Summer 2015

Three Essays on Dividend Policy

Mehmet Deren Caliskan
Old Dominion University, mcaliska@odu.edu

THREE ESSAYS ON DIVIDEND POLICY

By

Deren Caliskan
M.A. in Economics, 2015, Old Dominion University, Norfolk, VA
M.B.A., 2008, Old Dominion University, Norfolk, VA
B.B.A., 2005, Istanbul University, Istanbul, Turkey

A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirement for the Degree of

DOCTOR OF PHILOSOPHY

FINANCE

OLD DOMINION UNIVERSITY
August 2015

Approved by:

____
John Doukas (Chair)

____
Mohamad Najand (Member)

____
David Selover (Member)

ABSTRACT

THREE ESSAYS ON DIVIDEND POLICY

Mehmet Deren Caliskan

Old Dominion University, 2015

Advisor: Dr. John A. Doukas

This dissertation considers paying earnings out as dividends a conservative policy as opposed to investing earnings in to value-increasing projects. Based on this view, this dissertation explores the effect of chief executive officers' (CEO) risk preferences on dividend policy, market's reaction to dividend policy changes, and the effect of dividend policy on firm financial distress. The first chapter hypothesizes that risk seeking CEOs will be less likely to pay dividends compared to conservative CEOs. The second chapter hypothesizes that when the market sentiment is high (i.e., when investors are willing to take risk) firms that omit dividends should outperform the firms that initiate dividends. The third chapter predicts non-dividend-paying firms to be more likely to be in financial distress compared to dividend paying firms. Results support these hypotheses.

To my grandfather

ACKNOWLEDGMENTS

I thank myself.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: CEO RISK PREFERENCES AND DIVIDEND POLICY DECISIONS

1.1 Introduction

In this study, we examine whether the risk preferences of chief executive officers (CEOs) are linked to dividend policy, since they can affect the riskiness of corporate policies.[1] Using inside debt (i.e., pensions and deferred compensation) and the sensitivity of CEO equity compensation to stock price (i.e., delta) as proxies of CEO risk aversion, we examine whether risk aversion-inducing CEO compensation motivates managers to pay more dividends regardless of the market's preferences (Core and Guay, 1999; Jensen and Meckling, 1976; Sundaram and Yermack, 2007). This is likely for two reasons. First, we consider higher payouts a conservative policy as opposed to investing in value-increasing projects (Deangelo, Deangelo, and Stulz, 2006; Grullon, Michaely, and Swaminathan, 2002) which involve risk-taking. Therefore, CEOs with high inside debt should be inclined to pay excess cash out as dividends (or buy back stocks) rather than investing in projects, which may increase firm risk and thus endanger the value of their inside debt[2]. Second, to pursue investment opportunities (i.e., gambles), high-delta CEOs must give up more certain gains, decreasing the utility that they derive from investment opportunities (Kahneman and Tversky, 1979). On the other hand, equity compensation that is sensitive to stock return volatility (i.e., convex compensation or high vega) encourages CEOs to invest in value-increasing projects (Core

[1] See Core, Guay, and Larcker (2003) for a comprehensive survey of CEO compensation.
[2] CEOs may also hold cash; however, due to investor activism and rights, there is a limit to it. Another concern may be that since CEOs with high inside debt act like creditors, they may be unwilling to pay dividends due to liquidity constraints. We discuss these in detail in the literature review.

and Guay, 1999). We expect CEOs with convex compensation to decrease payouts since they are more likely to invest firm resources in value-increasing projects.

However, Sundaram and Yermack (2007) postulate that CEOs with more inside debt may tend to decrease dividend payouts to shareholders. Providing empirical support for this concept, White (2012, p. 2) argues that CEOs with high inside debt "seek to reinvest firm income to preserve the long–term viability of the firm and their future pension benefits." Conflicting views about the riskiness of dividend-paying firms exist even outside the academic world. [3] We contribute to this line of the literature by examining the effect of CEO risk preferences on payout policy. In particular, we account for CEOs' deferred compensation (a major component of inside debt) and test the effect of inside debt on the propensity to pay, which are overlooked in previous literature (White, 2012).

Because inside debt data are available since 2006, we test our hypotheses in the period from 2006 through 2011, with more than 2000 firm–year observations. We estimate the effect of CEO risk preferences on the propensity to pay dividends via logistic regressions. Each regression accounts for industry and year fixed effects. Lending support to our hypotheses, we find that CEOs with high inside debt or delta (i.e., CEOs with lower risk

[3] For example, the article entitled "Dividend–Paying Stocks Are Not 'Bond Equivalents'" by the Financial Lexicon on Seeking Alpha addresses the general perception that dividend-paying firms are being compared to bonds due to their low risk (see http://seekingalpha.com/article/1132851-dividend-paying-stocks-are-not-bond-equivalents). Even though the article does not present a counterargument to the general perception regarding the low risk of dividend-paying firms, it considers the comparison of dividend-paying firms to bonds an exaggeration. Another article published on forbes.com, titled "Paying Dividends," presents a life cycle-oriented argument and highlights the idea that dividends are reliable cash flows (see http://www.forbes.com/sites/larahoffmans/2012/12/06/paying-dividends-ken-fisher). The article adds, however, that a "dividend doesn't signal sure safety." Finally, a very interesting proposition is seen on cnbc.com in the article "6 Climbing High-Yield Dividend-Paying Stocks," which presents a completely different perspective to the already puzzling story of dividends (see http://www.cnbc.com/id/100331092): The author argues that "dividend–paying company executives understand they must stay aggressive each quarter or risk being forced to cut the dividend (and upset investors)," which is completely contrary to the public belief of dividend-paying firms being less risky.

tolerance) have a higher propensity to pay dividends, whereas CEOs with high vega (i.e., CEOs with high risk tolerance) have a lower propensity to pay dividends.

Our findings are robust to a battery of additional tests. First, we examine whether the relationship between inside-debt and the propensity to pay dividends is non-linear. This is because the wealth transfer view suggests that creditors dislike dividends, which may drain firm liquidity. If so, managers with significantly high inside debt may be reluctant to pay dividends since CEOs with inside debt might act like creditors. As such, the relationship between inside debt and the propensity to pay dividends may be non-linear. We test this possibility using dummy variables capturing the level of CEOs' inside debt (i.e., low, mid, and high) and comparing the dividend policy decisions of CEOs with low inside debt with that of others. Our results indicate that when CEO inside debt is measured via CEO relative leverage, there is no evidence of non-linearity. This suggests that CEOs whose personal leverage is comparable to that of the firm are more likely to pay dividends, regardless of firm characteristics or other CEO compensation incentives.

In the second robustness test, we check whether our results are sensitive to endogeneity bias. Our main concern is that some firm characteristics may be among the determinants of CEO compensation, causing an endogeneity bias in our results (Core and Guay, 1999). To address this, we deconstruct CEO risk preference proxies into "expected" and "excess." Following Shen and Zhang (2012), we first run a set of ordinary least squares (OLS) regressions, where the dependent variables are CEO variables (e.g., inside debt, vega, delta, equity) and the independent variables are firm variables (e.g., the debt/equity ratio, the market/book ratio). We save the residuals of these regressions as excess CEO variables that are not related to the firm characteristics. Using these excess variables as the CEO risk preference variables, we replicate the entire logistic regression analysis, which (at least partially) allows the endogeneity problem to be resolved. Even though the endogeneity robust results are less significant, there is still evidence to support our hypotheses.

Our third robustness check follows Grullon, Paye, Underwood, and Weston (2011) who introduce alternative definitions of payouts. Because firms can pay dividends and issue equity at the same time, or buy back shares instead of paying dividends, these authors argue that, for unbiased results, it is necessary to examine net payouts (e.g., dividends minus equity issuance) as opposed to whether a firm pays cash dividends at time *t*. Based on Grullon et al. (2011), we construct three alternative dependent variables capturing whether the firm's net payouts to shareholders are positive. Even with the alternative definitions of payouts that incorporate stock buybacks or the change in the value of treasury stock, our results still support the central hypothesis of our paper: risk-averse CEOs are more likely to pass earnings to shareholders via cash dividends or stock buybacks, whereas risk-seeking CEOs are more likely to retain earnings or issue more equity.

In our fourth robustness test, we examine the effect of CEO risk preferences on dividend policy changes such as dividend initiations, omissions, etc. This is because our main analysis may be biased, as some firms may have started or stopped paying dividends before the CEO took office. If so, examining dividend policy changes (e.g., initiations, omissions, etc.) should ensure that the dividend policy is affected by the current CEO's risk preferences, and thus alleviate a possible endogeneity problem. Consistent with our prior findings, we find that conservative CEOs are more likely to initiate or increase dividends, whereas risk-seeking CEOs are less likely to increase or initiate dividends.

In the fifth robustness tests, we replicate our original analysis in the period from 1995 through 2008. The advantage of this analysis is that it includes 2.5 times more observations than our original dataset. Further, it excludes the post-financial crisis era, which could have caused a bias in our prior results due to the pessimistic environment. Most importantly, this dataset allows us to test our hypothesis in a period that is mostly characterized by high sentiment because according to catering theory, market sentiment (measured by the average market/book ratio difference between payers and non-payers) determines the propensity to pay dividends. Thus our findings may be sample-specific due to market conditions. In this analysis, we find that CEOs with high delta or non-convex equity compensations have a higher propensity to pay dividends than CEOs with convex equity compensations. Hence, our results alleviate some of the sensitivity concerns with respect to the selection of a specific sample period.

In our sixth and final robustness test, we examine whether our findings are robust to market conditions in a more direct way. To do so, in the spirit of Baker and Wurgler (2004), we introduce the *Relative Dividend Premium* (*RDP*) measure to our analysis; *RDP* is the average market-to-book ratio of dividend paying firms minus that of firm *i*.[4] According to the catering theory, when the *RDP* is high (i.e., when dividend paying firms trade at a premium relative to firm *i*), managers should be likely to pay dividends. Testing this prediction, we estimate our baseline logistic regression with the inclusion of the *RDP*. The purpose of this test is to investigate whether our findings still hold after controlling for the market's preference for dividends. The results of this analysis show that risk-seeking CEOs are less

---

[4] Note that the *RDP* is derived based on the Dividend Premium of Baker and Wurgler (2004), defined as the average market-to-book ratio of dividend paying firms minus that of the non-paying firms.

likely to pay dividends and conservative CEOs are more likely to pay dividends, regardless of the market's state of preference for dividends.

In sum, testing the link between CEO risk preferences and payout policy, we find that risk-averse CEOs have a higher propensity to pay dividends than risk-seeking CEOs do. In particular, CEOs may forgo investment opportunities and pay out more dividends when they have greater exposure to inside debt. This pattern is also true for CEOs with less convex compensation packages. Perhaps this type of compensation motivates CEOs to maximize their utility rather than their wealth, since the utility that people derive from dividends and capital gains is different (Baker, Nagel, and Wurgler, 2007; Shefrin and Statman, 1984; Shefrin and Thaler, 1988). Especially after the 2008 financial crisis, we expect shareholders to "care" more about dividends and to compensate CEOs with instruments ensuring higher payouts. Our results show that debt-like compensation could prevent excessive risk taking and could increase dividend payouts.

The rest of this study is organized as follows. The next section presents a literature review on dividend policy, conflicts of interest between different parties in firms, and the antecedents and consequences of CEO risk tolerance. Section 2 develops a testable hypothesis and discusses the possible effects of CEO risk preferences on dividend policy. Section 3 presents the results of our empirical analysis and robustness checks. Section 4 concludes the paper.

1.2 Literature review and hypothesis development

1.2.1 Dividends and firm risk

Our goal is to investigate whether CEO risk preferences affect payout policy. Although Miller and Modigliani (1961) argue that dividend policy is irrelevant, some investors demand dividends for certainty[5] (Graham and Dodd, 1951), since managers may retain earnings to invest in risky projects. For instance, Fama and French (2001) show a trade-off between dividends and investments, Grullon, Michaely, and Swaminathan (2002) document that firm risk decreases after dividend increases (see also DeAngelo and DeAngelo, 2006; DeAngelo, DeAngelo, and Stulz, 2006), and Hoberg and Prabhala (2006) show that risky firms decrease dividends. In a different strand, Redding (1998) reveals a positive relation between the demand for dividends and investor risk aversion. Confirming Redding (1998), Breuer, Rieger, and Soypak (2012) show that, in countries where investors are more impatient and loss averse, firms pay out more dividends. Findings from both the firm side and the investor side suggest that paying dividends is a more conservative policy, since the alternative scenario may be to invest in high-risk projects. Therefore, this leads to the prediction that risk-averse CEOs (e.g., CEOs with high inside debt or delta) are more likely to pay dividends.

The catering theory of dividends, however, asserts that the disappearance of dividends since the 1960s (Fama and French, 2001) is due to the market being populated by investors with higher sentiment, leading to a higher demand for capital gains over dividends. Baker and Wurgler (2004) argue that managers cater to this investor demand by investing in value-increasing projects as opposed to paying dividends. In this study, we propose that if a

[5] See Allen and Michaely (2003) for a complete survey of payout policy.

CEO is risk-averse, the CEO could pass on risky projects and pay out dividends, even when the market demands capital gains. This is because risky projects lead to higher stock return volatility; in efficient markets investors put a discount on risky firms' shares, which increases the firm's market leverage. Lower share price, higher leverage, and increased volatility obstructs managers' ability to raise external capital in both equity and debt markets. These not only increase the cost of capital, but may also cause financial distress.

Therefore, using alternative measures of risk aversion, we investigate whether firms that are run by risk-averse CEOs are more likely to pay dividends even during periods of high investor sentiment. This could explain why some firms still pay dividends during low-dividend premium periods (i.e., when the market prefers capital gains over dividends). Since managers may disburse cash not only by paying dividends, but also by stock buybacks, our empirical approach considers the effect of dividend payouts and net payouts in the spirit of Grullon et al. (2011). That is, we examine conservative CEOs' propensity to pay out dividends and the propensity to have a positive net payout (which is calculated as the value of the stocks that are bought back plus the value of dividends paid, less the value of equity issuances).

1.2.2 CEO conservatism and cash holdings

While we test whether firms run by conservative CEOs are more likely to pay dividends, one may also argue that conservative CEOs may accumulate cash as a cushion in case of an emergency. Having such a cushion increases the firm's financial strength and decreases the likelihood of bankruptcy, which is the goal of conservative CEOs. However, this view is sound only when there are no agency costs and investors hold an optimal portfolio, regardless of their position in the firm, and is therefore unlikely to be realistic for several reasons. First, when a firm accumulates a great deal of cash, shareholders may become irritated, as managers may pursue their empire building objectives using free cash flow (Jensen, 1986). Another reason investors may be concerned is because when CEOs do not invest cash flows in projects to increase returns, shareholders bear an opportunity cost due to forgone investment projects. When managers disburse cash, investors can not only re-invest their proceeds based on their risk-return preferences, but also allocate their wealth in other assets to prevent under-diversification. Because of these reasons, if managers hoard a large sum of cash, they may face pressure from activist investors, especially in countries where investor rights are protected. Since our sample is from the U.S. where investor right-protection is the highest, the CEOs in our sample are more likely to be subject to greater investor activism and, thus, less likely to hoard cash flows.[6] This leaves CEOs with two options: investing in new projects or distributing earnings to shareholders. In the context of our study, since excess cash must be disgorged, we predict conservative CEOs to be more likely to pay dividends because they are less prone to invest cash flow in risky projects or prefer protecting their job by not falling into conflict with activist investors by hoarding cash flows.[7] Conversely, we predict risk-seeking CEOs to be less eager to pay dividends as they pursue new projects in an attempt to increase firm value.

---

[6]A good example is Apple Inc. In 2012, Apple had to pay more than $2 per share as dividends due to investor demand, solely because Apple accumulated excess free cash and in 2014 Apple dispersed 11.1 billion in dividends. While Apple is one of the most established and well-managed firms in the world, it was forced to disgorge surplus cash to its shareholders. Apple's CEO Tim Cook decided to pay dividends as opposed to launching their own satellites (URL: http://seekingalpha.com/article/316669-putting-a-satellite-into-orbit-a-great-use-for-aapls-cash).

[7]During the 2013-14 period, Apple is forced to increase dividend payouts and repurchase 45 billion worth of shares instead of investing, due to the pressure from Carl Icahn – a major blockholder. In 2015, Carl Icahn urged Apple to increase its share-buyback program, and Apple announced a $50 billion increase in its share-repurchase program –from $90 billion to $140 billion– in April. (URL: http://www.businessinsider.com/carl-icahn-on-apple-share-price-2015-5)

Starting with Jensen and Meckling (1976), many studies show that the method of compensation affects CEO behavior and thus corporate policies. Consequently, we use the nature of managerial compensation to proxy for CEO risk preferences.

1.2.3 Inside debt

Among the methods of CEO compensation, inside debt ties the value of CEO wealth to the market value of debt, which is inversely related to firm risk (e.g., Edmans and Liu, 2011; Jensen and Meckling, 1976; Sundaram and Yermack, 2007). Put differently, inside debt turns the CEO into a creditor who is not better off with higher share prices but faces a significant cost with bankruptcy. Therefore, inside debt is believed to discourage excessive risk taking and, in turn, forcing CEOs to allocate firm resources conservatively to increase the distance to default (Sundaram and Yermack, 2007). It also restrains CEOs from leveraging the firm and increasing research and development (R&D) expenditures, but motivates operational hedging (Cassell et al., 2012). Consistent with these findings, we predict high inside debt will lead to a high propensity to pay dividends, which we consider a conservative policy. However, Chen, Dou, and Wang (2011) and Sundaram and Yermack (2007) conjecture that dividends are a threat against companies' future financial health and hypothesize that CEOs with high inside debt will decrease payouts. Using hand-collected data, White (2012) shows that CEOs with high pensions decrease payout ratios and dividend yields. However, White's study has a number of limitations. First, White's hand–collected dataset is limited to pension-based compensation, as opposed to a combination of deferred compensation and pension. Second, White's dataset has 1507 firm–year observations from 2000 through 2009. Standard & Poor's Execucomp data have more than 2000 firm–year observations[8] from 2006 through 2011. Hence, his findings may be sample-specific. Most importantly, he does not analyze the effect of inside debt compensation on the propensity to pay dividends, dividend initiations, or net payouts, which are addressed in the current study.

In sum, unlike our hypothesis, this strand of literature suggests that paying dividends may reduce cash reserves, which might be considered as a wealth transfer from creditors to shareholders. However, the traditional wealth transfer hypothesis may not be applicable to CEOs with high inside debt because, even though CEOs with high inside debt may act like creditors, they are not pure creditors; they are *hybrid* stakeholders since, in addition to being a creditor due to inside debt, they are also shareholders of their own firm. In other words, when a CEO with high inside debt pays dividends, s/he is among the recipients of the dividend proceeds.

Even so, one may still argue that CEOs with high inside debt may build up slack cash instead of paying dividends. However, as we argued in subsection 2.2, there is a limit to hoarding cash due to investor activism and investor rights protection considerations. Hence, profits, at some point, need to be invested in projects or distributed to shareholders. Investing in new projects may increase stock return and cash flow volatilities, which may cause the market to perceive the firm risky. This, in turn, may hamper a firm's ability to raise external capital in the future and may lead to a financial distress, especially when closer to debt maturity dates. In short, we argue that, risk-averse CEOs are expected to be less likely to bear such a risk. Hence, the remaining possibility for CEOs is either paying out dividends or buying back stocks. While paying dividends may reduce firm liquidity, it allows firms to access more external equity since mutual funds only invest in firms that pay dividends. Paying

[8] This is after omitting the observation with missing variables that are needed in this study.

dividends or buying back stocks also help the firm in the equity markets. Stock buybacks and, according to the signaling view, paying dividends increase the share price; therefore, if needed, the firm may issue shares at a higher price and increase firm liquidity. Moreover, the literature shows that creditors are not necessarily alarmed by dividend payouts. This is because firms usually pay less than what the debt covenants allows (Kalay, 1982); based on the signaling view, Handjinicolaou and Kalay (1984) document that creditors may consider dividend payouts as "good news" regarding the future profitability of the firm and not tighten the lending terms.

1.2.4 CEO equity compensation

Unlike inside debt, equity compensation compels managers to work in the best interest of shareholders by increasing equity value (Jensen and Meckling, 1976). Therefore, equity compensation may substitute for dividends for two reasons. First, CEOs with equity compensation should seek investment projects more aggressively. Second, shareholders should demand fewer dividends, since they will be less concerned about wasting firm resources (Jensen, 1986).[9] However, high equity compensation can also induce risk aversion, restraining managers from pursuing value-increasing projects. First, higher CEO shareholding causes CEOs to incur large losses subsequent to drops in share value (Lambert et al., 1991; Smith and Stulz, 1985). This is mainly due to managerial underdiversification, since CEO intellectual capital is already invested in the firm. A possible financial distress threatens not only CEO equity holding, but also CEO lifetime annuities and reputation (Lambert, Larcker, and Verrecchia, 1991). Lending support to this, Tufano (1996) shows a

[9] Our hypothesis is also in line with other views. First, Rozeff (1982) argues that CEOs with higher equity compensation also receive higher dividends, creating high tax penalties for CEOs. Second, Deshmukh, Goel, and Howe (2009) show that CEOs with high equity ownership tend to be overconfident and to pursue risky projects.

positive relation between CEO ownership and hedging activities. The second reason equity compensation could substitute for dividends is because capital gains (i.e., gambles) and dividends (i.e., certain gains) yield different utility (Kahneman and Tversky, 1979), and CEOs could act as if they were maximizing the total utility they derive from them (Baker, Nagel, and Wurgler, 2007; Shefrin and Statman, 1984; Shefrin and Thaler, 1988). This suggests that, even though CEOs' goal is to maximize equity value, they may pass on investment opportunities when the marginal cost of pursuing projects (i.e., forgone dividends) is high. Since CEOs with high shareholding have to sacrifice more dividends when they take on investment projects, they may forgo investment opportunities leading to high payouts.

1.2.5 CEO equity delta and vega

Core and Guay (2002) and Guay (1999) show that the effects of CEO equity compensation on the riskiness of corporate policies depends not only on the size of the CEO equity compensation, but also on its sensitivity to stock returns and the stock return volatility (delta and vega, respectively). Core and Guay show that high delta leads to more conservative policies, while high vega increases CEO risk tolerance, since it raises the convexity of the compensation package. For instance, CEOs with high delta tend to hedge more (Knopf, Nam, and Thornton, 2002) and decrease R&D and leverage (Coles, Daniel, and Naveen, 2006). On the other hand, CEOs with high vega have a tendency to increase leverage and diversify less (Coles, Daniel, and Naveen, 2006; Hagendorff and Vallascas, 2011; Low, 2009; and Nam, Ottoo, and Thornton, 2003). Therefore, we expect CEOs with high delta (vega) to have a higher (lower) propensity to pay dividends, since we consider paying out dividends a conservative policy compared to investing in value-increasing projects.[10]

While the effect of delta and inside debt on CEO risk preferences and thus dividend policy may seem similar, the channels through which they affect dividend policy are indeed different: High CEO delta encourages CEOs to pursue less risky strategies because CEOs with high delta faces managerial underdiversification (i.e., CEOs' human capital and stock-based compensation are tied to the firm's fortunes). Hence, the effect of a drop in stock price on CEO's wealth is immediate for CEOs with high delta.

