risk* coefficients are significantly different from zero (p-values range from 0.603 to 0.206) when any of the distress risk measures are included in the model. However, when all of the distress risk measures are excluded from the model, the *Forced Turnover Risk* coefficient is positive and significant (p-value $= 0.035$), consistent with Peters and Wagner (2014). These results indicate that the positive association between distress risk and new CEO compensation reported above is not simply capturing an omitted positive relation between turnover risk and CEO compensation.

[29] Although not directly comparable given the differences in sample sizes, we note that magnitudes of the distress risk coefficients in Table 9 are comparable to, but generally larger than, their Table 3 counterparts.

In addition, the lack of an incremental association between forced turnover risk and CEO compensation suggests that the results in Peters and Wagner (2014) are capturing a more general relation between distress risk and CEO compensation, rather than a specific relation between turnover risk and CEO compensation as they posit. Thus, their results may be driven by the use of distress risk measures to identify their forced turnover risk estimates. To provide further evidence on this issue, we reestimate the first-stage forced turnover model (Equation (4)), but we exclude *BSM-Prob* from the model to better isolate the nondistress risk aspects of forced turnover risk. We then rerun the second-stage analyses that are presented in Table 9. As before, none of the *Forced Turnover Risk* coefficients are significant when one of the four distress risk measures is included in the compensation model; in contrast, all four of the distress risk measures are significant (p-values range from 0.008 to 0.026) when this version of *Forced Turnover Risk* is included in the model. In addition, when the distress risk measures are excluded from the model, the *Forced Turnover Risk* coefficient is no longer significant (p-value $= 0.116$). This finding further indicates that the positive association between forced turnover risk and CEO compensation found in Peters and Wagner (2014) is primarily attributable to the positive relation between financial distress risk and CEO compensation.

4.6. Additional Tests

4.6.1. Controlling for Other Measures of CEO Ability. The evidence in Table 3 indicates that new CEOs receive a financial distress risk premium after including *Media Hits* in Equation (1) to control for the positive effects of the new CEO's ability on compensation. Differences in ability are also partially captured by other explanatory variables in Equation (1). For example, *External*, *Chair*, *Sales*, *SalesGr*, and *B/M* are all expected to capture cross-sectional differences in the demand for high-ability CEOs. However, these variables may not fully capture cross-sectional differences in CEO ability. To examine the robustness of our results to alternative ability measures, we run a series of regressions where we sequentially replace *Media Hits* in Equation (1) with one of the 12 alternative CEO ability measures discussed above (*Ability Score*, *Future Return*, *Future ROA*, *Forecast Error*, *Meet/Beat*, *Short Tenure*, *General Ability*, *Prior CEO Exp*, *No. of Years as CEO*, *No. of Prior CEO Jobs*, *Recession Grad*, and *Ability Factor*). We also include a specification where we include all seven of the non-BoardEx-based measures at the same time.[30] For each ability measure, we

[30] We exclude the five BoardEx-based measures (*General Ability*, *Prior CEO Exp*, *No. of Years as CEO*, *No. of Prior CEO Jobs*, and *Recession Grad*) since these are only available for a reduced sample.

sequentially include one of the four distress risk measures. Thus, there are $13 \times 4 = 52$ total regressions. For the sake of brevity, we do not tabulate these results.

Overall, the results for the distress risk variables are qualitatively unaffected by the inclusion of the alternative CEO ability measures. The distress risk coefficients are always positive. Furthermore, in all but one case, the coefficients on the distress risk measures are statistically significant with p-values < 0.05 (and often < 0.0001). The single exception is the *BSM-Prob* coefficient when *Ability Score* is the ability measure. In this case, the coefficient is positive and marginally significant (p-value $= 0.069$). Thus, the results from these robustness tests do not provide support for the alternative explanation that the positive association between compensation and distress risk reflects a positive relation between distress risk and the new CEO's ability. Although our conclusion is tempered to the extent there is noise in our CEO ability measures, we note that our results still hold when we include seven ability measures in the same regression or when we use a factor score based on all available ability measures. We also note our results hold in the panel regression where we control for CEO fixed effects. Doing so will control for time-invariant differences in CEO ability.