On the other hand, increased firm risk affects the wealth of CEOs with high inside debt if the firm faces bankruptcy. One must note that, when stock price goes down, CEOs with high delta face losses; however, they still have an opportunity to recover losses by making better investment decisions and thus increasing the share price. Conversely, once the firm goes bankrupt, inside debt is mostly uncollectable. Thus, inside debt has a long-term effect on CEOs and can lead to a stronger form of risk-aversion because, unlike the value of high delta equity compensation, that of inside debt does not increase when the stock price increases. In other words, CEOs with high inside debt may pass on investments and distribute cash even if the investment project is low risk.

Using both measures, we are interested in knowing if delta and inside debt yield a consistent relationship with firm's dividend policy.

[10] Following the prior literature, we scale delta by vega to derive a less noisy variable in our empirical analysis (see, e.g., Cassell et al., 2012).

1.2.6 Cash compensation: Salaries and bonuses

In Jensen and Meckling's (1976) framework, cash compensation (salaries and bonuses) does not motivate CEOs to invest in long–term value-increasing projects because salaries are not sensitive to firm performance. Even though bonuses are granted depending on the CEO's success in a certain goal, they are generally short-term performance based compensation arrangements (Berger, Ofek, and Yermack, 1997; Lewellen, Loderer, and Martin, 1987). In other words, since cash compensation (the sum of salaries and bonuses) does not motivate CEOs to increase firm value in the long run, we do not anticipate CEOs with high cash compensation to invest in value-increasing projects. This may imply higher payouts; however, cash compensation may also cause CEOs to abuse free cash flows (Jensen, 1986). Therefore, the effect of cash compensation on the propensity to pay could be positive or negative.

1.2.7 CEO age and tenure

Kempf, Ruenzi, and Thiele (2009) find that younger CEOs value their compensation incentives more than older CEOs do, implying that they may be more motivated to seek risk to increase equity value and, as a result, their compensation. Consistent with this, Serfling (2013) presents a wide-range analysis on how corporate policies are affected by CEO age and shows that younger CEOs increase firm risk.

Further, CEO tenure is generally used as a control variable to proxy for managerial entrenchment (e.g., Berger, Ofek, and Yermack, 1997) or risk aversion (e.g., Coles, Daniel, and Naveen, 2006), both of which indicate that CEOs with longer tenure are less likely to increase firm value. We therefore expect older CEOs and CEOs with longer tenure to pay more dividends as opposed to investing in value-increasing projects.

1.3 Empirical analysis

1.3.1 Data and methodology

Since the U.S. Securities and Exchange Commission's 2006 rule, managers' deferred compensation and pension data, in addition to the detailed information of each stock option tranche (i.e., expiration date, number of stock options, and exercise price of each option grant), are available in Standard & Poor's Execucomp data. The detailed stock option data allow using the full information method rather than the one–year approximation method of Core and Guay (2002) in the calculation of stock option valuation.[11] Hence, the dataset used in this study consists of observations from 2006 through 2011.[12] In addition to Execucomp, the data are collected from Standard & Poor's Compustat, the Center of Research in Security Prices, and Kenneth French's website.[13] Finally, the three-month Treasury bill rate is obtained from the Federal Reserve's website.[14,15] We filter the dataset such that all observations have full disclosure of the CEO stock options available in Execucomp and we omit utilities and financial firms. Table 1 presents the distribution of the data by year.

---

[11] Core and Guay (2002) use the last available year's data to estimate the total value and the sensitivities of all the outstanding stock options, rather than track each tranche over time. In particular, they assume that the tranche that is granted in the last available year has 10 years to maturity, while all the other tranches have seven and a half years to maturity. In addition, dividing the total value of all outstanding options by the number of options outstanding, the authors approximate how much each option is in the money. By subtracting this amount from the price of the underlying stock, they find the exercise price.

[12] In the robustness checks, we also use data from 1995 through 2008.

[13] See http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

[14] See http://www.federalreserve.gov/releases/h15/data.htm.

[15] Even though the analysis includes observations from 2006 to 2011, observations from 2005 are used to calculate the change in total assets. Additionally, since stock return volatility is calculated using stock prices over the past 60 months, the start of the stock price data is the first month of 2001.

1.3.2 Measures of CEO risk preference

1.3.2.1 CEO compensation and risk preferences

Many studies in the literature use CEO equity compensation, CEO delta and vega, and CEO inside debt to proxy for CEO risk preferences. Prior findings indicate that CEO delta (or the CEO delta/vega ratio) and CEO inside debt decrease CEO risk tolerance and compel managers to employ low-risk corporate policies. On the other hand, convex CEO equity compensation incentivizes CEOs to pursue risky projects. Below, we discuss the variables we derive following prior studies.

1.3.2.2 Inside debt

We proxy for CEO inside debt with three variables (e.g., Cassell et al., 2012; Jensen and Meckling, 1976; Sundaram and Yermack, 2007): First, we calculate inside debt as the total dollar value of CEO pension and deferred compensation. Second, we derive *CEO Relative Leverage* as CEO leverage (CEO inside debt divided by total CEO equity compensation) over firm leverage. In our regression analysis, we use the natural logarithm of this variable for less noisy results. Finally, we derive a dummy variable indicating that CEO leverage is higher than firm leverage (i.e., a binary variable that equals one if CEO leverage is above firm leverage and zero otherwise). In our multivariate analysis, we refer to this variable as *High CEO Relative Leverage*. Following the prior literature, we predict high inside debt and *High CEO Relative Leverage* will discourage risky projects leading to higher payouts.

1.3.2.3 CEO equity compensation

We calculate *CEO Equity* as the total dollar value of CEO common stocks, stock options, and unvested stocks. We estimate the value of stock options using the Black-Scholes option pricing model (see Black and Scholes, 1973). CEOs can have up to 10 stock option tranches, since each tranche matures in 10 years. All of these data are available since 2006 in Execucomp, allowing us to calculate the stock option value of each tranche using the full information method, as opposed to the approximation method of Core and Guay (2002). We find the value of CEO stock option portfolios by aggregating those of each tranche. See Appendix 2 for a detailed derivation of these variables.

1.3.2.4 CEO equity delta and vega

We first calculate the delta and vega (sensitivity to stock price and sensitivity to stock return volatility, respectively) of each stock option tranche by taking the partial derivative of the Black–Scholes option pricing formula with respect to the stock price and the stock return volatility, respectively. Aggregating each tranche's delta and vega, we find the CEOs' stock option portfolio delta and vega, respectively. Following Core and Guay (2002), it is assumed that the delta and vega of CEO equity are the numbers of CEO shares multiplied by 1.0 and 0.01, respectively. This is because delta and vega are the CEO equity's sensitivity to a $1 change in the stock price and a 1% change in the stock return volatility, respectively. See Appendix 2 for detailed derivations of these variables.

1.3.2.5 Other variables

In addition to the above variables, we derive *CEO Cash Compensation* as the sum of CEO salary and bonuses. Since cash compensation does not motivate CEOs to enhance long-term firm performance and could cause managers to abuse firm resources, cash compensation could have a significant effect on payout policy. We also use *CEO Age* and *CEO Tenure* as control variables, since older CEOs and CEOs with longer tenure tend to avoid risky projects (Coles, Daniel, and Naveen, 2006; Serfling, 2014).

We define a firm dividend payer when its dividend per share by exdate is greater than zero. For more robustness, we use three dummy variables following Grullon et al. (2011) to define a firm a payer. The first variable is set to one if the value of total dividend payouts is greater than the value of stocks that are bought; otherwise, the variable is set to zero. The second one is set to one if the value of total dividend payouts plus the change in the value of treasury stock is positive, and zero otherwise. When the change in the value of treasury stock is missing, we replaced it with Purchase of Common and Preferred Stock less Sale of Common and Preferred Stock. The last dummy variable is set to one if the value of Purchase of Common and Preferred Stock less Sale of Common and Preferred Stock is positive, and zero otherwise.

We also use a variety of firm-level control variables. To proxy for growth opportunities, we derive the *Market/Book Ratio*, *Change in Assets*, the capital expenditures to total assets ratio (*Capex/Total Assets Ratio*), the ratio of R&D expenditures to assets (*R&D/Total Assets Ratio*), *Return Volatility*, and the ratio of retained earnings to assets (*Retained Earnings/Total Assets*). We proxy firm size, by the percentage of firms that are smaller than the firm in a given year and profitability with earnings available to common stock holders. In the robustness tests, we use debt/equity ratio to proxy for leverage, cash flows from operations less total dividends to proxy for free cash flows, and the natural log of sales to proxy for firm size. Following Baker and Wurgler (2004), we use the *Relative Dividend Premium*, which is the average market-to-book ratio of dividend paying firms at time t less the market-to-book ratio of firm i at time t. Finally, we measure firm idiosyncratic risk with the standard deviation of 36 monthly excess returns, estimated as the error term of the market model. Appendix 1, presents in detail the company variable derivations.

1.3.2.6 Descriptive statistics

Table 2 Part A presents the descriptive statistics of all the variables for dividend-paying and non-paying firms in the period of 2006 through 2011. We hypothesize risk-averse CEOs pay out more dividends than risk-seeking CEOs. Namely, CEOs with more inside debt, higher relative leverage, higher delta, and lower vega are expected to have a higher propensity to pay dividends. Descriptive statistics show that, in dividend-paying firms, CEOs have higher inside debt than CEOs in non-paying firms ($1.495 million compared to $0.559 million) and the natural logarithm of their relative leverage is higher than that of their non-paying counterparts (–0.587 compared to –1.588). They have less equity holdings in the firm ($20.923 million compared to $25.854 million), the delta/vega ratio of their equity compensation is larger (57.314 compared to 8.753), and their equity compensations are less sensitive to stock return volatilities (i.e., their vega is lower: $9.807 and compared to $59.477). Finally, CEOs in dividend-paying firms are older (the mean age in the subsample of payers is 55.572 years compared to 54.311 years) and they have longer tenure (the mean number of consecutive years served in the same firm in the subsample of payers is 5.94 year compared to 4.966 years).[16] All these mean-difference findings, shown in Panel C, are statistically significant at the 1% level per two-tailed *t*-tests.

Regarding firm characteristics, the results are consistent with those of Fama and French (2001): Dividend-paying firms are larger, as measured by market equity ($768 million compared to $665 million); have fewer growth opportunities, proxied by the change in total assets from time $t-1$ to time t and the market/book ratio (4.9% compared to 9.1% and 2.025 compared to 2.152, respectively); and are more profitable than their non–dividend-paying

[16] Dividend payout ratios and dividend yields are not presented, since these firms do not pay dividends.

counterparts ($44.019 million compared to $20.765 million). In addition, *Capex/Total Assets Ratio* and *R&D/Total Assets Ratio* are used as investment opportunity proxies to alleviate any omitted variable bias. Both of these variables have higher mean values in the subsample in non-paying firms (4.73% compared to 4.79% and 2.29% compared to 6.459%, respectively).[17] In sum, all these findings so far support the view that dividend-paying firms are less risky: They are larger, more profitable, have less room to grow, and are managed by risk-averse CEOs.

Table 3 presents the correlation coefficients of the main variables of interest.[18] In accord with our previous discussion, we expect inside debt, CEO relative leverage, the *CEO Delta/Vega Ratio*, *CEO Age*, and tenure to be positively correlated with *Payout Ratio* and *Dividend Yield*, as we hypothesize risk-averse CEOs will pay out more dividends. The *Payout Ratio* is positively correlated with *CEO Inside Debt* at the 5% level and with the *CEO Delta/Vega Ratio* at the 10% level. In addition, it is negatively correlated with the *CEO Vega* at the 10% level. *Dividend Yield* is positively correlated with *CEO Inside Debt* at the 1% level. The *CEO Delta/Vega Ratio* is positively correlated, whereas *CEO Vega* is negatively correlated with dividend yield, both of which are significant at the 1% level. Finally, *CEO Age* and *CEO Tenure* are positively correlated with both payout ratio and dividend yield. While these findings do not indicate causality, they support the hypothesis that risk-seeking

---

[17]The descriptive statistics indicate outlying observations in the dataset, that is, skewness that could cause heteroskedasticity, thus deteriorating the validity of the empirical analysis. Hence, we rigorously inspect the yearly subsamples for possible violation of homoskedasticity via model specification tests that also test the independence of the regressors from the error terms. For more robustness, all *t*-values of the OLS regressions are based on standard errors clustered at the firm level.

[18] The largest correlation is observed between free cash flows and the market/book ratio (–75%), which are not used in the same estimation model throughout the study. The second largest correlation is between CEO age and tenure (39%). A possible multicollinearity issue is taken into consideration during the multivariate analysis. In untabulated results, the variance inflation factors reveal no evidence of multicollinearity.

inducing CEO compensation decreases payout, whereas compensation strategies that discourage risk taking increase payout.

1.3.3 Logistic Regression Analysis: The effect of CEO risk tolerance on the propensity to pay dividends

The empirical goal of this study is to examine the effect of CEO risk preferences (proxied by CEO inside debt, vega, delta, etc.) on dividend policy. Prior literature suggests that inside debt and high delta compel managers to employ low-risk corporate policies, whereas high vega encourages risk-seeking behavior. Since we consider paying out dividends to be a conservative policy, we expect CEOs with high inside debt or high delta to have a higher propensity to pay dividends compared to CEOs with high vega. To test our hypothesis, we run logistic regressions in which the dependent variable equals one if the firm pays dividends at time *t*, and zero otherwise.

Table 4 presents the results of the logistic regressions. In the first seven models, we examine the effect of each CEO risk preference variable separately. For robustness, we proxy for inside debt using three variables (i.e., the sum of CEO deferred compensation and pensions, CEO relative leverage, and a dummy variable indicating that CEO leverage is higher than that of the firm), since these variables are used interchangeably in the literature. We run three more models (models (8) through (10)) to estimate the propensity to pay dividends using all the CEO variables since we proxy for inside debt using three variables. We estimate all models using CEO- and firm-level control variables, as well as with industry and year dummies. All the coefficients in this table are log odds ratios and transformed to probability with the natural exponential function, i.e., e^c where e is the mathematical constant (2.71828) and c is any coefficient presented in Table 4. Hence, the effect of one unit change in any coefficient on the propensity to pay dividends is calculated as follows: $(e^c - 1) \times 100$.

The first model shows that CEO cash compensation has no significant effect on the propensity to pay dividends. In models (2) through (4), we find that all three inside debt proxies positively affect the propensity to pay dividends at the 1% level, supporting our hypothesis that risk aversion-inducing compensation increases payouts. In economic terms, since the coefficients of *CEO Inside Debt* and *Log CEO Relative Leverage* are 0.0698 and 0.2238, the results indicate that a $1 million increase in inside debt or a 1% increase in CEO relative leverage increases the chances of paying out dividends by 7.2% and 25%, respectively.[19] More strikingly, the coefficient of *High CEO Relative Leverage* is 1.19 indicating that CEOs whose personal leverage is above the firm's leverage are 2.31 times more likely to pay dividends compared to other CEOs.[20]

Analyzing the effect of equity compensation and the convexity of equity compensation on the propensity to pay, we find more supporting evidence for our hypothesis in models (5) through (7). Model (5) shows that a one-point increase in the *CEO Delta/Vega Ratio* increases the propensity to pay dividends by 4.4%.[21] In models (6) and (7), the coefficients *CEO Equity* and *CEO Vega* are -0.0056 and -0.0539 suggesting that a $1 million increase in equity compensation or a $1000 increase in vega decreases the propensity to pay dividends by 0.56% or 5.25%, respectively.[22] These results indicate that equity compensation and, in particular, convex equity CEO compensation decrease payouts. This finding is

[19] $(e^{0.0698} - 1) \times 100 = 7.2\%$ and $(e^{0.2238} - 1) \times 100 = 25.08\%$
[20] $(e^{1.1987} - 1) \times 100 = 231.5804\%$
[21] $(e^{0.0443} - 1) \times 100 = 4.4\%$
[22] $(e^{-0.0056} - 1) \times 100 = -0.56\%$ and $(e^{-0.0539} - 1) \times 100 = -5.25\%$

consistent with our argument that CEO compensation that encourages risk taking decreases payouts as CEOs invest firm resources in projects.

In models (8) through (10), Table 4, we examine the effect of CEO variables on the propensity to pay dividends when other CEO characteristics are included in these regressions. Note that we estimate three models (i.e., models (8) through (10)), since we proxy inside debt with three variables. While the magnitudes and significance change, we still find that *CEO Vega* decreases and the *CEO Delta/Vega Ratio* increases the propensity to pay dividends. We also find that when other compensation variables enter the model, the coefficient of *CEO Equity* becomes insignificant. We argue that this is probably due to the vega, since it captures the convexity of the compensation package. In other words, rather than the size of the *CEO Equity*, we find that its sensitivity to stock return volatility decreases the propensity to pay. Last but not least, in these last three models, two out of three CEO inside debt variables have positive coefficients and are significant at the 5% levels. This supports our hypothesis that conservative CEOs are more likely to pay dividends.

This hypothesis is also supported by the control variables showing that CEOs with longer tenure have a higher propensity to pay dividends. Further, mature firms (i.e., firms with high retained earnings to assets ratio) are more likely to pay dividends compared to firms that invest in R&D and increase their assets. All these results are in line with the view that there is a trade-off between investments and dividends (Deangelo, Deangelo, and Stulz, 2006; Fama and French, 2001; Grullon, Michaely, and Swaminathan, 2002) and with the view that risky firms are less likely to pay dividends (Hoberg and Prabhala, 2006; Grullon et al., 2011).

1.3.4 Robustness check: Non-linearity test with inside-debt

Inside debt makes CEOs behave like creditors and compels them to manage the firm conservatively (i.e., prefer less risk to more risk-taking management decisions). The signaling view predicts a positive reaction to dividend payouts in bond prices, indicating that creditors do not consider dividends an expropriation of creditors in favor of shareholders. The wealth transfer view, on the other hand, indicates the opposite; creditors dislike dividends, as they may drain firm liquidity. If so, managers with significantly high inside debt may be reluctant to pay dividends. That is, the relationship between inside debt and the propensity to pay dividends may be non-linear. In order to test this possibility, we develop dummy variables capturing the levels of CEO inside debt. Namely these variables are Low, Mid, and High Inside Debt, as well as Low, Mid, and High CEO relative leverage. We substitute our original inside debt variables with these variables in our empirical analysis to test the possible non-linearity issue. The results are presented in Table 5. The *Low Inside Debt Dummy* and *Low CEO Relative Leverage Dummy* variables are not included in the models; therefore, the reference group consists of CEOs with low inside debt or low CEO relative leverage. Based on the central hypothesis of this paper, the coefficient of the *Mid Inside Debt* and *Mid CEO Relative Leverage Dummy* should be positive and significant. More important, the coefficients of the *High Inside Debt Dummy* and *High CEO Relative Leverage* should be larger than those of *Mid Inside Debt Dummy* and *High Inside Debt Dummy*. However, if managers act in accord with the prediction of the wealth transfer hypothesis, the coefficients of *High Inside Debt Dummy* and *High CEO Relative Leverage Dummy* should be lower than those of the Mid Inside Debt Dummy and *Mid Inside Debt Dummy* (or should not be significant).

In Model (1), we find that both the significance and the magnitude of *High CEO Relative Leverage Dummy* are higher than those of *Mid CEO Inside Debt Dummy*. We find the same pattern in Model (2), which is estimated with Mid and High CEO Relative Leverage dummies. In this model, the magnitude and the significance of *High CEO Relative Leverage Dummy* is twice as greater compared to those of *Mid CEO Relative Leverage.* For more robustness, we estimate models (3) and (4) by including other CEO risk preference variables. In model (3), the significance and the magnitude of *High CEO Relative Leverage Dummy* variable's coefficient is lower than those of *Mid CEO Relative Leverage Dummy.* While this may be a sign of non-linearity, the results of model (4) show that the CEOs with high relative leverage are more likely to pay dividends. Thus, our results indicate that when CEO inside debt is measured via CEO relative leverage, there is no evidence of non-linearity; this indicates that CEOs whose personal leverage is comparable to that of the firm are more likely to pay dividends, regardless of firm characteristics or other CEO compensation incentives.

1.3.5 Robustness check: Addressing endogeneity

Since boards pay CEOs in ways that align interests between shareholders and CEOs, CEO compensation and as a result CEO risk tolerance variables are likely to be determined endogenously (Core and Guay, 1999). To examine whether our results are robust to possible endogeneity concerns, we employ a rigorous test, following Shen and Zhang (2012). We deconstruct CEO risk tolerance variables (e.g., inside debt, delta, vega) into predicted values (i.e., predicted via firm characteristics) and excess values to strip away the effect of firm characteristics. We run OLS regressions on CEO risk tolerance variables, where the independent variables are firm characteristics.[23] Next, we use the error terms as the excess compensation and risk tolerance variables.

Using these excess compensation and risk tolerance variables as the independent variables, we replicate the analysis presented in Table 4. We estimate the effect of the excess compensation variables on the propensity to pay and Table 6 presents the results. In the first two models, we observe that *CEO Excess Cash Compensation* and *CEO Excess Delta/Vega Ratio*, do not significantly affect the propensity to pay dividends In economic terms, in contrast with our hypotheses, these findings imply that, rather than CEO compensation or risk preferences, firm characteristics play a role in payout policy. However findings in model (3) show that *CEO Excess Inside Debt* increases the propensity to pay and it is significant at the 10% level. Further, the results of models (4) and (5) of Table 6 show that *CEO Excess Equity Compensation* and *CEO Excess Vega* decrease the propensity to pay dividends, both of which are at the 1% level. This finding supports our argument that compensation schemes which increase CEO risk tolerance lead to lower payouts. Finally, model (6) is estimated using all the excess compensation variables. Note that the sign of *CEO Excess Equity* changes while the coefficient of *CEO Excess Inside Debt* becomes significant at the 5% level. These results imply that non-convex equity compensation and inside debt increase the propensity to pay dividends, whereas convex compensation, as shown by excess vega, has the opposite

---

[23] The unreported results of the OLS regressions indicate that CEO age (positive) and firm size (positive) are the only variables that affect CEO cash compensation. CEO inside debt holding (the sum of deferred compensation and pensions) is affected by firm-specific risk (negative), free cash flows at time t – 1 (negative), firm size (positive), and tenure (positive). A CEO's equity (sum of the value of shares, restricted shares, and options) in the firm is a function of cash compensation (positive), leverage (negative), free cash flows at time t – 1 (positive), tenure (positive), and the firm's growth opportunities (positive). The CEO vega is a function of cash compensation (positive), leverage (negative), firm size (positive), tenure (positive), and growth opportunities (positive). Finally, the CEO delta is affected by cash compensation (positive), leverage (negative), free cash flows at time t – 1 (positive), firm size (positive), CEO tenure (positive), and growth opportunities (positive).

effect. Overall, although the endogeneity-robust results are less significant than the original analysis reported in Table 4, they concur with the previous findings; this provides additional support to our central hypothesis which predicts that risk-averse CEOs are more likely to pay dividends than risk-seeking CEOs.[24] In sum, our evidence so far shows that CEO risk preferences play a role in payout policy.