An alternative, and arguably more powerful, approach to measuring CEO ability would be to create ability proxies based on the new CEO's compensation at his prior firm. One difficulty in implementing this approach is the lack of available compensation data for many externally hired CEOs and among them, the small number of new CEOs who were also CEOs at their prior firms. Chang et al. (2010) are able to identify only 131 cases of voluntary turnover where a CEO departed one public company to become the CEO of another public company. After merging their sample with ours, we are left with a maximum of 71 observations with the necessary data. Given the very small sample, we view our analyses as exploratory and only use *BSM-Rank* to measure distress risk.

We use three ability measures from Chang et al. (2010) based on the new CEO's compensation while CEO at their previous firm. *Relative Total Pay* is the ratio of the CEO's total pay to the total pay of the four other highest-paid executives over the last three full fiscal years before the CEO's departure. *Abnormal CEO Pay* is the three-year predeparture average of the residual from a regression in which the CEO's total pay is the dependent variable and the independent variables include size, sales growth, and industry and year indicators. *Abnormal Pay Difference* is the three-year predeparture average residual from a similar regression in which the difference between the CEO's total pay and the average of the total pay of the four other highest-paid executives in the same company is the dependent variable. See Chang et al. (2010) for details on how these measures are calculated. We also create a single factor that captures the common component of these three measures.

In untabulated analyses, we include each of three ability measures and the factor score in Equation (1) sequentially. We also run a specification where all three ability measures are included together. Consistent with our previous analyses, the results indicate a positive and significant association between financial distress risk and CEO compensation. Specifically, the *BSM-Rank* coefficients are all positive and significant (p-values < 0.05). Thus, using what are arguably more powerful, ex ante measures of the new CEO's ability, we continue to find support for H1.

4.6.2. Controlling for Additional Corporate Governance Attributes. CEO compensation is significantly associated with certain corporate governance attributes. Differences in governance attributes are partially captured by some of our explanatory variables, including *Chair*, *CEO Own*, and *Block Holder* (Core et al. 1999). In addition, *Prior CEO's TDC* will control for governance aspects that affect both the new and prior CEO's compensation. However, these variables may not fully capture cross-sectional differences in important corporate governance attributes. If the presence of these attributes varies with distress risk, then the positive association between distress risk and compensation could instead be driven by the effect of corporate governance on compensation.

To explore this possibility, we include two additional corporate governance variables in Equation (1): *Board Size* and *Independent*. *Board Size* is the total number of directors on the board. *Independent* is the percentage of board members deemed to be independent of management. We obtain *Board Size* and *Independent* from the Investor Responsibility Research Center database for the fiscal year in which the new CEO takes office. Our sample is reduced to a maximum of 1,142 observations.

The untabulated results demonstrate including the two additional board characteristics does not change the positive association between distress risk and CEO compensation. Specifically, each of the distress risk coefficients remains positive and all are statistically significant at the 5% level or better with the exception of *BSM-Prob*, which is marginally significant (p-value $= 0.096$).[31] Although we acknowledge that these additional aspects of corporate governance are far from comprehensive (and will be endogenously determined), their inclusion should reduce the

[31] In untabulated analyses, we also include the additional corporate governance variables in the PPS and PRS regressions. Our results and inferences regarding the distress risk variables remain unchanged.

likelihood that the distress risk premium is spurious because of omitted governance attributes.

4.6.3. Controlling for the Nature of the Prior CEO's Turnover. In our primary analyses, we did not condition on whether the prior CEO left voluntarily or was forced out. The nature of the prior CEO turnover could be important, because Denis and Denis (1995) and Huson et al. (2004) document the average post-turnover increase in performance is higher following a forced turnover compared to a voluntary turnover. In addition, it is likely that the prior CEOs are forced out more frequently among higher-distress-risk firms given their poor recent performance (see Table 1). Thus, the positive association between distress risk and CEO compensation that we document could be explained by greater performance improvements following forced turnovers.[32]

To allow for this possibility, we condition on the nature of the prior turnover by creating an indicator variable, *Forced Turnover*, that equals 1 if the prior CEO was forced out (based on the Jenter and Kanaan 2015 classification discussed above). As a result of data restrictions, our sample size is reduced to a maximum of 988 observations. Among these, 174 observations have forced turnover of the prior CEO, and the remaining 814 represent voluntary turnovers.