1.3.6 Robustness check: Alternative measures of payouts

Our goal is to test whether CEO risk preferences play a role in dividend policy. Traditionally, the dividend policy literature considers the firm a dividend payer when the firm has a positive dividend per share. However, Grullon et al. (2011) introduce alternative definitions of payouts, as firms can pay dividends and issue equity at the same time or buy back shares instead of paying dividends. Therefore, these authors argue that, for unbiased results, it is necessary to examine net payouts (e.g., dividends minus equity issuance) as opposed to whether a firm pays cash dividends. Based on Grullon et al. (2011), we use the following alternative specifications: a firm is considered a payer when 1) the value of total dividend payout is greater than the value of stocks that are bought back, 2) the value of total dividend payouts plus the change in the value of treasury stock is positive[25], and 3) the value of purchase of common and preferred stock minus sale of common and preferred stock is greater than zero. In order to test our prediction using Grullon et al.'s (2011) alternative definitions, we run three sets of logistic regressions in which the dependent variables are the

---

[24] We also examine the effect of CEO compensation on the payout ratio and dividend yield by replicating the analyses presented in Tables 4 through 5. In unreported results, we observe that most variables do not have a statistically significant effect on the payout ratio and dividend yield, including common variables such as firm size and profitability. In fact, in these tests (including endogeneity tests), the only variable that consistently provides statistically significant results is the vega confirming that convex compensation decreases payouts.

[25] In this definition, we replaced the change in the value of treasury stock with purchase of common and preferred stock minus preferred stock, when it is missing.

dummy variables. The results are presented in Tables 7 and 8. Based on the central hypothesis of our paper, the coefficients of *CEO Inside Debt* and *CEO Delta/Vega Ratio* should be positive, whereas the *CEO Vega* should be negative. The results of models (2), (4), (8), and (10) in Table 7 show that two out of three CEO inside debt proxies are positive and significant at the 1% level, regardless of which control variable is used in the model. Similarly, according to the models (5), (8), (9), and (10), CEOs with high delta/vega ratio are likely to have a positive net payout, thus supporting the main hypothesis of our paper. However, our new results are somewhat surprising. In model (7), the coefficient of CEO vega is significant only at the 10% level. More importantly, when other CEO variables are included in the model, the sign of the CEO vega becomes positive. While this is not in accord with our main hypothesis, there is a possible explanation; this could be because high vega CEOs may be engaging in stock buybacks when they do not have investment opportunities, thus yielding mixed results.

When we look at the control variables, we observe that CEOs with longer tenure, profitable firms, and firms with high retained earnings are likely to have positive payouts. Conversely, firms that increase their assets are less likely to have positive net payouts. These results are consistent with the literature. However, we find that older CEOs are likely to have a negative net payout, which contradicts with the literature and our hypothesis. The literature suggests that older CEOs are more likely to be conservative, and we predict conservative CEOs to have positive net payouts. It may be that older CEOs are overconfident and choose to invest in their own stock. Overall, however, the findings regarding the effect of CEO inside debt and CEO delta/vega ratio strongly support the core hypothesis of our paper; conservative CEOs are more likely to pay dividends (i.e., have positive net payouts).

The results in Table 8, based on the second dummy variable we derived following Grullon et al., are similar to those in Table 7. In models (2), (3), (4), (8), (9), and (10), *CEO Inside Debt* is positive and significant mostly at the 1% or 5% level. In models (5), (8), (9), (10), the effect of *CEO Delta/Vega Ratio* on payouts is positive and significant at the 1% level, regardless of all other variables included in the regression. *CEO Vega* is initially negative in model (7); however, in models (8), (9), and (10), it is not significant once all other variables are included in the regression. While the findings regarding CEO tenure, change in assets, profitability, and retained earnings are similar to those in Table 7, our findings regarding CEO age are mostly insignificant.

The third set of regressions is based on Grullon et al.'s alternative definitions, where the dependent variable is one if the value of purchase of common and preferred stock less sale of common and preferred stock is positive, and zero otherwise. While we do not present these results for brevity, they are available upon request. The results show that the effect of most variables, including common variables such as profitability, change in assets, and retained earnings on the propensity of positive net payouts are not statistically significant. Results regarding the effect of CEO risk aversion on the propensity to have a positive net payout are consistent with the central hypothesis of our paper. We find that CEOs whose relative leverage is higher than the firm leverage are more likely to have positive payouts. We also have little evidence showing that firms run by CEOs with high delta are likely to have positive net payout whereas those run by high vega CEOs are less likely to have a positive net payout. The results regarding the return volatility are consistent with the literature; firms with high return volatility are less likely to have a positive net payout. However, results of this final analysis also indicate that firms with high Capex, R&D, or market-to-book ratio are likely to have a positive net payout, which is inconsistent with the literature; therefore, the findings of this model are questionable.

Overall, two out of three alternative definitions that we derived based on Grullon et al. show that firms run by conservative CEOs are more likely to have positive payouts. Conversely, firms that are run by risk-seeking CEOs tend to have negative payouts. These findings support the central hypothesis of our paper.

1.3.7 Robustness check: CEO risk preferences and dividend increases, initiations, and omissions

In this subsection, we test another possible source of endogeneity. Our original analyses test CEOs' propensity to pay dividends; hence, our examination may be biased because the firm may have or may not have been paying dividends when the CEO took office. A probable solution to this issue is to test the effect of CEO compensation on dividend policy changes (i.e., dividend increases, cuts, initiations, and omissions) during the CEO's tenure. This would ensure that dividend policy decision is affected by the CEO's risk preference and alleviate the aforementioned concerns.

We examine the effect of CEO risk preferences on dividend policy changes in Table 9 and 10. First, we examine dividend increases. In these tests, the dependent variable is set to one if firm *i*'s dividend per share at time t is greater than that of time t -1, and zero otherwise. In models (2), (3), and (4) of Table 9, the coefficients of inside debt proxies are all positive and significant at no less than the 10% level. Significant at the 1% level, the results of model (4) indicate that managers whose leverage is higher than that of the firms are 79.6%

more likely to increase dividends.[26] The results of model (5) regarding the effect of *CEO Delta/Vega Ratio* on the propensity to increase dividends suggest that a one point increase in CEO delta/vega ratio increases the propensity to increase dividends by 1.52%.[27] Conversely, the results of model (7) show that CEOs with convex compensation (i.e., CEOs with high vega) are less likely to increase dividends. Estimation results of model (7) indicate that a $1000 increase in CEO vega decrease the propensity to increase dividends by 2.57%.[28] As before, we estimate the last three models by including all our proxies. We find that inside debt proxies become insignificant when other risk preference variables are included to the model. However, the *CEO Delta/Vega Ratio* and *CEO Vega* are still significant at the 1% level and support the central hypothesis of our paper. In addition, *CEO Equity* becomes significant at the 1% level with a positive sign, thus indicating that non-convex equity compensation increases the likelihood of dividend increases.

The control variables in these regressions point out that larger firms and firms with high retained earnings are likely to increase dividends. Conversely, firms that invest in R&D, firms that increase their asset stock, or risky firms are less likely to increase dividends. These findings are consistent with the literature which suggests that small firms, risky firms, and firms with growth opportunities are more likely to retain earnings.

Next we examine the effect of CEO risk preferences on dividend initiations. Note that this is a subsample-based analysis; in this examination, we run logistic regressions among the firms that were non-payers at time *t-1*. Naturally, the dependent variable is set to one if the firm starts paying dividends at time *t*, and zero otherwise. The results of the regression

[26] $(e^{0.5857} - 1) \times 100 = 79.6\%$
[27] $(e^{0.0151} - 1) \times 100 = 1.52\%$
[28] $(e^{-0.0261} - 1) \times 100 = 2.57\%$

models in Table 10 show that the *CEO Delta/Vega Ratio* and *CEO Vega* are stronger determinants of dividend initiations compared to all other variables, including firm characteristics. We find in model (5) that a one-point increase in CEO delta/vega ratio increases the propensity to initiate dividends by 0.52.[29] In model (7), we find that a $1000 increase in CEO vega decreases the propensity to initiate dividends by 0.71%.[30] The results of models (8), (9), (10) are estimated using all CEO proxies and show that the *CEO Delta/Vega Ratio* is significant, regardless of other variables in the model. In model (9), its economic significance more than triples when the *Log of CEO Relative Leverage* is added to the model; however, *CEO Vega* becomes insignificant. Across the models presented in Table 10, the only statistically significant firm level variable is *Change in Assets*, suggesting that dividend initiations are mostly determined by the CEO delta/vega ratio, CEO vega, and whether or not the firm increases its outstanding assets.

Finally, we study the effect of CEO risk preferences on the propensity to omit dividends. While we do not present these results for brevity, they are available upon request. In our regressions, we find little evidence showing that CEOs with longer tenure or a higher delta/vega ratio are less likely to omit dividends. However, results regarding the effects of retained earnings and return volatility are consistently significant and stronger in all models. Finally, we examine the effect of CEO risk preferences on the propensity to reduce dividends; we find the only variable that affects the propensity to decrease dividends is the change in assets. However, it is worth pointing out that the analyses on the propensity to omit

[29] $(e^{0.0052} - 1) \times 100 = 0.52\%$

[30] $(e^{-0.0072} - 1) \times 100 = -0.71\%$

or reduce dividends are subsample-based analyses and the findings of these analyses may be questionable due to small sample size.

In sum, the results regarding the effect of CEO risk preferences on the propensity to increase or initiate dividends show that CEO risk preferences are strong determinants of dividend increases and initiations. The findings regarding the propensity to omit or reduce dividends are mixed, and the small quantity of statistically significant results indicate that firm characteristics play more of a role in dividend omissions or decreases than CEO risk preferences.

1.3.8 Robustness check: Using an alternative period characterized by high investor sentiment

To test the sensitivity of our results, we conduct an additional robustness test by replicating our main analysis with a larger sample that contains data from 1995 through 2008. We exclude the period after 2008 due to the recent near-collapse of the financial system, which could have increased CEO risk aversion, causing higher sensitivity to pay dividends.[31] Further, this section examines whether our results remain robust over a period that is characterized by high investor optimism (Baker and Wurgler, 2004). Thus, in this section we examine whether our findings are robust to market conditions and are not sample specific. However, in this section, the effect of inside debt on dividend policy is not analyzed, but we investigate the effect of stock option values, deltas, and vegas, using the approximation method of Core and Guay (2002) instead of the full information method, on dividend policy.

[31] This was not possible in the original dataset, since the period from 2009 to 2011 accounts for half of the entire dataset.

This is because detailed information on stock option tranches and inside debt data have only been available since 2006.

Table 2 Part B presents the descriptive statistics of this dataset, showing that *CEO Vega* is higher while *CEO Delta/Vega Ratio* is smaller among non-paying firms,[32] dividend-paying firms are managed by older CEOs or CEOs with longer tenure, and dividend-paying firms are larger and have fewer growth opportunities (e.g., a smaller *Market/Book Ratio* or higher *Sales*). These results are in line with our prior findings that risk-seeking (risk-averse) CEOs have a lower (higher) propensity to pay dividends.

Using this extended dataset, we re-run logistic regressions, testing the effect of CEO risk preferences on the propensity to pay dividends, and report the results in Table 11. While in model (1) we find that *CEO Cash Compensation* does not significantly affect dividend policy, in model (2) the coefficient of *CEO Delta/Vega Ratio* is 0.0018 indicating that a one-point increase in the delta/vega ratio increases the propensity to pay dividends by 0.18%.[33] However, this finding is less significant compared to our previous results. Further, the results in models (3) and (4) indicate that a $1 million increase in equity compensation or a $1000 increase in vega decreases the propensity to pay dividends by 0.31% or 2.98%, since the coefficients of *CEO Equity* and *CEO Vega* are -0.0031 and -0.0303, respectively.[34] Estimated by using all proxies, model (5) shows that vega significantly decreases the propensity to pay dividends. Similar to the previous findings, the sign of *CEO Equity* becomes positive in this

[32] According to the descriptive statistics, there are two main differences between the original dataset and the larger dataset. First, in the smaller set, the change in assets is significantly higher in the subsample of non-paying firms. Second, in the large dataset, there is no statistically significant difference between non-payers and payers in terms of firm size (i.e., market equity).

[33] $(e^{0.0018} - 1) \times 100 = 0.18\%$

[34] $(e^{-0.0023} - 1) \times 100 = -0.22\%$ and $(e^{-0.034} - 1) \times 100 = -3.34\%$

model,[35] implying that high equity compensation increases managerial conservatism and thus dividend payout when not convex, i.e., when the model includes vega as a control variable (see Lambert, Larcker, and Verrecchia, 1991).

In sum, these logistic regressions further support our hypothesis that CEO compensation is a determinant of dividend policy and, in particular, convex pay packages decrease the propensity to pay dividends. While the coefficients of *CEO Equity* and *CEO Vega* are smaller than those in previous findings, the results are still significant at the 1% level and confirm our prior findings. Therefore, we still find evidence showing that CEO risk preferences play a role in dividend policy in a period of high market sentiment[36].

1.3.9 Robustness check: Market's preference for dividends

The catering theory of Baker and Wurgler (2004, pg. 1160) suggests that "managers give investors what they currently want." In the case of dividends, the theory predicts the majority of firms decide to pay dividends when dividend paying firms trade at a premium (i.e., when the market prefers dividends over capital gains)[37]. Thus far, we find that risk-seeking managers are less likely to pay dividends. However, according to Baker and Wurgler

---

[35] We observe the same in Tables 4 and 5.

[36] We employ the same endogeneity test as before based on Shen and Zhang (2012) to check the robustness of these findings in the larger dataset. We find that the results are still consistent with the central hypothesis of the current method. While we do not present the results for brevity, they are available upon request.

[37] Baker and Wurgler (2004) test this theory with the following model (pg. 1148):

$$Initiate_t = a + bP_{t-1}^{D-ND} + c\,\frac{M}{B_{t-1}} + d\,\frac{D}{P_{t-1}} + e\,Tax_{t-1} + fYear_{t-1} + u_t.$$

In this model, P^{D-ND} is the dividend premium, which is the log of the average market-to-book ratio of dividend paying firms (P^{D}) less that of the non-paying firms (P^{ND}). M/B is the average market-to-book ratio of non-paying firms, and $\frac{D}{P}$ is the dividend yield, *Tax* is the ratio of after-tax returns from dividends to that from capital gains ($\frac{1-Tax_{dividend}}{1-Tax_{capital\ gains}}$), and finally *Year* is the calendar year. The theory predicts the coefficient of the dividend premium b to be positive suggesting that when the market prefers dividends (i.e., when the dividend premium is high), the propensity to pay dividends should be higher. This prediction is supported empirically in Baker and Wurgler (2004).

(2004), the disappearance of dividends is due to the market's preference. Hence, it is necessary to run this final analysis to investigate whether our findings still hold after controlling for the market's preference for dividends. We do so by introducing the *Relative Dividend Premium (RDP)* variable in our baseline regression, which, in the spirit of Baker and Wurgler (2004), is defined as the value-weighted average of dividend paying firms' market-to-book ratio minus the market-to-book ratio of firm *i* at time *t*. Formally, we estimate the following model:

$$Logit(Pay) = a + b\ RDP_{i,t} + c\ Firm_{i,t} + d\ CEO_{i,t} + e\ Fixed_t + \ v_t$$

In this model, *RDP* is the relative dividend premium as defined above; *Firm* is a set of firm-level control variables; *CEO* is the set of CEO compensation variables that are used throughout the current study; and *Fixed* is a set of binary variables based on year and two-digit industry codes. Similar to the previous section, we conduct this test for the 1995 to 2008 period. Consistent with the catering theory, *RDP* is expected to have a positive impact on the propensity to pay dividends. If our findings continue to show that *CEO Delta/Vega Ratio* or *CEO Vega* exert a significant effect on the propensity to pay dividends, even after we include the *RDP* in the estimation model, they would indicate that they are not sensitive to specific market conditions.

Table 12 presents the logistic regression results. The first regression model, in accord with the prediction of catering theory, shows that the coefficient of *Relative Dividend Premium* is positive and significant at the 1% level. In economic terms, a one point increase in dividend paying firms market-to-book ratio relative to that of the firm *i*, increases the propensity of firm *i* to pay dividends by 40 times[38].

In the next four regression models, we examine the significance of the CEO risk preference variables when *RDP* enters the model. While we do not find a relationship between *CEO Cash Compensation* and the propensity to pay dividends in Model (2), the coefficient of the *CEO Delta/Vega Ratio*, in Model (3), indicates that it has a positive standalone effect on the propensity to pay. Significant at the 5% level, this finding aligns with the central hypothesis of this study suggesting that conservative managers are more likely to pay dividends compared to others. The results in models (4) and (5) are also in line with the central hypothesis of the current paper and stronger compared to those in Model (3). The results of models (4) and (5) suggest that higher equity compensation or convex compensation leads to a lower propensity to pay dividends.

The sixth model is estimated with all the CEO risk preference variables; similar to our previous findings, the sign of the *CEO Equity* changes to positive and both *CEO Equity* and *CEO Vega* are highly significant. This consistently suggests that convex equity compensation decreases the propensity to pay dividends whereas non-convex equity compensation leads to risk-aversion (see Lambert, Larcker, and Verrecchia, 1991) and as a result increases the propensity to pay dividends. In economic terms, we find that a $1 million increase in *CEO Equity* compensation increases the likelihood of the propensity to pay dividends by 0.32%, whereas a $1 thousand increase in *CEO Vega* decrease the propensity to pay dividends by 3.32%, even after controlling for the market's preferences for dividends[39].

---

[38] $(e^{3.7348} - 1) \times 100 = 4087.96\%$

[39] $(e^{0.0032} - 1) \times 100 = 0.32\%$ and $(e^{-0.0338} - 1) \times 100 = -3.32\%$

These findings provide incremental support to our argument that risk-seeking managers are less likely to pay dividends. More important, this examination shows that our findings are robust to the market conditions.

1.4 Conclusion

This study examines whether risk aversion-inducing CEO compensation motivates managers to pay more dividends regardless of investor preferences. Using inside debt (i.e., pensions and deferred compensation) and the sensitivity of CEO equity compensation to stock price changes (i.e., high CEO delta), as proxies of CEO risk aversion, we document that inside debt induces CEOs to pay dividends while CEOs with convex compensations decrease dividend payout.

Our tests are performed using two data samples, from 2006 through 2011 and from 1995 through 2008. We use the former as the main dataset, since it includes inside debt, and we use the latter for increased robustness. Confirming our predictions, our results show that high inside debt (i.e., pension and deferred compensation) and CEO delta increase the propensity to pay dividends, whereas convex compensation (i.e., vega) decreases payouts. This implies that risk-averse/risk-seeking CEOs are more/less likely to pay dividends. We end our empirical analysis by examining how the market's preference affects the dividend policy of firms run by risk-averse and risk-seeking managers. Consistent with our main findings, we find that risk-seeking managers are less likely to pay dividends even when the market has a preference for dividends.

CHAPTER 2: CATERING THEORY AND STOCK PRICE REACTIONS TO DIVIDEND INITIATIONS AND OMISSIONS

2.1 Introduction

According to catering theory of Baker and Wurgler (2004), the disappearance of dividends since the 1980's is attributed to investors' preference of non-dividend paying firms (non-payers, hereafter) and managers *catered* to this demand by not paying dividends. The intuition behind catering theory is that investors exhibit a time-varying demand for dividend-paying firms (payers, hereafter): when the market sentiment is low, investors prefer payers for certain gains. Conversely, investors prefer non-payers for capital gains when the market sentiment is high, thus increasing the share prices of non-payers. Hence, in an attempt to maximize share prices, managers cater to the market's preferences: they pay dividends when dividend-paying firms trade, on average, at a premium compared to non-paying dividends. Conversely, managers are more likely to discontinue dividends when non-payers trade at a premium. However, unlike the prediction of catering theory, the market may interpret dividend omissions as a "signal" of poor prospects and may force omitting firms' share prices to drop (Aharony and Swary 1980; Bhattacharya 1979; Miller and Rock 1985; Michaely, Thaler, and Womack 1995). The objective of this study is to examine empirically which of these views is more consistent with reality.

To address this issue, we analyze the market's reaction to dividend initiations and omissions over the period of 1980-2010, as this period is mostly characterized with high market sentiment (i.e., investor optimism) leading to a higher demand for non-payers for capital gains compared to payers[40]. In accord with the prediction of catering theory, due to the market's preference for dividends, initiating (omitting) firms' stock returns are expected to be lower (higher) compared to the pre-initiation (-omission) period.

In order to test these predictions, we collect data from the Center for Research in Security Prices, Kenneth French's website, and Jeffrey Wurgler's website. Following Michaely et al. (1995), we examine the 36-month periods before and after dividend initiations and omissions[41]. First, we find that initiating firms' average return is 2.02% in the pre-initiation period and 1.27% in the post-initiation period. Omitting firms' average return is -0.42 in the pre-omission period and .09% in the post-omission period. These results are in support of catering theory since initiating firms perform worse in the post-initiation period while omitting firms perform better in the post-omission period. Second, the average cumulative abnormal returns (*ACARs*) over the 36-month periods before and after initiations and omissions are analogous to our prior findings and consistent with catering theory. In our sample, the 36-month *ACARs* of initiating firms is 63% and 11%, before and after initiations, respectively. The 36-month *ACARs* of omitting firms are -69% and -16%, before and after omissions, respectively. Last, multivariate analyses, based on the Fama–French four-factor model (see Fama and French, 1993), confirm that initiating firms perform worse after

[40] Baker and Wurler (2004) report that the dividend premium (i.e., the demand for dividend paying firm) was low in the 1980-2000 period with non-paying firms trading mostly at a premium due to high market sentiment. The updated dividend premium and sentiment data for the period of 1980-2010 are available on Jeffrey Wurgler's website: http://people.stern.nyu.edu/jwurgler/data/Investor_Sentiment_Data_v23_POST.xlsx.

[41] Following the literature, we limit our examinations to firms that did not pay dividends for 36 consecutive months prior to initiations, then kept paying dividends for 36 consecutive months after initiations. Conversely, we only examine the omitting firms that paid dividends for 36 consecutive months prior to omissions, then did not pay dividends for 36 consecutive months thereafter. Over the period of 1980-2010, we find 360 initiations and 268 omissions. In our sample, especially in the last decade, the number of non-payers to payers is two to three times more. However, while the number of initiating firms is larger than that of omitting firms, the percentage of non-payers that initiate dividends is lower than the percentage of payers that omit dividends.

initiations whereas omitting firms perform better after omissions. According to our findings, in the period of 1980-2010, initiating firm's average risk-adjusted yearly return is almost 6% lower in the post-initiation period compared to the pre-initiation period. Conversely, that of omitting firms is more than 16% higher in the post-omission period compared to the pre-omission period. Thus, our findings are in accord with the catering theory prediction that investors favor non-payers in the presence of high sentiment. The reason our findings are opposite of Michaely et al. (1995) is probably due to their sample period, 1964-1988. During almost two-thirds of their sample period, the dividend premium was positive, indicating that payers traded at a premium. Collectively, our results suggest that the signaling effect was less prominent in the 1980-2010 period, a period mostly characterized by investor optimism (i.e., strong preference for non-payers).

We repeat our examination for three sub-sample periods: 1980-1990, 1991-2000, and 2001-2010. The objective of this robustness test is to examine 1) whether our results are specific to one sub-period, and 2) whether the market's reaction to dividend initiations or omissions is related to changes in sentiment (or the dividend premium) as predicted by catering theory. In Figure I, we plot the dividend premium and market sentiment. Note that the market sentiment is high in the early 1980s, yet drops gradually and dips below zero around the Savings and Loan crisis in 1991. In the 1990s, there is a general upward trend and the sentiment index peaks in 2000, right before the burst of the dot-com bubble and the 9/11 terrorist attacks. In the 2003-2007 period, it starts to recover from the terrorist attacks and ramps up with the housing bubble. Over this period, notice that the dividend premium is significantly below zero, indicating a stronger demand for non-payers. In the 2003-2007 period, the S&P 500 index increased by more than 80%, which is equivalent to 15% yearly return. In addition, the US housing index increased by more than 44%. Most likely, investors wanted to ride this wave and demanded capital gains instead of dividends. If catering theory holds, the stock price reaction to dividend initiations and omissions should be associated with the market's sentiment and the dividend premium.

Our results are mostly in agreement with this argument. We find a negative market reaction to dividend initiations in all three decades. However, the only significant result is during the 2001-2010 period. In fact, when we limit the sample to years 2003 through 2007 (the period between the 9/11 and the burst of the housing bubble, in which both the housing and stock markets were bullish), the results are more significant, confirming the prediction of catering theory that when the market sentiment is high the price reaction to initiations is negative. We also find a positive reaction to omissions in all sub-sample periods, but the magnitude of the market's reaction to omissions is higher in the 2000s, yet the statistical significance of the results is stronger in the 1990s. Similar to the findings regarding initiations, the result of the analysis during the 2000-2010 period are more significant during the era characterized by high sentiment due to the booming housing and stock markets. As before, when we limit our analysis to this high sentiment period, the positive effect of omissions on stock prices turns out to be more significant. In sum, our results support the proposition of catering theory: during times of high sentiment, investors prefer non-payers and firms perform worse (better) subsequent to initiations (omissions). However, the conjecture that omitting firms perform better, when the market sentiment is high, finds stronger support in our analysis.

2.2 Literature review and hypothesis development

In perfectly efficient and frictionless markets (e.g., no transaction cost, taxes, investor irrationality, information asymmetry), changes in dividend policy do not affect firm value (Miller and Modigliani, 1961). Miller and Rock (1985) relax the information symmetry assumption and argue that managers have more information than outsiders do regarding a firm's prospects and dividend policy is determined depending on the firms' future profitability. Hence, an increase (decrease) in dividends signals good (bad) news and should increase (decrease) the share price (see also Aharony and Swary, 1980), which is empirically confirmed by Michaely et al. (1995). The shortcoming of the signaling hypothesis is that it does not account for the market's preferences (e.g., the market sentiment) for dividends.

Relaxing the market efficiency assumption of Miller and Modigliani (1961), catering theory of Baker and Wurgler (2004) suggests that managers distribute or reinvest earnings depending on the market sentiment. This is because investors demand capital gains (as opposed to dividends) when the market sentiment is high. Conversely, investors prefer certain gains (i.e., dividends) when the sentiment is low. Hence, the catering theory predicts that, when the market is optimistic, investors prefer non-payers (i.e., when the dividend premium is negative) and managers will invest cash flows in growth opportunities, as opposed to paying dividends, for capital gains. A subtle and untested assumption of catering theory, addressed in this study, is that managers will omit dividends in an attempt to increase share price when the market sentiment is high (i.e., when the market prefers non-payers) and yet the market will not react negatively to dividend omissions -as in the signaling view.

Baker and Wurgler (2004) measure the market's demand for dividends via the dividend premium. They also use the dividend premium as one of the components of the sentiment index (see Baker and Wurgler, 2006). We plot these series in Figure I. As expected, there is a negative correlation between the dividend premium (i.e., investor demand for dividends) and the sentiment. Note also that over the period of 1980-2010, the dividend premium is mostly negative –with the exception of two years- meaning that non-payers traded at a premium compared to payers. Baker and Wurgler argue that high investor sentiment is the main reason investors prefer non-payers to payers. If catering theory holds, over this period, initiating firms' stock returns should be lower in the post-omission period whereas those of omitting firms' should be higher in the post initiation period. The objective of this study is to test this hypothesis.

2.3 Data and descriptive statistics

We collect data from the Center of Research in Security Prices (CRSP), Kenneth French's website, and Jeffrey Wurgler's website[42]. Data on quarterly ordinary dividends and monthly returns adjusted to distributions are from the CRSP. Monthly Fama-French factors are from Kenneth French's website. Available through 2010, the dividend premium and consumer sentiment data are from Wurgler's website.

Even though we analyze the initiations and omissions that took place after 1980, our stock return data begin in 1977 to calculate pre-event stock returns and to ensure a clean dividend history of initiations and omissions. Following the literature, we exclude utilities—Standard Industrial Classification (SIC) codes 4900–4949—and financial firms—SIC codes 6000–6999. To ensure that firms are publicly traded, we use firms with share codes of either

---

[42] French's website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. Wurgler's website: http://people.stern.nyu.edu/jwurgler/.

10 or 11. We trim stock returns at the 1% and 99% level to exclude outliers. We also exclude the firms that omitted or initiated dividends more than once.

2.3.1 Qualifying dividend initiations and omissions

We choose qualifying dividend initiating and omitting firms following Michaely et al. (1995). For a firm to qualify as an omitting firm, it has to meet the following two requirements (with CRSP variable mnemonics in parentheses). First, the firm must be present in the CRSP dataset with a non-missing stock return adjusted to distributions (retx) for 36 consecutive months and have paid quarterly cash dividends (adjodiv) for 12 consecutive quarters and second the firm must be present in the dataset and not have started paying dividends after the omission for at least 36 months. For a firm to qualify as an initiating firm, we require the following criteria. First, the firm must be present in the CRSP dataset with a non-missing stock return adjusted to distributions and not have paid dividends (adjodiv) for 36 consecutive months prior to the event and second the firm must be present in the dataset and not have stopped paying dividends after the initiation for at least 36 months.

2.3.2 Descriptive statistics

We present our sample distribution in Table 1[43]. The percentages of firms that initiate and omit dividends show that between 1980 and 2003, the propensity to initiate dividends is lower than the propensity to omit dividends. Since over this period the dividend premium is mostly negative, this finding corroborates the catering theory implying that managers are less likely to pay dividend when the market prefers non-payers. The initiation rate increases

[43] The numbers we present may not match with Baker and Wurgler (2004) since we follow Michaely et al.'s (1995) definitions of initiating and omitting firms.

drastically in 2003 and exceeds that of omission. This is probably due to the Bush administration's tax policy changes lowering the tax rates of dividend income.

In Table 14, we present the mean returns of initiating and omitting firms before and after initiations and omissions. The pre-event mean returns are estimated over the 36-months before initiations and omissions. Post-event mean returns are measured over the 37-months including the event months and the subsequent 36-month periods. The mean monthly stock returns are 2.03% before initiation and 1.27% after initiation. The mean monthly stock return is -0.42% before omissions and 0.97% after omissions. According to *t*-tests, all the mean values are significantly different from zero at the 1% level. These results suggest that initiating firms perform poorly in the post-initiation period compared to their pre-initiation period, whereas omitting firms perform better compared to their pre-omission period. These findings are in support of the catering theory predicting that over periods when the market prefers non-payers, dividend initiations lead to lower stock returns, whereas dividend omissions result in equity value increases.

2.4 Average cumulative abnormal returns before and after omissions and initiations

To investigate the effect of dividend omissions and initiations on stock returns, we employ an event study approach. First, we calculate the cumulative abnormal returns (i.e., stock return less the market return) for each month up to 36 months prior and subsequent to dividend initiations and omissions. Next, we take the average of these returns across omitting and initiating firms. Formally, we calculate the cumulative abnormal return for asset i as follows:

$$CAR_i = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{M,t})$$

where $R_{i,t}$ is asset i's return (the percentage change in the price of the asset from time $t-1$ to t) and $R_{M,t}$ is the return on the market for month t. Therefore, the average cumulative abnormal returns, $ACAR$, after omissions and initiations are calculated as follows:

$$ACAR_t = \frac{1}{N}\sum_{i}^{N} CAR_{i,t}$$

We present the results of this analysis in Table 15. Note that we do *ACAR* calculation for the entire dataset and for three subsamples (i.e., for three decades). Results in Panel A show that 36-month *ACAR* of initiating firms is almost 6 times higher in the pre-initiation era compared to the post-initiation era (63% compared to 11%) in the full sample analysis. In addition, we find that initiating firms' average return is 1.63% in the initiation month (*t*=0) and is 2.61% in the month prior to the initiation month (*t*=-1). This finding supports the implication of catering theory in the short-run since initiating firms perform poorly in the initiation month relative to the prior month. That is, in the periods when the market sentiment is high, market reacts negatively to dividend initiations. We find similar results in the periods of 1980-1990 and 2001-2010.

In Panel B of Table 15, we present the results for omitting firms. In the full sample analysis, we find that the average returns of omitting firms one month prior to the omission and in the month of omission are -6.2% and -3.14%, respectively. This shows that omitting firms performed better in the omission month compared to the month before the omission. Findings in the subsample analysis are also consistent. These results appear to be consistent with prediction of catering theory that dividend omissions may increase share value when the market prefers non-payers. When we compare the 36-month periods before and after omissions, we find that omitting firms underperformed the market by 69% percent in the pre-omission period. However, they underperform the market by only 16% in the post-initiation period indicating that omitting firms perform better in the post-omission period. More strikingly, our subsample analysis shows that over the 2001-2010 period, omitting firms outperformed the market by 31%. While omitting firms do not outperform the market after omissions in the other subsamples, they still perform better compared to the pre-omission period.

2.5 Risk-adjusted returns: Augmented Fama–French model

Using an augmented Fama–French model, we test whether the calculated *ACAR* values load entirely on risk factors, indicating that the *ACAR* values are due to firm size, growth opportunities, or the market premium. If so, we can conclude that dividend policy changes do not generate risk-adjusted return indicating that neither catering theory nor the signaling hypothesis can predict the effect of dividend policy changes on stock returns. The model that we estimate is as follows:[44]

$$R_{i,t} - R_{f,t} = \alpha_i + \alpha_{\Delta i} D_t + b_i \left(R_{M,t} - R_{f,t}\right) + b_{\Delta i} D_t \left(R_{M,t} - R_{f,t}\right) + s_i SMB_t + s_{\Delta i} D_t SMB_t + h_i HML_t + h_{\Delta i} D_t HML_t + o_i MOM_t + o_{\Delta i} D_t MOM_t + \varepsilon_t$$

[44] This model was originally used by Grullon et al. (2002). Charitou, Lambertides, and Theodoulou (2011) fine-tuned the model by adding the momentum factor.

This model is estimated over the 36-month period before and after the dividend event, that is, $-36 \leq t \leq 36$, indicating 73 observations for each initiation or omission. The term $R_{i,t} - R_{f,t}$ is the difference between the return on asset i and the risk-free rate at time t; $(R_{M,t} - R_{f,t})$, SMB, HML, and MOM are the Fama–French market premium, firm size, book-to-market ratio, and momentum risk factors, respectively; $\alpha_i$is the abnormal return; and b_i, s_i, h_i, and o_i are factor loadings *before* the event.

To capture the changes in risk-adjusted returns and factor loadings, a dummy variable D_t and its interaction with the Fama–French factors are added to the model, where D_t is set equal to zero in the period before the initiation or omission and one otherwise. Hence, $\alpha_{\Delta i}$, $b_{\Delta i,}$ $s_{\Delta i,}h_{\Delta i}$, and $o_{\Delta i}$ capture changes in risk-adjusted return, the market risk factor, the size factor, the value factor, and the momentum factor, respectively, after initiations and omissions.

Our sample consists of 360 dividend initiations and 268 omissions. Hence, we estimate the augmented Fama–French model using 360 and 268 times for initiations and omissions, respectively. All the coefficients from these regressions are saved for the initiations and omissions separately, on which two-tailed *t*-tests are conducted on the cross section to check whether the estimated coefficients are significantly different from zero.

Our coefficients of interest is α and α_{Δ} capturing the abnormal returns of initiating and omitting firms. If our results show that $\alpha_{\Delta i}$ is significant at conventional levels, it will indicate that dividend initiations or omissions generate abnormal returns that are not explained by Fama–French factors. Based on catering theory, we predict α_{Δ} to be negative after initiations and positive omissions.

In addition, a positive and significant $b_{\Delta i,}$ $s_{\Delta i,}h_{\Delta i,}$ or $o_{\Delta i}$ will indicate market premium increased and firms started acting like smaller, value firms (with a high book-to-market ratio), or high-momentum firms, respectively, after the dividend policy change. On the other hand, if the changes in the coefficients (i.e., $b_{\Delta i,}$ $s_{\Delta i,}$ $h_{\Delta i}$, and $o_{\Delta i}$) are negative and significant, it will indicate that, after the dividend policy change, the market premium was low and firms started acting like large firms, glamour firms (with a low book-to-market ratio), or low-momentum firms.

We present the results regarding initiations in Panel A and omissions in Panel B of Table 16. The results for the entire sample in Table 16 Panel A show that returns load on $\alpha, (R_m - R_f), HML,$ and SML positively and on MOM negatively before initiations. All the mean values are significant at the 1% level, except for MOM. A positive α indicates that firms had been generating positive risk-adjusted returns before the initiation suggesting that non-payers are associated with higher risk-adjusted returns (i.e., non-payers trade at a premium before the dividend initiations).

The most striking result is that α_Δ (the coefficient of the dummy variable assigned to capture the effect of dividend policy change) is -0.47 and significant at the 1% level. This result suggests that initiations consistently trigger negative market reaction throughout the sample period. In economic terms, initiating firms' average risk-adjusted monthly return is almost half a percent lower in the post-initiation period compared to the pre-initiation period[45]. This translates into an almost 6% discount each year (compounded monthly) for initiating firms. This finding supports the prediction of catering theory that there is less

[45] Taken together, initiating firms continue generating positive risk-adjusted returns, since $\alpha_{\Delta i}$ plus α_i is still greater than zero. However, their risk-adjusted returns are halved in the post-initiation period.

demand for payers over the period of 1980-2010. We repeat the same analysis in our three subsample-periods to examine whether the demand for payers is time varying. As shown, α_{Δ} has a greater coefficient and *t*-value in the period of 2001-2010. In additional subsample analyses, we find these results to be strongly related to the high sentiment 2003-2007 period during which both the stock market and the housing market were booming. However, we do not find significant results in the other two decades even though the coefficients are negative. Overall, our results indicate that dividend initiations triggered negative market reaction in all three decades, but the valuation effects were not as pronounced in the 1980s and 1990s, compared to the 2000s.

Next, we examine the effect of omissions on stock returns. These results, presented in Table 16 Panel B, show that before omissions, the mean coefficients of $(R_m - R_f)$, HML, and SMB are positive, while that of MOM and α are negative. The results based on the entire sample show that these coefficients are significant at the 1% level, with large *t*-values. A negative α indicates that omitting firms had been performing poorly prior to the policy change, suggesting that payers, consistent with catering theory, trade at a discount. Capturing the changes in risk-adjusted returns after omissions, α_{Δ} is 1.27 and statistically significant at the 1% level. The change in risk-adjusted return is also economically significant. This implies that omitting firms' average risk-adjusted monthly return is 1.27 higher in the post-omissions era. This is more than 16% yearly and 57% risk-adjusted return (compounded monthly) over the 36-month period after omissions. In general, while there is some variation across the three decades, these results demonstrate that the market's reaction to dividend omissions is positive and varies with investor sentiment, as expected based on the prediction of catering theory.

The subsample analysis shows that this finding is consistent and significant over the three decades. While the magnitude of α_{Δ} increases in the latter decades, it is only significant at the 5% level in the latest decade. When we limit our sample to the period in which both the stock and the housing markets were bullish, we find that the significance increases to the 1% level. Overall, the results show that omitting firms generate positive risk-adjusted returns since the 1980s. These findings are consistent with the prediction of the catering view that dividend omissions should boost the equity value when market sentiment is high.

2.6 Summary of findings and conclusion

The negative dividend premium, originally documented in the renowned study of Baker and Wurgler (2004), over the period of 1980-2010, suggests that the market preferred non-payers to payers. An untested prediction of catering theory, addressed in this study, is that initiating firms' stock returns will be lower in the post-initiation period compared to the pre-initiation period. Conversely, omitting firms' returns should be higher in the post-omission period compared to the pre-omission period. This prediction contradicts the signaling view, which claims that dividend omissions signal bad news regarding the future prospects of firms, thus leading to a decrease in equity value.

We test the effect of dividend policy changes on stock returns over the period of 1980-2010 to shed more light on the validity of these conflicting views. Consistent with the prediction of catering theory, we find that firms perform better (worse) subsequent to dividend omissions (initiations) compared to the pre-omission (-initiation) period. Fama-French regression results show that risk-adjusted returns in the post-initiation period are significantly negative mainly during the 2001-2010 period. In this period, initiating firms realize 6% less risk-adjusted return each year in the post-initiation compared to the pre-initiation years. We find stronger support for the catering theory among omitting firms. The Fama-French regression results show that omitting firms generate 16% more risk-adjusted yearly return subsequent to omissions compared to the pre-omission period. This translates to more than 57% risk-adjusted return over the 36-month period after omissions compared to the 36-month period prior to omissions. In accord with the catering theory, our results show that managers omit dividends in an attempt to maximize share prices when the market is more optimistic favoring non-payers to payers. Nevertheless, our results contradict the signaling view, which predicts positive (negative) returns after initiations (omissions).

CHAPTER 3: DIVIDEND POLICY AND FINANCIAL DISTRESS RISK

3.1 Introduction

The compensation and risk preferences of chief executive officers (CEOs) have always attracted much attention. Empirical and anecdotal evidence indicate that executive compensation structures that encourage risk-seeking behavior may increase firm risk. In this study, we contribute to the literature by examining the link between firm financial distress, dividend policy, and CEO risk preferences. One of the few studies in this area is a survey study by DeAngelo and DeAngelo (1990), which includes 80 observations from 1980 through 1985. The authors conclude that the managers of distressed firms reduce dividends to increase firm liquidity, consequently reducing the risk of bankruptcy. In contrast, Grullon, Michaely, and Swaminathan (2002) find an increase in firm risk subsequent to a decrease in dividend payouts. In this study, we provide a fresh look at this literature and address these conflicting findings by incorporating CEO risk preferences.

We argue that a low payout policy may increase free cash flow and thus the debt capacity at the disposal of managers. If the CEO is a risk-taker, these additional resources could be invested in high-risk projects, thus increasing firm risk. If so, the findings of Grullon et al. (2002) are supported for risk-seeking managers. On the other hand, our view predicts that risk-averse CEOs will allocate retained earnings to decrease firm risk (e.g., reduce leverage, increase liquidity). Such findings would support DeAngelo and DeAngelo's (1990) argument and indicate that results in Grullon et al. (2002) are specific to risk-seeking managers.

Our view is consistent with previous studies suggesting a trade-off between growth opportunities and dividend payouts (DeAngelo, DeAngelo, and Stulz, 2006; Fama and French, 2001) and that managers invest in value-increasing projects when the market has a preference for capital gains over dividends (Baker and Wurgler, 2004). Different from these studies, we also acknowledge that the low payout policy is related to managerial risk-seeking behavior. If the data confirms our view, this would suggest that catering to investor demand by pursuing investment projects at the expense of dividend payouts increases the risk of bankruptcy. Moreover, such results would elucidate the findings of Hoberg and Prabhala (2009), who document that there is a negative association between risk and dividend payouts. Namely, our findings would indicate that the source of the risk mentioned in Hoberg and Prabhala (2009) may be due to managerial risk-seeking behavior.

To test our view, we re-visit DeAngelo and DeAngelo (1990), who argue that managers of distressed firms reduce dividends to increase firm liquidity, thus decreasing the risk of bankruptcy.[46] However, according to our view, in distressed firms, risk-seeking CEOs should be more likely to omit dividend, since they may pursue projects to revert firm prospects. This is similar to the gambling hypothesis of prospect theory (Kahneman and Tversky, 1979), namely that people may exhibit a lottery-type behavior to cover previous losses.

[46] DeAngelo and DeAngelo (1990) suggest that the low dividend payout policy of distressed firms is to meet credit requirements or gain bargaining power against labor unions, both of which decrease the risk of financial distress. According to DeAngelo and DeAngelo, non-dividend paying firms should be financially stable regardless of managers' risk preferences. This is because the authors assume that free cash flow will be allocated to avoid financial distress, which is a questionable assumption. In addition, more than one third of the managers report in their survey that they decrease dividends to invest in "new projects"; however, the authors do not provide information regarding the riskiness of these projects. Consistent with prospect theory, these new projects may be high-risk gambles that managers undertake to revert firm prospects.

We re-visit DeAngelo and DeAngelo (1990) by first employing a clinical method allowing us to examine why managers omit dividends. As such, we scan the 10Ks of firms that omit dividends to determine why they do so. We find clear statements in dividend-omitting firms' 10Ks that some firms omit dividends to take on investment opportunities. For example, Infospace Inc. announced that the firm "intend[s to] retain [its] earnings to finance future growth, and therefore, do[es] not anticipate paying any cash dividends" (2009 10K). In addition, Startek Inc. also "plan[s] to invest in growth initiatives in lieu of paying dividends" (2007 10K). These statements support our view.

Second, we test our hypothesis against that of DeAngelo and DeAngelo (1990) in cross section on a dataset collected from Compustat, Center for Research in Security Prices, and Execucomp.[47] This dataset comprises observations from the period of 2006 to 2012, because the inside debt data has been available since 2006. The main variables of interest in this study are proxies for managerial risk preferences, firm risk, and dividend payouts. We proxy for managerial risk preferences using (i) CEOs inside debt (i.e., sum of deferred compensation and pension), and (ii) the sensitivity of CEO compensation to stock return volatility (i.e., vega) and stock returns (i.e., delta). Previous literature suggests that inside debt induces managerial risk aversion, as it ties CEOs' wealth to the value of a firm's debt (Edmans and Liu, 2011; Sundaram and Yermack, 2007). On the other hand, high vega/delta ratio equity compensation (i.e., convex equity compensation) motivates risk-seeking behavior (Core and Guay, 1999; Cassell, Huang, Manuel Sanchez, and Stuart, 2012). We measure firm risk using Altman's (1968) Z-Score (hereafter, Z-Score). According to Altman (1968),

[47] Our historical cross section enables an examination of the actual outcomes of managers' decisions. This is more advantageous than survey data, as manager opinions can vary based on when the questions are posed (Pan & Statman, 2012).

firms with a Z-Score less than 1.8 are distressed, while those with a Z-Score equal to or more than 3.0 are stable. Last, we consider firms with dividend per share by exdate greater than 0.0 at time *t* to be dividend payers, and we proxy for free cash flow using the difference between operating income and total dividend disbursements.