Accordingly, we include the *Forced Turnover* indicator variable in Equation (1). The untabulated results show that the positive association between financial distress risk and CEO compensation remains after we control for the nature of the prior CEO turnover. The distress risk coefficients are positive and significant (p-values between 0.0003 and 0.02). Three of the four *Forced Turnover* coefficients are significantly positive (p-values between 0.011 and 0.020). The magnitudes of the coefficients indicate that new CEOs receive between 14.0% and 15.6% more in total compensation when the prior CEO was terminated compared to when the prior turnover was voluntary. We also analyze a specification where we include the interaction variable *Forced Turnover* $*$ *Distress Risk*. The inferences with respect to the distress risk measures are the same (and, in fact, are slightly stronger) as without the interaction variables. The results for the interaction coefficients indicate that the financial distress risk premium generally does not vary significantly with the nature of the prior CEO's turnover.

We also analyzed whether the positive associations between financial distress risk and new CEO incentives presented in Tables 7 and 8 are affected by the prior turnover. In untabulated results, we add *Forced Turnover* to the PPS and PRS regressions. We continue to find positive and significant coefficients on the financial distress risk variables (p-values range from <0.0001 to 0.0004) in both the PPS and PRS regressions, with the exception of *O-Score* in the PRS regression. With the exception of the PPS regression that includes *O-Score*, none of the coefficients on *Forced Turnover* are significantly different from zero at the 5% level of better. We also included the interaction term *Forced Turnover* $*$ *Distress Risk* in the model. Our inferences with respect to the distress risk variables remain unchanged. None of the interaction coefficients in the PPS regressions are significant. Two of the four interaction terms had significantly negative coefficients in the PRS regressions, indicating risk-taking incentives increase at a lower rate with distress risk when the prior CEO turnover was involuntary. Overall, the results suggest that the greater compensation and incentive levels provided to new CEOs at higher-distress-risk firms are not generally affected by whether the prior CEO was forced out, with the possible exception of risk-taking incentives. Thus, whether the prior CEO's turnover was voluntary or involuntary does not appear to affect the nature of the agency relationship substantially.

4.6.4. Differences in Time in Office During the First Fiscal Year. New CEOs assume office at different times throughout their firms' fiscal years, so the reported data reflect compensation received over periods of different lengths. This issue is most relevant for cash compensation paid to external hires, since salary and bonuses are more likely to be prorated than the noncash components of compensation. For internal CEOs, reported salary and bonus figures are the amounts earned over the entire fiscal year, and not just the portion during which the executive served as CEO. Consequently, although still present, the magnitude of timing differences are much smaller for internal CEOs compared to external CEOs.

To assess the importance of this timing issue, we perform four additional analyses. First, we use the annualized salary ((reported salary/days as CEO) $\times$365) for external CEOs instead of the reported salary. Second, we use both annualized salary and annualized bonus ((reported bonus/days as CEO) $\times$ 365) for external CEOs. Third, we restrict the sample to new CEOs that were in office at least six months during the firm's fiscal year. Fourth, we exclude external CEOs. In all four sets of additional tests, the inferences from the untabulated results are qualitatively the same as those from Table 3. Specifically, the point estimates and significance levels of the distress risk variables are qualitatively the same as their reported counterparts. Overall, the evidence does not indicate that timing drives our results.

[32] We control for stock returns during the new CEO's time in office during the first fiscal year in office (as well as lagged returns). Doing so should at least partially control for this effect.

5. Conclusion

We examine the effects of ex ante financial distress risk on the compensation packages of new CEOs. We expect financial distress risk to affect compensation because it incrementally affects the nature of the agency relationship through two primary channels. The first channel relates to the large costs CEOs incur if their firms eventually become financially distressed. Accordingly, we predict that new CEOs will require a compensation premium for bearing ex ante financial distress risk. We find that compensation levels for new CEOs are positively associated with the firm's financial distress risk and the magnitude of the distress premium is economically significant. The premium is greater for younger new CEOs, who are likely to have greater financial distress-related career concerns. The second channel relates to how distress risk leads firms to provide more equity-based incentives when distress risk is higher. We find that the distress risk premium is driven by higher equity-based compensation, not cash-based compensation. Further, consistent with our hypotheses, we find that pay-performance sensitivity and pay-risk sensitivity increase with distress risk. Together, these findings indicate that the distress risk compensation premium is paid in the form of additional equity-based compensation so that firms can provide the desired incentives. The positive association between financial distress risk and CEO incentives is in contrast to the negative association between risk and incentives that is predicted by agency theory. Thus, our findings indicate that distress risk affects the agency relationship in a substantially different manner than do equity-based risk measures.

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