In our multivariate analyses, we find that risk-seeking managers are more likely to omit and less likely to pay dividends in distressed firms. This casts doubt on the prior literature which suggests that managers of distressed firms reduce dividends as a risk-averse policy to increase firm liquidity or honor credit requirements. Instead, our findings imply that low payout of distressed firms may be due to managerial risk-seeking behavior. This finding is consistent with the gambling hypothesis derived from prospect theory and the findings of Grullon et al. (2002).[48]

Having established that low payout policy of distressed firms may be due to managerial risk-seeking behavior, we broaden the scope of our investigation. We examine the association between CEO risk preferences, low payout policy or free cash flow, and firm financial stability. We predict that risk-seeking managers will increase firm risk when they have high free cash flow. If so, firms that retain earnings (or firms with high free cash flow) and are run by risk-seeking managers should be more likely to be in financial distress. Our results support this prediction. Furthermore, we find that risk-averse managers (e.g.,

[48] As a robustness check, we investigate the role of debt in distressed firms' dividend policy. Risk-seeking managers may increase firm risk (e.g., increase leverage) and as a result, the cost of debt. If so, the low payout policy that we find in firms run by risk-seeking managers may hinge on liquidity constraints due to the high cost of debt (Jensen, 1986). The impact of leverage on dividend payout may be more significant in financially distressed firms, since these may have difficulty generating cash flow. To address this, we conduct robustness tests to examine whether our findings survive the effect of cost of debt on the dividend policy in distressed firms. Untabulated results (available upon request) show that the cost of debt financing significantly decreases the propensity to pay dividends in distressed firms. However, even after controlling for the cost of debt, we still find among distressed firms that risk-seeking managers have a lower propensity to pay dividends than risk-averse managers.

managers with high inside debt) do not increase firm risk even when they have a high free cash flow. Complementing our previous findings, these results imply that the effect of free cash flow on firm risk is not uniform and depends on CEO risk preferences. Our study clarifies the contradiction between the findings of DeAngelo and DeAngelo (1990) and Grullon et al. (2002). We show that the effect of low dividend policy (i.e., free cash flow) on firm risk depends on CEO risk tolerance.

In sum, we address whether taking on projects as opposed to paying dividends increases bankruptcy risk, which is especially relevant since the 2008 financial crisis demonstrated that irresponsible investment behavior in aggregate may lead to long-lasting macroeconomic decline. Our study shows that while fewer dividends increase the cash at the disposal of managers, which may be used to adjust capital structure or honor credit requirements, risk-seeking managers may allocate free cash flow in a way that increases firm risk. In our examination, convex compensation structures appear to be associated with financial distress in non-paying firms. However, inside debt appears to prevent managers from engaging in high-risk projects regardless of the availability of excess cash flow. In conclusion, we argue that investors should monitor the allocation of free cash flow and be leery of high-risk acquisitions in non-dividend paying firms, especially in firms run by CEOs with convex compensation.

The remainder of the study is organized as follows: In section 2, we employ a clinical approach and investigate the relation between corporate investment activities and dividend omissions. In section 3, we continue our study in a traditional manner. As such, we briefly discuss relevant studies from the perspective of managerial risk preferences and the dividend policy literature, which leads to the development of testable hypotheses. In section 4, we describe the sources of data, sample selection, and variables used in the analysis. We employ multivariate analyses in the next two sections, before concluding the study in the final section.

3.2 Why do firms omit dividends? A clinical approach

In this section, we employ a clinical method to examine the reasons firms omit dividends by presenting facts from the 10Ks of firms that omit dividends. In our dataset, we determine that 33 firms omitted their recurring dividends in the period of 2006 to 2012. After carefully examining their 10Ks, we observe that all 33 firms made recent investments, and that 31 are planning to invest more in the future. This is consistent with prior literature indicating a trade-off between corporate investments and dividend payouts. For more concrete results, we explore dividend omitting firms' justifications for their decisions to omit dividends. We observe that many firms that omit dividends provide forward-looking statements indicating their plan to invest in growth projects. Below, we present the most obvious statements indicating that firms omit dividends to invest in other projects or growth opportunities.

1. "Infospace Inc. currently intend[s] to retain [their] earnings to finance future growth and therefore, do[es] not anticipate paying any cash dividends on [their] common stock in the foreseeable future" (2009 10K).
2. "[Pulse Electronic Corp. does] not anticipate that [they] will make dividend payments in future periods. [They] believe that use of these funds can generate a higher return if utilized to continue the execution of [their] strategic initiatives" (2012 10K).
3. Startek Inc. "plan[s] to invest in growth initiatives in lieu of paying dividends" (2007 10K).

4. Tuesday Morning Corp. discontinued their cash dividend in 2008, announcing that they will make acquisitions and that "stockholders must look solely to appreciation of our common stock to realize a gain on their investment" (2008 10K).

Further, some firms such as Standard Motor Products Inc., Stein Mart Inc., and the Vicor Corporation do not provide specific reasons for omitting dividends, but report in their 10Ks that they are seeking growth. These examples prove that firms may omit dividends to allocate cash flow in acquisitions or other projects with the hope of increasing shareholder value, supporting the central hypothesis of this study. Furthermore, these examples are consistent with Grullon et al. (2002), who identify an increase in firm risk subsequent to decreases in dividend payouts.

We also notice that several firms such as Entercom Communications Corp. and A. H. Belo Corp. mention substantial indebtedness (i.e., high leverage) in their 10Ks in the years prior to the dividend omission year. We argue that this is consistent with the central hypothesis of the current study: Risk-seeking managers may follow risky corporate policies, which may not increase the firm's cash flow; consequently, they may need to omit dividends.

Next, we focus on firms that omit dividends for conservative-sounding reasons that may support DeAngelo and DeAngelo's (1990) contentions. In our sample, we identify only seven firms providing either conservative or conservative-sounding reasons for their decision to omit dividends. We provide a simplified cash flow statement for these firms in Table 17 for the years around the dividend omission, and discuss their operations below. In Table 17, the numbers in parentheses indicate cash outflows.

1. "[Arctic Cat Inc.'s] investment objectives are first, safety of principal and second, rate of return" (2009 10K). In 2009, the firm paid dividends for the last time, and in the following two years, did not retire any debt obligations. The cash outflow of $0.95 million in 2011 is due to a stock buyback program. Note that the total amount of dividends was $3.7 million in 2009, but over the three-year period starting in 2009, their investments increased by $14.2 million; $6.5 million; and $11.6 million, respectively. That is, the firm had enough cash to pay dividends, but managers preferred to allocate cash in investments. The negative cash flow from operations in 2011 is attributed to their $71 million investment in short-term securities (recorded under operating securities), which is an effort to increase liquidity. However, this is not to meet credit obligations; rather, the firm finances its working capital through short-term borrowing[49]. While this may seem as a conservative policy, it differs from the conservatism suggested in DeAngelo and DeAngelo (1990), as the firm is not hoarding cash to meet long-term credit obligations. Instead, they reserve cash to buy inventories in case the demand for their product increases.

2. Carmike Cinemas omitted dividend payouts in 2009. "[They] … [intend] to allocate available capital primarily to reducing [their] overall leverage" (2009 10K). The firm did so by reducing their credit obligations by more than $80 million in 2008 through 2010. However, the firm also made investments: They opened five theaters in 2009, and their investments totaled $10.5 million and $12.8 million in 2009 and 2010, respectively. These amounts are one and a half times and double the total dollar amount of dividends paid in 2008. Finally, the firm announced they would be investing more if they have more profitable

[49] The nature of the business (the firm sells all-terrain vehicles and snowmobiles) indicates that they face seasonality. Their 10K suggests that they finance working capital through short-term lending. However, fearing that these funds may not be available (or may include covenants they cannot honor), they invested in short-term marketable securities.

opportunities in the future. They announced in their 2009 10K that "[i]f opportunities exist where new construction will be profitable to us, we will consider building additional theatres in future periods." Based on this, it appears that Carmike Cinemas sacrificed dividends to pursue investment. In other words, they financed their growth opportunities using cash that could be paid as dividends, rather than through outside financing.

3. "During fiscal year 2009, [Pier 1 Imports] opened one new store and closed 26 store locations" (2009 10K). The firm omitted dividends in 2007, as "[t]he Company believed that discontinuing the cash dividend would provide financial flexibility as it executed its turnaround strategy." The firm recorded more than $200 million in losses during the period of 2007 to 2009. In the same period, the firm's net investments were positive, which implies they liquidated some investments. Finally, in the same period, the firm raised approximately $10 million through financing activities; however, these proceeds are from stock and stock options and not related to credit obligations. In 2009 (the year after the omission) the firm increased end-year cash and equivalents, which has been decreasing over the 2007-2009 period. The firm's 2008 10K suggests drastically declining sales due to the macroeconomic crisis. As part of the turnaround strategy, the firm may close up to 80 locations to reduce costs. Overall, Pier 1 Import's financing practices are similar to what DeAngelo and DeAngelo (1990) suggest: The firm allocates cash in the restructuring of its operations, instead of paying out dividends or seeking expansion.

4. Furniture Brands Int'l., Inc. omitted dividend payouts in 2009. From 2008 to 2010, the firm had significant cash outflows related to their financing activities, and they still paid off more than $220 million of long-term debt. However, in their 2009 10K, they announced that "[they will] review all capital projects and are committed to execute only on those projects that are either necessary for business operations or have an attractive expected rate of return."

Accordingly, in 2009, they assumed 5 leases and acquired 40 stores. Though the firm did not pay dividends in 2008, resulting in savings of approximately $5.8 million, they made investments worth $5.3 million and $19.1 million in 2009 and 2010, respectively. While paying off long-term debt may seem a conservative policy, the practices of Furniture Brands Int'l., Inc. are similar to those of Carmike Cinemas: They allocated internal cash to investment projects or to pay off long-term debt, instead of paying out dividends.

5. "[Tempur-Pedic International] suspended [their] quarterly dividend payment to redirect the use of these funds to pay outstanding debt [...]." They allocated a net of $400 million cash to retire a chunk of their long-term debt in 2008 through 2011. While this may fit the prediction of DeAngelo and DeAngelo (1990), the firm also announced that "[they] expect to increase investment in capital projects, to create operational efficiencies, and support future growth." In years 2009 and 2010, the firm allocated $51 million in investment activities as opposed to paying out dividends. This amount is almost three times the amount of dividends paid in 2008. We argue that similar to Carmike Cinemas and Furniture Brands Int'l. Inc., Tempur-Pedic International decreased its leverage, although they also made significant investments. The amounts spent on these new investments exceed total amounts of dividends that could have been paid if the firm sustained the last dividend payouts. Note that these firms generated large positive cash flow from operations in the year they omitted dividends and over the two-year period following the omission. Therefore, even though these firms' dividend omission decision seems like a conservative decision as per their 10K, it appears that they preferred capital investments to investments.

6. Wabash National Corp. omitted dividends in 2009 "to enhance liquidity" (2010 10K). In fact, the firm suffered weak liquidity and was not permitted to pay dividends because of binding covenants. While their 2010 10K mentions innovation and corporate growth,

their net investments were very low in 2009 and positive in 2010, indicating they liquidated more assets than they acquired in 2010. In addition, according to their 2009 10K, "[t]here is doubt about [their] ability to continue." Although they paid $45 million toward their revolving credit facility in 2008 and 2009, they borrowed $50 million in 2010, indicating that their indebtedness did not improve. In year 2008—the year before the omission—the firm made investments worth more than $12 million. Tracing their investment back until 2006—two years prior to the dividend omission—we determine that the firm allocated $11.6 and $75.1 million cash in investments in 2007 and 2008, respectively. Based on this, we argue that the firm's decision to omit dividends appears to be linked to its previous investments: Managers of the firm engage in large acquisitions, but fail to generate enough cash flow. This is consistent with the main idea of this study, namely that managerial investment decisions play a role in firms' financial strength and dividend policy decisions.

7. Winnebago Industries Inc. aims to "conserve capital and maintain liquidity" (2010 10K). Their net investments are positive in years around the dividend omission year, indicating that the firm liquidated more assets than it acquired. The firm generated $33 million cash from its operations in 2010, 11 times more than total dividends paid in 2009. However, according to their 10K, Winnebago has $10 million negative cash flow from operation in 2010 consequent to increased inventories caused by an economic slowdown. The firm's practices fit with DeAngelo and DeAngelo's (1990) prediction that firms omit dividends either to increase liquidity or honor credit requirements.

In conclusion, of the 11 firms that we closely examine, only two—Pier 1 Imports and Winnebago Industries Inc.—omitted dividends either to increase liquidity or honor credit requirements, thus consistent with DeAngelo and DeAngelo (1990). On the other hand, several firms clearly stated in their 10Ks that they omit dividends to invest in growth opportunities, while several others make significant investments after omitting dividends. Therefore, our clinical analysis indicates that managers may omit dividend payouts to allocate cash flow in investment projects. Further, our analysis suggests that dividend omissions may be due to recent unfruitful investment activities that drain firms' liquidity. Overall, our initial clinical-based results favor the view that there is a trade-off between dividend payouts investment activities. Next, we continue our study in a traditional manner by first reviewing the related literature to enable to develop hypotheses that are finally empirically tested.

3.3 Literature review and hypotheses

3.3.1 Dividend policy and managerial risk-seeking behavior

Fama and French (2001) show that firms seeking growth pay fewer dividends, because increasing assets-in-place substitute dividends. Grullon et al. (2002) document that firm systematic risk increases subsequent to dividend decreases, suggesting that firms invest excess cash flow in risky ventures when not paid out as dividends. In accordance with these studies, we conjecture that risk-seeking managers are more likely to increase firm risk, as risk-seeking managers are less likely to pay dividends. Our hypothesis is also aligned to Baker and Wurgler's (2004) catering story, namely that managers decrease payouts when the market demands capital gains to divert capital resources to risky projects, ultimately aiming to enhance firm's future prospects. However, the market's appreciation for capital gains may be related to the perception of high growth prospects without realizing that such a policy could result in higher firm risk. Hence, this study addresses a subtle issue not addressed by Baker and Wurgler (2004); because of managers' catering, dividend omissions may be linked to high risk tolerance, which increases firm risk. Finally, our study contributes to Hoberg and

Prabhala's (2009) argument that risk decreases dividend payouts. While they do not address the source of the risk, we develop an argument in which managerial risk preferences lead to higher firm risk and fewer payouts. Our examination elucidates the risk story in Hoberg and Prabhala (2009); we consider managerial risk preferences as the source of risk.

3.3.2 Managerial risk preferences

Following the prior literature, we proxy for managerial risk preferences using CEO equity compensation, CEO equity compensation sensitivity to stock return volatility and stock returns, and CEO inside debt. Under the traditional principal–agent framework (Jensen and Meckling, 1976), equity compensation aligns managers and shareholders' interests by encouraging managers to take on value-increasing projects. Compensation schemes sensitive to stock return volatility, rather than stock returns (i.e., convex compensation) are more likely to encourage seeking risk (see among others Core and Guay, 1999; Guay, 1999; Smith and Stulz, 1985), because convex compensation resolves managerial under-diversification, which may arise from high managerial ownership (Lambert, Larcker, and Verrecchia, 1991). In accordance with prior literature (see Cassell, Huang, Manuel Sanchez, and Stuart, 2012), we employ the CEO vega/delta ratio to measure CEO compensation convexity, and consider CEOs with a high vega/delta ratio to be risk-takers.

In addition, we use inside debt, which is a debt-like compensation leading to managerial conservatism, as it ties the value of CEOs' wealth to the value of debt (Anantharaman, Fang, and Gong, 2010; Edmans and Liu, 2011; Sundaram and Yermack, 2007). We predict that CEOs with high (low) inside debt will exhibit low (high) risk tolerance and pursue risky (less risky) corporate policies. This conjecture builds on the evidence of

Sundaram and Yermack (2007), who determine a higher Z-Score for firms managed by CEOs with high inside debt, thus indicating a lower possibility of financial distress.

3.3.3 Hypotheses

We argue that low dividend policy may increase firm risk if the CEO is a risk-taker. Conversely, DeAngelo and DeAngelo (1990) contend that distressed firms' managers reduce dividends to decrease firm risk. We test these opposing views by examining distressed firms' propensity to omit and pay dividends in relation to CEOs' risk preferences. According to our view, risk-seeking managers should be more likely to omit (or less likely to pay) dividends when the firm performs poorly. This is because we predict these CEOs will invest cash flow in "castle-in-the-air" projects in the hope of rescuing the firm from possible bankruptcy. This hypothesis is consistent with the prospect theory of Kahneman and Tversky (1979), in which people take high-risk gambles to cover previous losses.

For more concreteness, we examine how free cash flow affects the firm's financial stability when the CEO is either risk-averse or a risk-taker. We predict that risk-seeking managers who do not pay dividends are more likely to increase firm risk. This is because fewer dividends increase cash, and consequently the debt capacity, that could be allocated to high-risk projects.

3.4 Data

We collect cross section data from the Center for Research in Security Prices, Standard Poor's Compustat and Execucomp, and Bloomberg. Our main dataset comprises observations from the period 2006 through 2012, because CEO-deferred compensation and pension data has been available since 2006. In our robustness test, the key variable is cost of debt, which has been available since 2009. We exclude small firms (i.e., firms with total assets less than $0.5 million); utilities and financial institutions Standard Industrial Classification - SIC- codes between 4900 and 4949 or 6000 and 6999).

Our main variables of interest are the Z-Score, CEO inside debt, CEO vega, CEO delta, and dividend policy variables. The Z-Score is calculated using firms' working capital, retained earnings, profitability, market value of equity, and sales (see Appendix 3 for the formula). Firms with a Z-Score less than 1.8 are considered distressed. Firms with a Z-Score equal to or more than 3.0 are considered stable, while other firms are considered to be in the "zone of ignorance" (Altman, 1968). We capture firm distress via a binary variable (i.e., *Distressed Firm*), which is 1.0 if the firm's Z-Score is less than 1.8, and 0.0 otherwise. We also create a binary variable, *Stable Firm*, which takes the value of 1.0 if a firm's Z-Score is equal to or more than 3.0. For different times, we compare distressed firms to all other firms, namely stable firms and firms in the zone of ignorance. We refer to these firms as non-distressed firms. *Dividend Payer* and *Retain Earnings* are dummy variables. *Dividend Payer* is 1.0 if the firm's dividend per share by exdate is greater than 0.0 at time *t*, and 0.0 otherwise. *Retain Earnings* is 1.0 if the firm retains all earnings at time *t,* and 0.0 otherwise.

Among the CEO variables, CEO equity is calculated as the sum of restricted stocks, stock holdings, and stock options' dollar value. CEO compensation convexity is measured through the *CEO Vega/Delta Ratio*. Using Black-Scholes option pricing formula (Black and Scholes, 1973), CEO delta was calculated as the change in the value of CEO equity due to a $1 change in the share price. CEO vega is the change in the value of CEO equity due to a 1% change in stock return volatility (Core and Guay, 1999). In accordance with prior literature (Cassell, Huang, Manuel Sanchez, and Stuart, 2012), CEOs with a high vega/delta ratio are characterized as more risk-seeking than the others.

CEO inside debt is the second CEO risk preference proxy. This is calculated as the sum of CEO deferred compensation and pension. The value of inside debt is tied to the market value of the firm's debt, and can be collected only after retirement. High inside debt is expected to lead to managerial conservatism (see Jensen and Meckling, 1976; Sundaram and Yermack, 2007). In particular, CEOs whose personal leverage (i.e., CEO inside debt to CEO equity ratio) is higher than firm leverage (i.e., debt/equity ratio) are expected to be risk-averse. We predict non-paying firms run by CEOs with high inside debt will have a higher Z-Score. In our empirical analysis, we use a binary variable, *High CEO Relative Ratio*, which is 1.0 if the CEO's personal leverage is higher than firm leverage and 0.0 otherwise, to capture managerial risk aversion.

In addition, we use CEO age and tenure to proxy for CEO as control variables, as these affect CEOs' risk preferences. Prior literature suggests that older CEOs or CEOs with longer tenure employ less risky policies, because they are closer to retirement, have accumulated enough wealth, and are more concerned about damaging their reputations (Berger, Ofek and Yermack, 1997; Coles, Daniel and Naveen, 2006).[50]

3.4.1 Descriptive statistics

According to the view develop in this study, distressed firms should be associated with risk-seeking managers and have a lower propensity to pay dividends. To provide relevant insights from the data, Table 18 presents descriptive statistics for firms that are financially

[50] We trim all variables at 1% and 99% to exclude extreme observations.

distressed (Panel A) and non-distressed (Panel B). Note that the column on the far right (Panel C) shows the sample mean differences between distressed and non-distressed firms (i.e., distressed less non-distressed). The results show no significant difference between distressed and non-distressed firms in terms of payout ratio and dividend yield. Consistent with previous survey-based responses (DeAngelo and DeAngelo, 1990), we find that only 7% of distressed firms pay dividends, compared to 34.5% of non-distressed firms. We also observe that compared to the CEOs of non-distressed firms, CEOs of distressed firms have a higher vega/delta ratio (0.810 compared to 0.428), and lower inside debt ($0.29 million compared to $0.84 million). These results are all significant according to two-tailed *t*-tests at the 1% level, indicating that financially distressed firms are largely managed by risk-seeking CEOs. We also find that CEOs of distressed firms have lower equity holdings ($15.67 million compared to $25.26 million). This is consistent with Jensen and Meckling (1976) in that equity compensation encourages CEOs to work in shareholders' best interests. However, further analysis is required to reach a concrete conclusion because depending on its convexity, equity compensation may also lead to excessive risk taking. Thus far, the results indicate that financially distressed firms pay fewer dividends and are run by risk-seeking managers. These two findings are aligned to our view that risk-seeking managers invest in high-risk projects (as opposed to paying dividends), and thus increase firm risk.

Descriptive statistics also show that distressed firms have significantly lower capital expenditures, but higher R&D expenses, indicating that non-distressed prefer low-risk investments. The non-distressed firms in our sample increase their assets on average by 6%, and their average market/book ratio is 2.09. On the other hand, the assets of distressed firms decrease by more than 15% each year, and their average market-to-book ratio is 1.81. Finally, we find that compared to non-distressed firms, distressed firms are smaller (measured by market equity: $274 million compared to $724 million), less profitable ($193 thousand loss compared to $69 thousand profit), and have a significantly higher cost of debt (2.3% compared to 1.3%). Note that the number of observations for the cost of debt is considerably smaller, because of data availability.

3.4.2 Correlation coefficients

The correlation coefficients in Table 19 show a positive relation between Z-Score and firm size (27.54%), profitability (76.06%), and market/book ratio (10.91%). This pattern suggests that larger, more profitable, and firms with higher growth opportunities are less likely to be in distress. Consistent with the prior literature, we find that Z-Score is negatively correlated with *CEO Vega/Delta Ratio* (−31%) and *R&D* (−74%), indicating that risk-seeking managers and risky corporate investments increase the probability of financial distress.

The cost of debt and Z-Score are negatively correlated (−29%) at the 1% level, implying that financially stable firms have a lower cost of debt. Unlike the argument of DeAngelo and DeAngelo (1990), we find Z-Score is not significantly correlated with dividend yield or payout ratio. Finally, the correlation between Z-Score and CEO inside debt is not statistically significant, although we find that inside debt is positively associated with dividend per share (9.52%), dividend yield (6.28%), and dividend payout ratio (4.02%). The first two are significant at the 1% level, and the third is significant at the 5% level. Consistent with the central argument of this study, these findings indicate that, compared to firm financial stability, managerial risk aversion may play a more significant role in the dividend policy decision.

3.4.3 Preliminary findings

We begin our multivariate analyses by examining the effect of firm financial distress on dividend policy. The results show that distressed firms (i.e., firms with Z-Score less than 1.8) are 59% less likely, and stable firms (i.e., firms with Z-Score more than 3.0) 1.17 times more likely to pay dividends compared to firms in the zone of ignorance[51] (The results are omitted for scrutiny, but are available upon request). These findings coincide with DeAngelo and DeAngelo (1990), who note that most distressed firms pay fewer dividends. However, these findings may not be sufficient to conclude that managers of distressed firms decrease payouts to decrease firm risk. In the following sections, we fill this void by incorporating managerial risk preferences into our analyses.

3.5 CEO risk preferences and the dividend policy of distressed firms

3.5.1 Firm distress and propensity to omit dividends

We begin our multivariate analyses through a cross section test of DeAngelo and DeAngelo's findings. Unlike these authors, we argue that distressed firms may omit dividends to invest cash flow in high-risk projects, which increases the risk of bankruptcy. This hypothesis is derived from Kahneman and Tversky's (1979) prospect theory, which contends that people may take high-risk gambles to make up for prior losses. It also aligns to the findings of Grullon et al. (2002). If we find that distressed firms run by risk-seeking managers are more likely to omit dividends, then this would provide evidence supporting prospect theory's gambling hypothesis. However, if we find that risk-averse managers are more likely to omit dividends in distressed firms, this would support the view of DeAngelo and

[51] Control variables in these regressions show that larger or more profitable firms have a higher propensity to pay dividends, which is consistent with the prior literature. Conversely, firms that invest in Capex and especially in R&D, a riskier type of investment, or firms that have a higher market-to-book ratio are less likely to pay dividends (see Fama and French (2001) for example).

DeAngelo, who argue that managers of distressed firms reduce dividend payouts as a conservative policy. We test these views by estimating the following model:

$$Logit(OmitP) = \alpha + \beta_M M_{Risk_{j,t}} + \sum_{int \in INT} \beta_{int} INT_{j,t} + \sum_{f \in F} \beta_f f_{j,t} + \sum_{y \in Y} \beta_y y_{j,t} + \sum_{sic \in SIC} \beta_s sic_{j,t} + \varepsilon_{i,t}$$

In this model, the dependent variable is 1.0 if the firm omits dividends at time *t*, and 0.0 otherwise. M_{Risk} is a set of variables (i.e., CEO equity compensation, *CEO Vega/Delta Ratio*, and CEO inside debt) to capture managerial risk preferences. INT is a set of interaction variables (*Distressed Firm *CEO Equity*, *Distressed Firm *CEO Vega/Delta,* and *Distressed Firm *High CEO Relative Leverage*) that capture the role of CEOs' risk preferences in dividend omissions in distressed firms. f, $y_{j,t}$, and SIC are control variables for firm characteristics, year fixed effects, and industry fixed effects, respectively. We present the results of this analysis in Table 20. In logistic regression, estimated coefficients are converted into percentages as follows: $\left(e^{\text{coef.}} - 1\right) * 100$

In model (1) and (2), the coefficients of *CEO Equity* and the interaction variable *Distressed Firm *CEO Equity* are insignificant. This implies that CEO equity compensation does not affect the propensity to omit dividends regardless of the firm's financial stability. We continue our analysis by examining the effect of *CEO Vega/Delta Ratio* on the propensity to omit dividends. Based on prospect theory, we predict that risk-seeking managers will take on projects to revert the firm's prospects. If so, risk-seeking managers (e.g., CEOs with a high vega/delta ratio) may be more likely to omit dividends when the firm is in distress. We test this hypothesis in models (3) and (4). We do not find a significant link between *CEO Vega/Delta Ratio* and propensity to omit dividends in model (3). However, in model (4), the coefficient of the interaction variable *Distressed Firm*CEO Vega/Delta Ratio* is 15.71 and significant at the 1% level. The results of model (4) suggest that in distressed firms, risk-seeking managers are highly likely to omit dividends. This finding supports the hypothesis we derive from prospect theory.

Next, we examine the effect of CEO relative leverage on the propensity to omit dividends in models (5) and (6). In these models, the coefficients of *High CEO Relative Leverage* are −1.75 and −1.67, which are significant at the 5% level. In economic terms, the results of these models suggest that managers whose personal leverage is higher than that of the firm are 81%–82%[52] less likely to omit dividends. Note that in model (6) the interaction variable *Distressed Firm*High CEO Relative Leverage* is insignificant, thus indicating that risk-averse CEOs do not omit dividends in financially distressed firms. This finding casts a doubt on DeAngelo and DeAngelo (1990) who suggest that dividend omissions among distressed firms is a conservative policy.

In model (7), we combine all three managerial risk preference variables, and in model (8), we include all managerial risk preference proxies and interaction variables. The results of these models are consistent with the prior models in the same table: Risk-seeking managers are more likely to omit dividends in distressed firms. Our findings cast doubt on prior literature that suggests managers of distressed firms omit dividends as a conservative policy.

---

[52] $(e^{-1.67} - 1) * 100 = -82\%$

3.5.2 Firm distress and propensity to pay dividends

In this section, we examine risk-seeking and risk-averse CEOs' propensity to pay dividends in distressed firms. We estimate the same model in Section 5.1, except that now the dependent variable is 1.0 if the firm pays dividends at time *t*, and 0.0 otherwise. We present the results in Table 21. In model (1), the interaction of firm distress and CEO equity holdings is insignificant. In model (2) the coefficient of the interaction variable *Distressed Firm *CEO Vega/Delta Ratio* is −6.04, implying that in distressed firms a one-point increase in *CEO Vega/Delta Ratio* decreases the propensity to pay dividends by 99%.[53] It is also interesting that the coefficient of *Distressed Firm* becomes insignificant when the *Distressed Firm *CEO Vega/Delta Ratio* enters the model. This suggests that the low payout policy of distressed firms could be attributed to managerial risk-seeking behavior. This is consistent with the central argument of this study, namely that risk-seeking managers decrease dividend payouts to invest cash flow in high-risk projects.

In model (3), the coefficient of the interaction variable *Distressed Firm *High CEO Relative Leverage* is 2.46 and significant at the 1% level. Hence, our findings show that CEOs whose personal leverage is higher than that of the firm (i.e., risk-averse managers) are 10 times more likely to pay dividends, even when the firm is in distress.[54] Perhaps, this is because conservative CEOs fear that a reduction in dividends will signal poor future prospects to the market, which may collapse the value of equity (Miller and Rock, 1985). Such a reaction would adversely affect a firm's ability to issue equity or debt in the future.

[53] $(e^{-6.04} - 1) * 100 = -99\%$
[54] $(e^{2.46} - 1) * 100 = 1070\%$

We continue our analysis by combining all our proxies in model (4). We find that the coefficient of *Distressed Firm*High CEO Relative Leverage* is positive, but becomes insignificant, while other variables act the same with slightly different coefficient magnitudes and statistical significance. The change in the coefficient of *Distressed Firm*High CEO Relative Leverage* may be due to the interaction variable *Distressed Firm*CEO Equity*, which was insignificant in the first model. To address this, we estimate model (5) without this interaction variable, observing that the coefficient of inside debt becomes significant, but with a smaller coefficient and *t*-value compared to those in the second model. In addition, note that older CEOs and CEOs with longer tenure are more likely to pay dividends. The coefficients of these two variables are positive and significant at the 1% and 5% level, respectively.

As a robustness check, we investigate whether the cost of debt affects the propensity to pay dividends among distressed firms. Jensen (1986) argues that debt may substitute dividends, since it increases cash flow to creditors. Our findings may be biased, as risk-seeking managers may increase firm risk and thus the cost of debt (i.e., cash flow to creditors). Therefore, the high cost of debt may be reducing the propensity to pay dividends. To address this concern, we re-run the regression presented in Table 21, this time including the cost of debt as a control variable. (These results are omitted, but available upon request). We find that the cost of debt financing significantly decreases the propensity to pay dividends in distressed firms. However, even after controlling for the cost of debt, we still find among distressed firms that risk-seeking managers have a lower propensity to pay dividends than risk-averse managers. Overall, the results of this section support the view that the low payout policy of distressed firms may be due to a managerial risk-seeking behavior.

3.6 CEO risk preferences and the effect of free cash flow on firm financial stability

3.6.1 Earnings retention and firm distress

In this study, we predict that risk-seeking CEOs may increase firm risk by investing in risky projects when they have more cash at their disposal. Note that retaining earnings can also increase the firm's debt capacity and may lead to high leverage. With this view, we address two conflicting findings in the literature. On the one hand, DeAngelo and DeAngelo (1990) suggest that retaining earnings increases may help the firm decrease firm risk, assuming that the CEO allocated excess cash conservatively. On the other hand, Grullon et al. (2002) provide empirical evidence that a low payout policy increases firm systematic risk.

In this study, we add to this literature by accounting for CEO risk preferences. As such, we argue that if the CEO is a risk-taker, non-paying firms should be more likely to be in financial distress, since risk-seeking CEOs are more likely to prefer risky opportunities. However, if the CEO is conservative, then retained earnings should be allocated to increase firms' financial strength, in other words, increase a firm's Z-score. We test this view with the following model:

$$Logit(Z - Score) = \alpha + \beta_M \, M_{Risk\,j,t} + \sum_{int \in INT} \beta_{int} \, INT_{j,t} + \sum_{f \in F} \beta_f \, f_{j,t} + \sum_{y \in Y} \beta_y \, y_{j,t} + \sum_{sic \in SIC} \beta_s \, sic_{j,t} + \varepsilon_{i,t}$$

In this model, the dependent variable is 1.0 if the firm is financially stable, and 0.0 otherwise. We measure financial stability using the Z-Score, and consider firms with a Z-Score equal to or more than 3.0 as stable. M_{Risk} is a set of variables (i.e., *CEO Equity, CEO Vega/Delta Ratio, and High CEO Relative Leverage*) measuring CEO risk tolerance. INT is a set of interaction variables (*Retain Earnings*CEO equity*, *Retain Earnings*CEO High*

CEO Relative Leverage, and *Retain Earnings*CEO Vega/Delta Ratio*) that capture the effect of CEO risk preferences on firm risk when CEOs retain earnings. As before, f, $y_{j,t}$, and SIC are control variables for firm characteristics, year, and industry fixed effects, respectively. According to our hypothesis, *Retain Earnings*CEO Equity and Retain Earnings*CEO Vega/Delta Ratio* should negatively impact a firm's financial stability, as risk-seeking managers may invest cash flow in high-risk projects.

The results obtained from the eight models used in this analysis are presented in Table 22. In the first model, we examined the effect of *CEO Equity* on the financial stability of a firm, and do not find a significant association. In model (2), we examine how non-dividend paying CEOs with high equity compensation affect the firm's financial stability by adding the interaction variable *Retain Earnings*CEO Equity*. We determine the coefficient of *Retain Earnings*CEO Equity* as −0.03 and significant at the 1% level. In economic terms, we find that $1 million increase in CEOs' equity compensation in dividend paying firms increases a firms' propensity to be financially stable by 3%.[55]

These findings indicate that managers with high equity compensation may increase firm risk when they have excess cash (e.g., when they do not pay dividends). Note that the coefficient of *CEO Equity* is 0.027 and becomes significant at the 1% level when the interaction variable *Retain Earnings*CEO Equity* is added to the model. This implies that in the absence of abundant cash, CEO equity compensation encourages CEOs to follow corporate policies that improve the firm's financial stability.

[55] $(e^{-0.03} - 1) * 100 = -2.95\%$

In models (3) and (4), we repeat the examination described above for managers with high vega/delta ratio compensation (i.e., convex compensation that triggers risk-seeking behavior). In model (3), we find that a convex compensation alone does not have a significant effect on firm's financial stability, since *High CEO Vega/Delta Ratio* enters the regression with an insignificant coefficient. In model (4), we employ the interaction variable *Retain Earnings*CEO Vega/Delta Ratio* to capture the effect of CEO compensation convexity on firm financial stability. The results of model (4) show that the coefficients of *CEO Vega/Delta Ratio* and *Retain Earnings*CEO Vega/Delta Ratio* are 2.74 and −2.76, respectively. According to our results, a one-point increase in the CEO's vega/delta ratio in dividend paying firms increases the firm's propensity to be financially stable by almost 15 times.[56] Conversely, a one-point increase in the CEO's vega/delta ratio decreases the firm's propensity to be financially stable by 93%.[57] These results suggest that risk-seeking managers that do not pay dividends (i.e., CEOs that retain all earnings) allocate cash flow to projects that increase firm risk. These findings confirm those of model (2).

Next, in models (5) and (6), we examine how dividend paying and non-dividend paying managers with high inside debt affect a firm's financial stability. We determine the coefficients of *High CEO Relative Leverage* as 1.068 and 1.16 in models (5) and (6) respectively, both of which are significant at the 1% level. These findings imply that when the CEO debt/equity ratio is above that of the firm's (e.g., risk-averse managers), the firm is approximately two times more likely to be financially stable regardless of retained earnings.[58]

---

[56] $(e^{2.77} - 1) * 100 = 1495\%$
[57] $(e^{-2.79} - 1) * 100 = -93.86\%$
[58] $(e^{1.068} - 1) * 100 = -2.95\%$, $(e^{1.16} - 1) * 100 = -2.95\%$

In model (7), we combine all managerial risk preference variables, and in model (8), we include managerial risk preference variables and the interaction variables that capture the effect of CEO risk preferences regarding non-dividend paying on the firm's financial strength. In model (7), the only significant variable is inside debt, indicating that risk-averse managers contribute to the firm's financial strength. When we estimate the last model by including all proxies and interaction variables, the results show that the significance and magnitudes of our proxies decrease when other proxies enter the model compared to models (3), (5), and (7). *Retain Earnings*CEO Vega/Delta Ratio* and *Retain Earnings*CEO Vega/Delta Ratio* are significant at 5%, as opposed to 1%. However, the implications of these findings remain the same and reinforce our previous findings that risk-seeking CEOs with excess cash flow may increase the likelihood of financial distress. Findings regarding the control variables are consistent with the prior literature, as we confirmed that profitability and firm size strengthen the firm's financial stability, whereas high R&D expenditures may cause financial distress.

In conclusion, we find no evidence supporting the notion that a low payout policy improves a firm's financial stability, as DeAngelo and DeAngelo suggest. Developed in this study, our view is supported by the data and complements Grullon et al. (2002). Primarily, the results demonstrate that non-dividend paying firms increase the likelihood of reducing financial stability if their managers are risk-seekers and/or compensation contracts are designed to incentivize risk-taking behavior.

3.6.2 Free cash flow and firm distress: A robustness check

In this subsection, we estimate a set of regressions similar to those described in Section 6.1, except we replace *Retain Earnings* with *Free Cash Flow*. Unlike the dummy variable *Retain Earnings*, *Free Cash Flow* is a continuous variable calculated as the difference between operating income and total dividends. The advantage of this variable is that it shows the amount of cash left at the CEOs disposal after dividends payouts, allowing us to control for a possible bias that may be caused by CEOs who pay dividends but still have a high free cash flow. We estimate the following model:

$$Logit(Z - Score) = \alpha + \beta_{FCF}\, FCF_{j,t} + \sum_{int \in INT} \beta_{int}\, INT_{j,t} + \sum_{f \in F} \beta_f\, f_{j,t} + \sum_{y \in Y} \beta_y\, y_{j,t} + \sum_{sic \in SIC} \beta_s\, sic_{j,t} + \varepsilon_{i,t}$$

In this model, the dependent variable is 1.0 if the firm is financially stable at time *t*, and 0.0 otherwise. FCF is free cash flow available to the CEO at time *t*. INT is a set of interaction variables (*FCF*CEO equity*, *FCF *CEO High CEO Relative Leverage*, and *FCF *CEO Vega/Delta Ratio*) that capture the effect of CEO risk preferences on firm risk when the CEO has high free cash flow. As before, f, $y_{j,t}$, and SIC are control variables for firm characteristics, year, and industry fixed effects, respectively. The results are presented in Table 23.

The first model in Table 23 shows that firms with high free cash flow are more likely to be financially stable. A $1 million increase in free cash flow makes the firm 3.17 times more likely to be financially stable.[59] In the next three models, we examine how free cash flow affects the firm's financial stability when the CEO has high equity, convex compensation, or high inside debt, respectively. In model (2), we find that CEOs with high equity compensation do not affect the firm's financial stability negatively or positively when they have high free cash flow at their disposal. This is interesting, as according to Jensen and Meckling (1976), equity compensation compels managers to work in shareholders' best interests. The results in model (3) indicate that firms run by high vega-to-delta ratio CEOs

[59] $(e^{1.43} - 1) * 100 = 317.86\%$

(i.e. risk-seeking CEOs) are less likely to be financially stable when the firm has high free cash flow. This finding is consistent with our central argument that risk-seeking CEOs may increase firm risk when they do not pay out cash flow as dividends.

The findings in model (4) show that the coefficient of *FCF*High CEO Relative Leverage* is positive (8.04) and significant at the 1% level. This suggests that firms with free cash flow are a lot more likely to be financially stable when the CEO is conservative (i.e., when the CEO has high inside debt). Note that the significance of *Free Cash flow* disappears when *FCF*High CEO Relative Leverage* is included in the model. According to this finding, the effect of free cash flow on firm financial stability depends on CEO risk aversion. Finally, we estimate model (5) by including all three interaction variables. The results of this model confirm those of the previous models.

Overall, these findings support the central argument of our study that risk-seeking CEOs may increase firm risk when they have high free cash flow at their disposal, for example, when they do not pay dividends.

3.7 Summary and conclusion

In this study, we argue that the effect of low payouts on firm risk may depend on managerial risk preferences. Specifically, we argue that retained earnings may be invested in high-risk projects and increase firm risk if the non-paying firm's CEO is a risk-taker. Our arguments offer a resolution to the conflicting findings on the effect of dividend policy on firm risk. On the one hand, based on an 80-firm survey study, DeAngelo and DeAngelo (1990) conclude that a low dividend policy increases firms' financial distress, as high free cash is used to honor credit requirements or increase liquidity. On the other hand, Grullon et al. (2002) empirically confirm that low dividend disbursements increase a firm's systematic risk. If our argument is true, conflicting findings in the literature could be attributed to varying CEO risk preferences.

We test our view in multiple ways. First, we employ a clinical analysis to examine the reason firms omit dividends. In several firms' 10Ks we find evidence indicating that firms omit dividends to take on investment projects. Second, we test whether the low payout policy of distressed firms' (as documented in DeAngelo & DeAngelo, 1990) is related to CEO risk preferences. We investigate whether managers of distressed firms invest in projects to revert the firm's prospects, similar to the gambling hypothesis of the prospect theory. We find that in distressed firms, risk-seeking CEOs are more likely to omit and less likely to pay dividends, implying that the low payout of poorly performing firms may not be due to managerial conservatism, as argued in the prior literature; instead, it is due to CEOs' risk-seeking incentives.

Next, we turn to the big picture and examine whether firms that retain earnings or firms with high free cash flow are more likely to be in distress. Our view predicts that risk-seeking CEOs increase firm risk when they have high free cash flow at their disposal. We confirm that firms with high free cash flow are more likely to be in financial distress when managers have convex compensation (i.e., risk-seeking behavior inducing compensation). The results also show that free cash flow decreases the likelihood of financial distress only if the CEO is conservative (i.e., when the CEO has high inside debt).

In conclusion, our results suggest that the effect of dividend policy on firm risk depends on CEOs' risk preferences: Managers with convex compensation packages are more likely to increase firm risk when they have high free cash flow, whereas CEOs with high inside debt do not increase firm risk regardless of the availability of free cash flow. Our study implies that investors should monitor the allocation of free cash flow and be leery of high-risk acquisitions in non-dividend paying firms, especially in firms run by CEOs with convex compensation. CEO convex compensation, conventionally proposed to align agent and principal interests, does not seem to serve shareholders' interests.

REFERENCES

Aharony, J., and Swary, I,. 1980, Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis, *Journal of Finance* 35, 1-12.

Allen, F., Michaely R., 2003, Payout policy, *Handbook of the Economics of Finance* 1, 337–429.

Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, *23*(4), 589–609.

Anantharaman, D., Fang, V. W., & Gong, G., 2013, Inside Debt and the Design of Corporate Debt Contracts. *Management Science*, *60*(5), 1260–1280.

Baker, M., Nagel, S., and Wurgler, J., 2006, The effect of dividends on consumption, *National Bureau of Economic Research Working Paper Series* No. 12288.

Baker, M., and Wurgler, J., 2004, A catering theory of dividends, *Journal of Finance* 59, 1125–1166.

Berger, P. G., Ofek E., and Yermack, D. L., 1997, Managerial entrenchment and capital structure decisions, *Journal of Finance* 52, 1411–1438.

Bhattacharya, S., 1979, Imperfect information, dividend policy, and "the bird in the hand" fallacy, *The Bell Journal of Economics* 10, 259-270.

Black, F., and Scholes, M., 1973, The pricing of options and corporate liabilities, *Journal of Political Economy* 81, 637–654.

Breuer, W., Rieger, M. O., and Soypak, K. C., 2012, The behavioral foundations of corporate dividend policy. A cross-country empirical analysis, Working paper, http://ssrn.com/abstract=1804265.

Cassell, C. A., Huang, S. X., Sanchez, J. M., and Stuart, M. D., 2012, Seeking safety: The relation between CEO inside debt holdings and the riskiness of firm investment and financial policies, *Journal of Financial Economics* 103, 588–610.

Charitou, A., Lambertides, N., and Theodoulou, G., 2011, Dividend increases and initiations and default risk in equity returns, *Journal of Financial and Quantitative Analysis* 46, 1521-1543.

Chen, F., Dou, Y., and Wang, X., 2011, Executive inside debt holdings and creditors' demand for pricing and non-pricing protections, Working paper, http://www-2.rotman.utoronto.ca/userfiles/departments/accounting/File/inside%20debt%20contracting%200930.pdf.

Coles, J., Daniel, N. D., and Naveen, L., 2006, Managerial incentives and risk-taking, *Journal of Financial Economics* 79, 431–468.

Core, J., and Guay, W., 1999, The use of equity grants to manage optimal equity incentive levels, *Journal of Accounting and Economics* 28, 151–184.

Core, J., and Guay, W., 2002, Estimating the value of employee stock option portfolios and their sensitivities to price and volatility, *Journal of Accounting Research* 40, 613–630.

Core, J. E., Guay, W., and Larcker, D. F., 2003, Executive equity compensation and incentives: A survey, *Economic Policy Review* 9, 27–50.

DeAngelo, H., & DeAngelo, L., 1990, Dividend Policy and Financial Distress: An Empirical Investigation of Troubled NYSE Firms. *Journal of Finance*, *45*(5), 1415–1431.

DeAngelo, H., and DeAngelo, L., 2006, The irrelevance of the mm dividend irrelevance theorem, *Journal of Financial Economics* 79, 293–315.

DeAngelo, H., DeAngelo, L., and Stulz, R. M., 2006, Dividend policy and the earned/contributed capital mix: A test of the life-cycle theory, *Journal of Financial Economics* 81, 227–254.

Deshmukh, S., Goel, A. M., and Howe, K. M., 2009, CEO overconfidence and dividend policy, Working paper, Federal Reserve Bank of Chicago.

Edmans, A., and Liu, Q., 2011, Inside debt, *Review of Finance* 15, 75–102.

Fama, E. F., and French, K. R., 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3–56.

Fama, E. F., and French, K. R., 2001, Disappearing dividends: Changing firm characteristics or lower propensity to pay? *Journal of Financial Economics* 60, 3–43.

Graham, B., and Dodd, D. L. F., 1951. *Security Analysis* (McGraw-Hill, New York).

Grullon, G., Paye B., Underwood, S., and Weston, J. P., 2011, Has the Propensity to Pay Out Declined?, *Journal of Financial and Quantitative Analysis* 46, 1–24.

Grullon, G., Michaely, R., and Swaminathan, B., 2002, Are dividend changes a sign of firm maturity? *Journal of Business* 75, 387–424.

Guay, W. R., 1999, The sensitivity of CEO wealth to equity risk: An analysis of the magnitude and determinants, *Journal of Financial Economics* 53, 43–71.

Hagendorff, J., and Vallascas, F., 2011, CEO pay incentives and risk-taking: Evidence from bank acquisitions, *Journal of Corporate Finance* 17, 1078–1095.

Handjinicolaou, G., and Kalay, A., 1984, Wealth Redistributions of Changes in Firm Value - An Analysis of Returns to Bondholders and Stockholders around Dividend Announcements, *Journal of Financial Economics* 13, 35–63.

Hoberg, G., and Prabhala, N. R., 2009, Disappearing dividends, catering, and risk, *Review of Financial Studies* 22, 79–116.

Jensen, M. C., 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323–329.

Jensen, M. C., and Meckling, W. H., 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305–360.

Kahneman, D., and Tversky, A., 1979, Prospect theory: An analysis of decision under risk, *Econometrica* 47, 263–292.

Kalay, A., 1982, Stockholder-bondholder conflict and dividend constraints, *Journal of Financial Economics* 10, 211–233.

Kempf, A., Ruenzi, S., and Thiele, T., 2009, Employment risk, compensation incentives, and managerial risk taking: Evidence from the mutual fund industry, *Journal of Financial Economics* 92, 92–108.

Knopf, J. D., Nam, J., and Thornton, Jr., J. H., 2002, The volatility and price sensitivities of managerial stock option portfolios and corporate hedging, *Journal of Finance* 57, 801–813.

Lambert, R. A., Larcker, D. F., and Verrecchia, R. E., 1991, Portfolio considerations in valuing executive compensation, *Journal of Accounting Research* 29, 129–149.

Lewellen, W., Loderer, C. and Martin, K., 1987, Executive compensation and executive incentive problems: An empirical analysis, *Journal of Accounting and Economics* 9, 287–310.

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

Merton, R. C., 1973, Theory of rational option pricing, *Bell Journal of Economics* 4, 141–183.

Michaely, R., Thaler, R. H., and Womack, K. L., 1995, Price reactions to dividend initiations and omissions: Overreaction or drift?, *Journal of Finance* 50, 573-608.

Miller, M. H., and Modigliani, F., 1961, Dividend policy, growth, and the valuation of shares, *Journal of Business* 34, 411–433.

Miller, M. H., and Rock, K., 1985, Dividend policy under asymmetric information, *Journal of Finance* 40, 1031-1051.

Nam, J., Ottoo, Richard E., and Thornton, Jr., J. H., 2003, The effect of managerial incentives to bear risk on corporate capital structure and R&D investment, *Financial Review* 38, 77–101.

Pan, C. H., and Statman, M., 2012, Questionnaires of Risk Tolerance, Regret, Overconfidence, and Other Investor Propensities. *SCU Leavey School of Business,* Research Paper No. 10-05. Available at SSRN: http://ssrn.com/abstract=1549912

Redding, L. S., 1998, Can risk aversion explain the demand for dividends? Working paper, http://dspace.gla.ac.uk/handle/1905/555.

Rozeff, M. S., 1982, Growth, beta and agency costs as determinants of dividend payout ratios, *Journal of Financial Research* 5, 249–259.

Serfling, M. A., 2014, CEO age and the riskiness of corporate policies, *Journal of Corporate Finance* 25, 251–273.

Shefrin, H. M., and Statman, M., 1984, The disposition to sell winners too early and ride losers too long: Theory and evidence, *Journal of Finance* 40, 777–790.

Shefrin, H. M., and Thaler, R. H., 1988, The behavioral life-cycle hypothesis, *Economic inquiry* 26, 609–643.

Shen, C. H., and Zhang, H., 2013, CEO risk incentives and firm performance following R&D increases, *Journal of Banking & Finance* 37, 1176–1194.

Smith, C. W., and Stulz, R M., 1985, The determinants of firms' hedging policies, *Journal of Financial and Quantitative Analysis* 20, 391–405.

Sundaram, R. K., and Yermack, D. L., 2007, Pay me later: Inside debt and its role in managerial compensation, *Journal of Finance* 62, 1551–1588.

Tufano, P., 1996, Who manages risk? An empirical examination of risk management practices in the gold mining industry, *Journal of Finance* 51, 1097–1137.

White, R. S., 2012, Three Essays on Inside Debt, Doctoral Dissertations. Paper 5. http://digitalcommons.uconn.edu/dissertations/5

APPENDICES

Appendix 1. Company variables

This Appendix presents company variables in *italics*. Variables are listed in the alphabetical order and Compustat Mnemonics are given in parentheses.

- *Book Equity* = *Shareholder Equity* – *Preferred Stock* + Balance Sheet Deferred Taxes and Investment Tax Credits (TXDITC);
- *Capex/Total Assets Ratio* = Capital Expenditures (CAPX)/Assets (AT);
- *Daily Excess Return* (e) is estimated using the market model in the 36-month period before $t = 0$ $r - r_f = a + \beta\left(r_m - r_f\right) + e$, where r is daily stock return, r_m is daily market return, r_f is daily risk–free rate. Market return and daily risk-free is obtained from Kenneth French's website (see footnote 9);
- *Debt/Equity* = Liabilities (LT) / *Market Equity*;
- *Dividend Yield* = Dividend per Share by ExDate (DVPSX)/Stock Price (PRCCF);
- *Dividend Payout Ratio* = Total dividends [Dividend per Share by ExDate (DVPSX) * Shares Outstanding (CSHO)]/*Earnings Available for Common*;
- *Earnings Available for Common* = Earnings before Extraordinary Items (IB) – Preferred Dividends (DVP) + Income Statement Deferred Taxes (TXDITC);
- *Idiosyncratic Risk* is the standard deviation of *Daily Excess Returns* over the period of *t*= -36 to *t*=-1;
- *Market/Book Ratio* = *Market Equity/Book Equity*;
- *Market Equity* = Stock Price (PRCCF) * Shares Outstanding (CSHO);
- *Net payout (1):* Total dividends [Dividend per Share by ExDate (DVPSX) * Shares Outstanding (CSHO)] - *Value of Stocks that are Bought Back*;

- *Net payout (2):* Total dividend payouts [Dividend per Share by ExDate (DVPSX) * Shares Outstanding (CSHO)] + the change in the value of treasury stock [or Purchase of Common and Preferred Stock (PRSTKC) - Sale of Common and Preferred Stock (SSTK)];
- *Net payout (3):* Purchase of Common and Preferred Stock (PRSTKC) - Sale of Common and Preferred Stock (SSTK);
- *Preferred Stock* = Preferred Stock Liquidating Value (PSTKL) [or Preferred Stock Redemption Value (PSTKRV), or Preferred Stock Par Value (PSTK)];
- *R&D/Total Assets Ratio* = R&D Expense (XRD)/Assets (AT);
- *Relative Dividend Premium* = Value-weighted average *Market/Book Ratio* of dividend paying firms less the *Market/Book Ratio* of firm *i;*
- *Retained Earnings/Total Assets Ratio*= Retained Earnings (RE) / Total Assets (AT);
- *Return volatility* = Standard deviation of daily stock returns: $\sqrt{\frac{\sum_{t=-255}^{-1}(r_t-\bar{r})^2}{254}}$, where r_t is the daily stock return of firm *i,* which is collected from CRSP with mnemonic *RETX.*
- *Shareholder Equity* = Shareholders' Equity (SEQ) [or Common Equity (CEQ) + Preferred Stock Par Value (PSTK) or Assets (AT) – Liabilities (LT)];
- *Firm Size* = the percentage of firms with smaller Market Equity at time *t;*

Value of Stocks that are Bought Back = (Number of shares outstanding time *t* – Number of shares outstanding time *t-1*) * ((Share price time *t* + Share price time *t-1*)/2). Number of shares outstanding and share price are collected from CRSP with mnemonics *CRSP_ADJ_SHR and CRSP_ADJ_PRC,* respectively.

Appendix 2. Derived CEO variables

In this study, we derive CEO stock option values, deltas, and vegas twice: One for the 2006 through 2011 period, which is the main data set since it includes CEO inside debt and one for 1995 through 2008 period. For the 2006 through 2011 period, we derive CEO stock option values, deltas, and vegas separately for each tranche and aggregate them to find the sum of those of the CEO stock option portfolio. For the 1995 through 2012 period, we use Core and Guay's (1999) approximation method (see footnote 7 for details). In our derivation we use the Black–Scholes (1973) option pricing model as modified by Merton (1973) following Core and Guay (1999) and Guay (1999).

In this Appendix, we first present how we derive CEO stock option values, deltas, and vegas and then we define other variables. As before, we italicize the variables we derive and we provide Compustat Mnemonics in parentheses.

The Black-Scholes model requires the following variables to estimate CEO stock option values and "greeks":

· d = natural logarithm of the expected dividend yield over the life of the option: $\ln\left(1 + \left(\sum_{t=-3}^{-1} D_t \div 3\right)\right)$, where the dividend yield at year t is D_t (DVYDF);

· r = Risk-Free Rate: $\mathrm{Ln}(1 + R_f)$, where R_f is Three-Month U.S. Treasury Bills which is obtained from the website of the U.S. Department of the Treasury (see footnote 10);

· S_t = Stock Price at time *t* (PRCCF);

· σ = Expected Stock Return Volatility Over the Life of the Option: Annualized monthly return (r) volatility over the past 60 months which equals $\left(\sqrt{\frac{\sum_{t=-60}^{-1}(r_t-\bar{r})^2}{59}}\right) * \sqrt{12}$, where $r = \ln(S_t/S_{t-1})$;

· N = Cumulative Probability Function for the Normal Distribution;

· N' = Normal Density Function;

· T= Time Until the Maturity of the Option;

· X = Strike Price (EXPRIC);

· $Z = \left[\ln\left(\frac{S}{X}\right) + T\left(r - d + \frac{\sigma^2}{2}\right)\right] / \sigma T^{(1/2)}$.

Using these variables, we derive CEO stock option values, deltas, and vegas as follows:

· $Delta = \frac{\partial V}{\partial S} = e^{-dt} N(Z) * (S/100)$;

· $Value = S\, e^{-dt} N(Z) - X\, e^{-rT} N(Z - \sigma T^{(1/2)})$;

· $Vega = \frac{\partial V}{\partial \sigma} = e^{-dt} N'(Z) S T^{(1/2)} * (0.01)$.

We list the other CEO variables in alphabetical order as follows:

· *CEO Inside debt* = Total Aggregate Balance in Deferred Compensation Plans at Fiscal Year (DEFER_BALANCE_TOT) + Present Value of Accumulated Pension Benefits from All Pension Plans (PENSION_VALUE_TOT);

· *CEO Unvested Stock Value* = Stock Price (PRCCF) * Restricted Stock Holdings (STOCK_UNVEST_NUM);

· *CEO Common Stock Value* = Stock Price (PRCCF) * Shares Owned (SHROWN_EXCL_OPTS);

· *CEO Equity Holdings* = *CEO Common Stock Value* + *CEO Unvested Stock Value* + *CEO Stock Options Value*;

· *CEO Cash Compensation* = Salary (SALARY) + Bonus (BONUS);

· *CEO Leverage* = *CEO Inside Debt* /*CEO Equity Holdings*;

· *CEO Relative Leverage* = *CEO Leverage/[Debt/Equity]*;

· *High CEO Relative Leverage* is a dummy variable = one if *CEO Relative Leverage* > *[Debt/Equity],* and zero otherwise.

Appendix 3. Variable definitions

This appendix explains how we derive accounting and CEO variables. We start with the accounting variables. The italicized variables are those derived in this study. We obtain all accounting data from Compustat, and present mnemonics in parentheses.

· Book equity: *Shareholders' equity* − *Preferred stock* + deferred taxes and investment tax credit (TXDITC) + postretirement benefit asset (PRBA)

· *Book Leverage*: Total assets (AT) −*Book Equity* all divided by total assets (AT)

· *Cash Surplus*: Operating income (OANCF) + depreciation (DCP) + R&D expense (XRD) all scaled by total assets (AT)

· *Collateral Assets/Total Assets*: Plant, property, and equipment (PPENT) scaled by total assets (AT)

· *Dividend Payer*: $\begin{cases} 1, (\text{DVPSX})(t) > 0 \\ 0, (\text{DVPSX})(t) = 0 \end{cases}$

· *Dividend per Share:* Dividend per Share by ExDate (DVPSX)

· *Dividend Yield*: Dividend per Share by ExDate (DVPSX)/Stock Price (PRCCF);

· *Dividend Payout Ratio*: (Dividend per Share by ExDate (DVPSX) * Shares Outstanding (CSHO)/Earnings Available for Common;

· *Free Cash flow:* [Operating income (OANCF) − Total Dividends (DV)]/Total assets (AT);

· *Market/Book Ratio*: Total assets (AT) − *Book Equity* + *Market Equity* all divided by total assets (AT)

· *Market Equity*: Common shares outstanding (CSHO) * stock price (PRCCF)

· *Market Leverage*: Total assets (AT) − *Book equity* all divided by *Market equity*

· *Preferred Stock*: First available of preferred stock liquidation value (PSTKL), preferred stock redemption value (PSTKRV), preferred stock (PSTK)

· *Shareholders' Equity*: First available of shareholders' equity (SEQ), total assets (AT) − total liabilities (LT), common stock (CEQ) + preferred stock (PSTKL)

· *Log(Sale)*: Natural log of sales (SALE)

Next, we derive the CEO variables. We obtain all CEO variables from Execucomp. In addition, we use data from the Federal Reserve's (Fed) website (http://www.federalreserve.gov/releases/h15/data.htm), Compustat, and CRSP, since CEO stock option calculation requires yearly dividend payout information, stock prices, and the three-month Treasury bill as the risk-free rate. Dividend payout ratio is calculated as presented under the accounting data calculation in this Appendix, Stock prices are obtained from CRSP, and the risk-free rate is from the Fed.

· *CEO Age*: (AGE)

· *CEO Portfolio Delta*: *Restricted Share Delta* + *Stock Holding Delta* + *Stock Option Delta*

· *CEO Portfolio Vega*: *Restricted Share Vega* + *Stock Holding Vega* + *Stock Option Vega*

· *CEO Restricted Stock Delta*: Restricted Stock Holdings (STOCK_UNVEST_NUM) * Stock Price (PRCCF)/100

· *CEO Restricted Stock Vega*: Restricted Stock Holdings (STOCK_UNVEST_NUM) * *Stock Return Volatility* * 0.01

· *CEO Stock Holding Delta*: Shares Owned (SHROWN_EXCL_OPTS) * Stock Price (PRCCF)/100

· *CEO Stock Holding Vega*: Shares Owned (SHROWN_EXCL_OPTS) * *Stock Return Volatility* * 0.01

· *CEO Stock Option Delta* and *CEO Stock Option Vega*: $e^{-dT}N(Z) * (S/100)$ and $e^{-dT}N'(Z)ST^{\left(\frac{1}{2}\right)} * (0.01)$ respectively, where $Z = \left[\ln\left(\frac{S}{X}\right) + T\left(r - d + \frac{\sigma^2}{2}\right)\right] / \sigma T^{(1/2)}$, X is strike price, S is price of the stock (PRCCF), σ is expected stock-return volatility over the life of the option, r is the risk-free rate, d is natural logarithm of the expected dividend yield over the life of the option, T is the time until the maturity of the option, N is cumulative probability function for the normal distribution, and N' is normal density function. Stock option values and "greeks" are calculated for each trance separately and aggregated to find the total values, deltas, and vegas.

· *CEO Tenure*: Calculated as the number of consecutive years employed as the CEO

Figure 1. Consumer sentiment and dividend premium

This figure presents the consumer sentiment (dashed-line) and dividend premium (solid line). Consumer sentiment is scaled by the right axis and dividend premium is scaled by the left axis. Positive (negative) dividend premium indicates that payers (non-payers) trade at a premium.

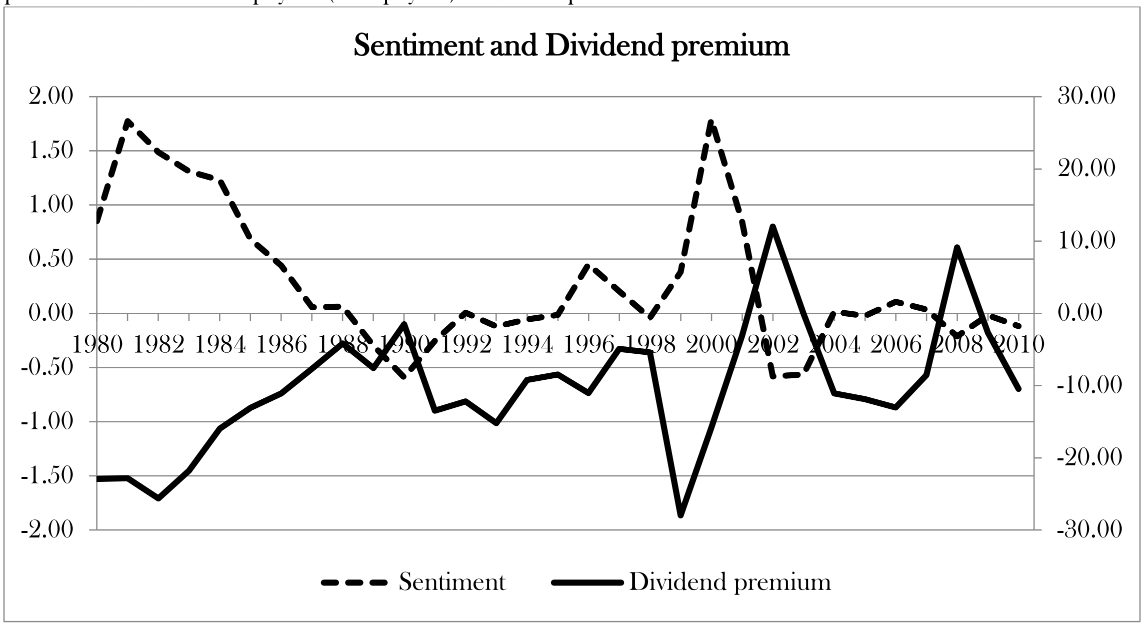

Figure 2. Percentage of initiating and omitting firms

This table presents the percentage of firms that initiated (dashed-line) and omitted (solid line) dividends. Percentage of initiating firms is calculated by dividing the number of initiating firms at time t by the number of non-payers at time t-1 which were still listed at time t. Percentage of omitting firms is calculated by dividing the number of omitting firms at time t by the number of payers at time t-1 which were still at time t.

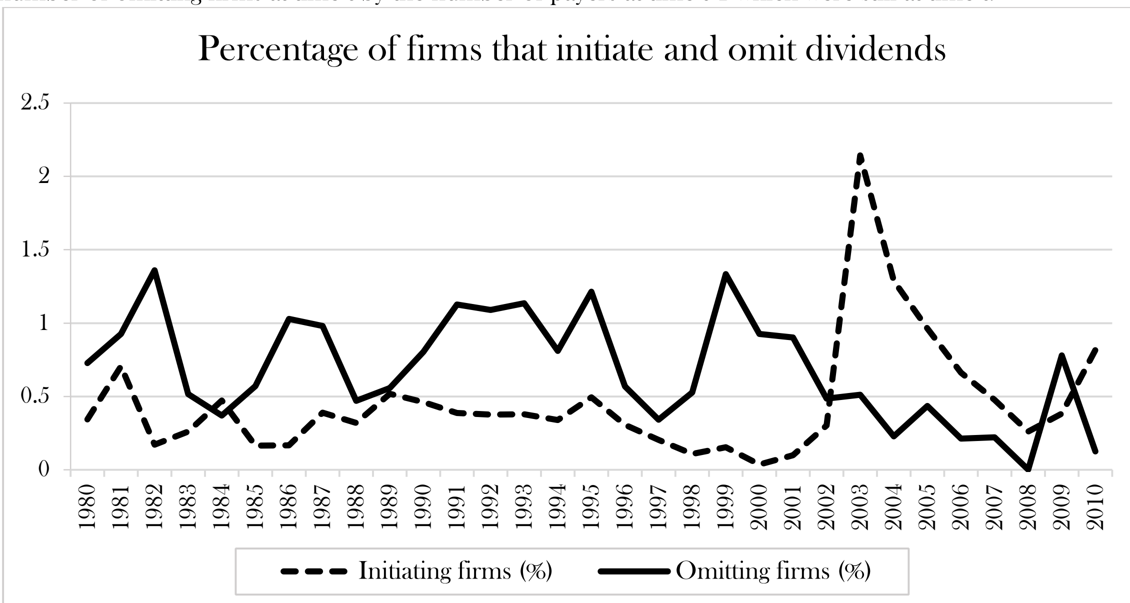

Table 1. Sample distribution: 1996-2008 vs. 2006-2011

This table presents the sample distribution by year and industry. Panel A shows the breakdown of the sample observations by year and Panel B by two–digit Standard Industrial Classification (SIC) industry codes.

	Main		**Robustness**	
	2006-2011		**1995-2008**	
YEAR	**N**	**%**	**N**	**%**
1996	-	-	219	5.62%
1997	-	-	228	5.85%
1998	-	-	240	6.16%
1999	-	-	270	6.93%
2000	-	-	290	7.45%
2001	-	-	304	7.80%
2002	-	-	316	8.11%
2003	-	-	313	8.04%
2004	-	-	315	8.09%
2005	-	-	303	7.78%
2006	246	11.62	299	7.68%
2007	377	17.81	366	9.40%
2008	393	18.56	432	11.09%
2009	401	18.94	-	-
2010	376	17.76	-	-
2011	324	15.30	-	-
Total observations	2117	100%	3895	100%

Table 2. Descriptive statistics: payers vs. non-payers

Part A. Descriptive statistics in the 2006 through 2011 period

This table presents descriptive statistics for Non-Payers and Payers separately in Panel A and Panel B. The t–values of a t–test for the difference in sample means (non-payers less payers) are presented in parentheses. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively.

	Non-Payers (NP)						Payers (P)						NP-P
	N	*MEAN*	*Q1*	*MEDIAN*	*Q3*	*STD*	*N*	*MEAN*	*Q1*	*MEDIAN*	*Q3*	*STD*	*t-value*
CEO Cash Comp. ($ million)	1453	0.617	0.425	0.529	0.7	0.439	664	0.7	0.492	0.603	0.768	0.506	(-3.8801)***
CEO Delta/Vega Ratio	1453	8.753	1.703	3.141	6.939	36.561	664	57.317	16.841	39.52	75.897	69.167	(-21.086)***
CEO Equity ($ million)	1453	25.854	4.187	9.8	23.137	56.263	664	20.923	2.622	5.862	14.872	50.8	(1.9277)*
CEO Vega ($ thousand)	1453	59.477	16.148	35.787	72.874	75.195	664	9.807	0.594	1.583	8.055	27.701	(16.5152)***
CEO Age	1453	54.311	49	54	60	7.865	664	55.572	51	55	60	6.754	(-3.5735)***
CEO Tenure	1453	4.966	2	4	6	3.652	664	5.94	3	5	8	4.229	(-5.4126)***
Log of CEO Relative Leverage	416	-1.588	-2.611	-1.513	-0.497	1.819	418	-0.587	-1.671	-0.594	0.343	2.835	(-6.0639)***
CEO Inside Debt ($ million)	1453	0.559	0	0	0.136	2.458	664	1.495	0	0.341	1.653	2.788	(-7.7893)***
Capex/Total Assets	1453	4.799	1.481	2.788	5.586	6.177	664	4.732	2.101	3.515	6.244	3.805	-0.2582
Change in Assets (%)	1453	0.091	-0.032	0.075	0.19	0.249	664	0.049	-0.023	0.038	0.107	0.317	(3.29)***
Dividend Yield	1453	-	-	-	-	-	664	0.025	0.009	0.015	0.027	0.072	-
Market Equity ($ million)	1453	665.339	235.418	482.922	859.99	700.281	664	765.345	369.661	596.091	977.563	586.479	(-3.2022)***
Market/Book	1453	2.152	1.207	1.718	2.576	1.593	664	2.025	1.217	1.639	2.357	1.287	(1.8086)*
Profitability ($ thousand)	1453	20.765	0.009	20.682	48.58	68.224	664	44.019	18.15	38.434	72.029	60.128	(-7.5454)***
Payout Ratio	1453	-	-	-	-	-	664	0.386	0.091	0.201	0.373	2.926	-
R&D/Total Assets	1453	6.459	0	3.401	9.462	9.435	664	2.298	0	0	3.145	4.033	(10.9165)***
Retained Earnings/Total Assets	1453	-0.348	-0.377	0.129	0.372	2.055	664	0.408	0.258	0.439	0.605	0.437	(-9.3796)***
Return Volatility	1453	29.123	2.63	3.354	4.303	265.979	664	3.11	2.271	2.818	3.627	1.217	(2.5199)**
Sale ($ thousand)	1324	361.701	164.687	309.956	531.356	245.367	501	539.23	332.703	542.896	740.475	239.71	(-13.8808)***
Debt/Equity	1442	0.616	0.109	0.229	0.543	2.026	664	0.612	0.151	0.312	0.61	2.116	-0.0363
Free Cash Flow/Total Assets	1442	-0.297	-0.422	-0.234	-0.087	0.356	664	-0.303	-0.445	-0.277	-0.135	0.23	-0.3601
Idiosyncratic Risk	1424	0.033	0.025	0.03	0.038	0.013	654	0.025	0.02	0.024	0.028	0.007	(15.1927)***
Net Payout (1)	1332	7.313	-3.619	-0.289	6.657	54.869	639	30.984	4.356	13.543	35.245	53.059	(-9.0607)***
Net Payout (2)	1452	-20.837	-18.265	-3.449	1.219	195.721	664	29.847	-0.227	7.662	27.161	124.784	(-6.1274)***
Net Payout (3)	1450	7.719	0	0	0.232	43.615	664	22.289	5.019	10.825	24.533	47.543	(-6.9275)***

Part B. Descriptive statistics in the 1995 though 2008 period

This table presents descriptive statistics for Non-Payers and Payers separately in Panel A and Panel B. The *t*–values of a *t*–test for the difference in sample means (non-payers – payers) are presented in parentheses. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively.

	Non-Payers (NP)						Payers (P)						NP-P
	N	*MEAN*	*Q1*	*MEDIAN*	*Q3*	*STD*	*N*	*MEAN*	*Q1*	*MEDIAN*	*Q3*	*STD*	*t-value*
CEO Cash Comp. ($ million)	2371	0.723	0.424	0.575	0.855	0.53	1524	0.839	0.496	0.702	1	0.56	(-6.5612)***
CEO Delta/Vega Ratio	2371	21.886	2.557	5.779	16.403	287.23	1524	54.706	20.968	40.407	74.125	54.07	(-4.4106)***
CEO Equity ($ million)	2371	34.802	3.699	10.855	30.06	80.81	1524	27.989	1.499	4.962	16.246	72.59	(2.6709)***
CEO Vega ($ thousand)	2371	61.577	4.503	22.708	58.539	193.57	1524	9.537	0.367	1.318	6.354	25.14	(10.4381)***
CEO Age	2371	54.544	49	54	60	8.2	1524	57.168	51	57	62	8.48	(-9.6133)***
CEO Tenure	2371	4.558	2	4	6	3.01	1524	5.042	3	4	7	3.2	(-4.7782)***
Capex/Total Assets	2371	6.45	2.073	4.218	8.192	6.82	1524	6.034	2.656	4.499	7.571	6.03	(1.945)*
Change in Assets (%)	2371	-0.001	-0.093	0.061	0.19	0.58	1524	0.023	-0.031	0.048	0.13	0.42	(-1.3797)
Dividend Yield	2371	-	-	-	-	-	1524	0.023	0.007	0.014	0.024	0.09	-
Market Equity ($ million)	2371	829.102	276.778	557.391	993.207	1103.11	1524	794.823	344.391	589.017	985.177	735.16	-1.07
Market/Book	2371	2.505	1.303	1.873	2.895	2.37	1524	2.025	1.26	1.619	2.259	1.34	(7.216)***
Profitability ($ thousand)	2371	22.289	0.624	24.896	50.959	66.94	1524	53.019	22.078	44.329	79.099	47.88	(-15.5474)***
Payout Ratio	2371	-	-	-	-	-	1524	0.434	0.085	0.169	0.322	3.95	-
R&D/Total Assets	2371	6.208	0	1.579	8.597	12.27	1524	1.701	0	0	2.094	3.38	(14.0014)***
Retained Earnings/Total Assets	2371	-0.183	-0.07	0.201	0.395	1.68	1524	0.458	0.29	0.438	0.633	0.28	(-14.7288)***
Return Volatility	2371	16.759	2.582	3.292	4.432	194.93	1524	5.275	1.968	2.403	3.101	87.67	(2.1634)**
Sale ($ thousand)	2098	372.943	176.69	325.698	543.031	251.07	1122	533.91	329.507	526.797	731.702	242.37	(-17.5438)***
Debt/Equity	2359	0.543	0.103	0.245	0.552	1.25	1520	0.591	0.163	0.344	0.643	1.48	(-1.088)
Free cash flow/Total Assets	2358	-0.332	-0.469	-0.296	-0.111	0.34	1520	-0.314	-0.456	-0.322	-0.148	0.21	(-1.7916)*
Idiosyncratic Risk	2331	0.036	0.027	0.034	0.042	0.01	1508	0.024	0.019	0.023	0.028	0.01	(33.5799)***
Relative Dividend Premium	2371	-0.487	-0.845	0.181	0.714	2.37	1524	-0.000	-0.227	0.400	0.756	1.33	(-7.2983)***
Relative Dividend Premium (VW)	2371	0.359	-0.059	0.977	1.548	2.37	1524	0.856	0.566	1.228	1.615	1.36	(-7.4429)***

Table 3. Correlations between CEO risk preferences and dividend payouts

This table presents the Pearson correlations for the sample observations for all the variables used. *p*-values are presented in parentheses. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1 *CEO Age*															
2 *Capex/Total Assets*	0.0008														
	(0.9702)														
3 *CEO Equity ($ million)*	0.0456	0.1554													
	(0.0361)	(<.0001)													
4 *CEO Vega ($ thousand)*	-0.026	0.0134	0.3452												
	(0.231)	(0.5382)	(<.0001)												
5 *CEO Delta/Vega Ratio*	-0.0272	0.0574	0.123	-0.2146											
	(0.2116)	(0.0082)	(<.0001)	(<.0001)											
6 *Profitability ($ thousand)*	-0.0299	0.1159	0.1591	0.1034	0.1807										
	(0.1691)	(<.0001)	(<.0001)	(<.0001)	(<.0001)										
7 *CEO Inside Debt ($ million)*	0.1028	-0.0235	-0.0073	0.0543	0.0961	0.0899									
	(<.0001)	(0.2806)	(0.7369)	(0.0125)	(<.0001)	(<.0001)									
8 *Idiosyncratic Risk*	0.0045	-0.0725	-0.0217	-0.0656	-0.2247	-0.2046	-0.1292								
	(0.8381)	(0.0009)	(0.3231)	(0.0028)	(<.0001)	(<.0001)	(<.0001)								
9 *Log of CEO Relative Leverage*	0.11	-0.0538	-0.1791	-0.1657	0.1148	0.0456	0.2941	-0.1455							
	(0.0015)	(0.1204)	(<.0001)	(<.0001)	(0.0009)	(0.1886)	(<.0001)	(<.0001)							
10 *Market/Book*	-0.0863	0.081	0.237	0.1526	0.1362	0.1927	-0.0591	0.038	0.0742						
	(0.0001)	(0.0002)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0066)	(0.0829)	(0.0322)						
11 *Market equity ($ million)*	-0.0975	0.1302	0.3084	0.3144	0.1767	0.4976	0.111	-0.2363	0.0859	0.5028					
	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.0131)	(<.0001)					
12 *Payout Ratio*	0.0399	0.0037	-0.0131	-0.0389	0.0397	0.0112	0.0532	-0.0434	0.0491	0.0027	-0.0035				
	(0.0662)	(0.8642)	(0.5456)	(0.0732)	(0.0681)	(0.6056)	(0.0144)	(0.048)	(0.1567)	(0.9009)	(0.8705)				
13 *Change in Assets (%)*	-0.0559	0.0598	0.1066	0.0833	0.0283	0.2132	-0.0211	0.0542	-0.0133	0.1916	0.1834	-0.0517			
	(0.0102)	(0.0059)	(<.0001)	(0.0001)	(0.1927)	(<.0001)	(0.332)	(0.0135)	(0.7021)	(<.0001)	(<.0001)	(0.0173)			
14 *R&D/Total Assets*	-0.0532	-0.1429	0.0045	0.1604	-0.1443	-0.2077	-0.099	0.1792	0.0244	0.2045	-0.0365	-0.0211	-0.0771		
	(0.0143)	(<.0001)	(0.8355)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.4816)	(<.0001)	(0.093)	(0.3321)	(0.0004)		
15 *CEO Tenure*	0.3918	-0.0372	0.0976	0.0628	0.0022	-0.013	0.1698	-0.0305	0.0058	-0.1541	-0.0132	0.0394	-0.0917	-0.0224	
	(<.0001)	(0.0866)	(<.0001)	(0.0038)	(0.9177)	(0.55)	(<.0001)	(0.1646)	(0.8666)	(<.0001)	(0.5443)	(0.07)	(<.0001)	(0.3024)	
16 *Dividend Yield*	0.0454	0.0015	-0.0228	-0.0996	0.082	-0.0251	0.0663	-0.0892	0.0569	-0.0252	-0.0316	0.863	-0.0647	-0.066	0.0694
	(0.0368)	(0.9441)	(0.295)	(<.0001)	(0.0002)	(0.2478)	(0.0023)	(<.0001)	(0.1005)	(0.2473)	(0.1455)	(<.0001)	(0.0029)	(0.0024)	(0.0014)

Table 4. CEO risk tolerance and the propensity to pay dividends

This table presents the results of the logistic regression in which the dependent variable equals one if the firm pays dividends at time *t*, and zero otherwise. Presented in parentheses is the square root of the Wald statistic, which is analogous to the *t*–value. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. Models (3) and (9) are estimated with 834 observations and all the others with 2117 observations. All models include industry and year dummies.

	Dependent variable: Equals one if the firm pays dividends at time *t*, and zero otherwise									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CEO Cash Comp. ($ million)	0.0782							0.2355	0.0449	0.2612
	(0.6829)							(1.3029)	(0.1371)	(1.5265)
CEO Inside Debt ($ million)		0.0698***						0.0808**		
		(2.8771)						(2.1416)		
Log of CEO Relative Leverage			0.2238***						0.0785	
			(4.4199)						(1.3128)	
CEO Relative Leverage Dummy				1.1987***						0.5127**
				(6.598)						(2.2085)
CEO Delta/Vega Ratio					0.0443***			0.0203***	0.0706***	0.0209***
					(14.6607)			(6.2707)	(8.0559)	(6.4491)
CEO Equity ($ million)						-0.0056***		0.0007	-0.0008	0.0007
						(-3.9659)		(0.3977)	(-0.1574)	(0.3836)
CEO Vega ($ thousand)							-0.0539***	-0.0395***	-0.0186***	-0.0383***
							(-14.6871)	(-9.6505)	(-3.7203)	(-9.386)
CEO Age	0.0006	0	-0.0246*	-0.0034	-0.0017	0.0044	-0.0071	-0.0079	-0.0405**	-0.0078
	(0.0723)	(0.0052)	(-1.7455)	(-0.4116)	(-0.1795)	(0.5397)	(-0.7289)	(-0.7783)	(-2.0188)	(-0.7755)
Log of Tenure	0.2227***	0.1858**	-0.0883	0.204**	0.3285***	0.2656***	0.5793***	0.5186***	0.2609	0.5359***
	(2.7235)	(2.2503)	(-0.7099)	(2.4609)	(3.4601)	(3.1993)	(6.0067)	(5.0908)	(1.5253)	(5.2947)
R&D/Total Assets	-0.0948***	-0.0899***	-0.0786**	-0.0907***	-0.0633***	-0.0922***	-0.0189	-0.0133	0.0329	-0.0174
	(-5.5907)	(-5.3171)	(-2.575)	(-5.3094)	(-3.4861)	(-5.4115)	(-0.9872)	(-0.6776)	(0.7403)	(-0.8831)
R&D Missing Dummy	0.3942***	0.4292***	0.4587**	0.5117***	0.3097**	0.4501***	0.374**	0.4185**	0.6524**	0.4259**
	(2.8557)	(3.0991)	(2.1916)	(3.6289)	(1.9627)	(3.2337)	(2.3367)	(2.48)	(2.2951)	(2.5175)
Capex/Total Assets	-0.0235**	-0.0221*	0.005	-0.0226*	-0.0422***	-0.0182	-0.0099	-0.0223	-0.0101	-0.0236*
	(-1.9979)	(-1.889)	(0.2266)	(-1.9256)	(-3.1034)	(-1.5548)	(-0.7325)	(-1.5587)	(-0.3515)	(-1.6506)
Change in Assets (%)	-1.991***	-1.9532***	-3.1627***	-1.8589***	-1.6788***	-1.9513***	-1.6631***	-1.5591***	-3.8493***	-1.5558***
	(-5.4888)	(-5.3663)	(-5.1703)	(-5.0943)	(-4.2194)	(-5.3517)	(-3.9853)	(-3.5978)	(-4.6171)	(-3.597)
Market/Book	0.0677	.0816	0.1801*	0.0483	-0.0348	0.1086*	0.0125	-0.0076	0.0926	-0.0255
	(1.1754)	(1.4192)	(1.657)	(0.8313)	(-0.5071)	(1.8361)	(0.1759)	(-0.0993)	(0.5657)	(-0.33)
Profitability ($ thousand)	0.0001	0.0001	0.0019	0.0002	-0.0004	0.0003	0.0008	0.0002	0.0021	0.0003

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	(0.1144)	(0.1066)	(1.1088)	(0.1312)	(-0.271)	(0.2073)	(0.5195)	(0.1603)	(0.9464)	(0.1675)
Size	0.0032	0.0019	-0.0053	0.0029	-0.004	0.0049	0.0157***	0.0074*	-0.0067	0.0081**
	(1.0231)	(0.609)	(-1.1451)	(0.9343)	(-1.1172)	(1.5583)	(4.2504)	(1.8595)	(-1.0238)	(2.0439)
Retained Earnings/Total Assets	1.6584***	1.6814***	1.3639***	1.5834***	1.3786***	1.71***	1.6236***	1.5374***	0.9516***	1.5015***
	(9.6614)	(9.7279)	(5.3882)	(9.1496)	(7.3603)	(9.8531)	(8.0965)	(7.4961)	(3.0596)	(7.3149)
Return Volatility	-0.2656***	-0.2595***	-0.2626***	-0.243***	-0.1786***	-0.2503***	-0.3302***	-0.2585***	-0.2313**	-0.2477***
	(-4.0412)	(-3.9502)	(-2.8404)	(-3.6612)	(-2.587)	(-3.8097)	(-4.3804)	(-3.3844)	(-2.0154)	(-3.2409)
Intercept	-0.7146	-0.6266	2.2675**	-0.5738	-1.3427**	-1.104**	-0.3507	-0.9181	1.0699	-0.9936
	(-1.3018)	(-1.1402)	(2.4735)	(-1.0326)	(-2.1916)	(-1.9693)	(-0.5441)	(-1.3333)	(0.8676)	(-1.4515)

Table 5. Robustness test: Inside debt and non-linearity

This table presents the results of the logistic regression in which the dependent variable equals one if the firm pays dividends at time *t*, and zero otherwise. Presented in parentheses is the square root of the Wald statistic, which is analogous to the *t*–value. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. Models (3) and (9) are estimated with 834 observations and all the others with 2117 observations. All models include industry and year dummies.

Dependent variable: Equals one if the firm pays dividends at time *t*, and zero otherwise

	(1)	(2)	(3)	(4)
CEO Cash Comp. ($millions)			0.2222	0.221
			(1.201)	(1.2207)
MID CEO Inside Debt ($millions)	0.9441***		0.615***	
	(6.1466)		(3.1892)	
HIGH CEO Inside Debt ($millions)	1.0094***		0.4695**	
	(6.1008)		(2.1432)	
MID Log of CEO relative lev. dummy		0.747***		0.4086**
		(4.903)		(2.1729)
HIGH Log of CEO relative lev. dummy		1.491***		0.7***
		(9.072)		(3.3512)
CEO Delta/Vega Ratio			0.0199***	0.02***
			(6.1755)	(6.2511)
CEO Equity ($ million)			0.0008	0.0015
			(0.4636)	(0.8149)
CEO Vega ($ thousand)			-0.0384***	-0.0378***
			(-9.5152)	(-9.3535)
CEO Age	0.0008	-0.0005	-0.0062	-0.0064
	(0.0988)	(-0.0553)	(-0.6088)	(-0.6332)
Log of Tenure	0.1339	0.1933**	0.4948***	0.5175***
	(1.5989)	(2.2997)	(4.8051)	(5.095)
R&D/Total Assets	-0.0776***	-0.0806***	-0.0114	-0.0137
	(-4.5435)	(-4.6337)	(-0.5785)	(-0.6906)
R&D Missing Dummy	0.4881***	0.5482***	0.4224**	0.4438***
	(3.458)	(3.8296)	(2.5016)	(2.6123)
Capex/Total Assets	-0.0179	-0.0169	-0.0209	-0.0226
	(-1.5045)	(-1.4305)	(-1.4598)	(-1.5832)
Change in Assets (%)	-1.7864***	-1.6869***	-1.5538***	-1.5013***
	(-4.8592)	(-4.5607)	(-3.5624)	(-3.4472)
Market/Book	0.1322**	0.0818	0.0197	-0.0077
	(2.281)	(1.3898)	(0.2554)	(-0.0997)
Profitability ($ thousand)	0.0002	0.0001	0.0004	0.0003
	(0.1246)	(0.1097)	(0.2935)	(0.2238)
Size	-0.0005	0.0013	0.0067*	0.007*
	(-0.157)	(0.4114)	(1.6629)	(1.7476)
Retained Earnings/Total Assets	1.7007***	1.5822***	1.532***	1.4867***
	(9.6949)	(9.0336)	(7.4157)	(7.2169)
Return Volatility	-0.2697***	-0.2269***	-0.2613***	-0.244***
	(-4.0231)	(-3.4032)	(-3.3869)	(-3.1743)
Intercept	-0.8889	-1.0249*	-1.1331	-1.1516*
	(-1.5766)	(-1.8077)	(-1.628)	(-1.6657)

Table 6. Robustness test: A Robustness test for endogeneity bias in the 2006 though 2011 period

This table presents the results of a robustness test checking for endogeneity bias using logistic regressions, where the dependent variable equals one if the firm pays dividends at time *t* and zero otherwise. Following Shen and Zhang (2012), we deconstruct CEO compensation variables into their "expected" and "excess" components. We estimate all regression models using industry (two-digit SIC codes) and year dummy variables. The square root of the Wald statistic, which is analogous to the *t*-value, is reported in parentheses. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. All models are estimated using 1781 observations.

Dependent variable: Equals one if the firm pays dividends at time *t*, and zero otherwise						
	(1)	(2)	(3)	(4)	(5)	(6)
CEO Excess Cash Compensation	0.039					-0.254
	(0.3317)					(-1.2554)
CEO Excess Delta/Vega Ratio		-0.0003				-0.0003
		(-0.5867)				(-0.874)
CEO Excess Inside Debt			0.0417*			0.1338**
			(1.717)			(2.5423)
CEO Excess Equity				-0.0064***		0.0053***
				(-3.5544)		(2.7332)
CEO Excess Vega					-0.0446***	-0.0477***
					(-13.0908)	(-12.9304)
CEO Age	-0.0131	-0.0128	-0.0129	-0.0109	0.0029	0.0012
	(-1.4342)	(-1.4068)	(-1.4159)	(-1.1762)	(0.2656)	(0.1118)
Capex/Total Assets	-0.0218*	-0.0218*	-0.0209	-0.0165	0.0027	-0.0005
	(-1.6518)	(-1.6513)	(-1.5876)	(-1.2442)	(0.1862)	(-0.0347)
Log of Tenure	0.3775***	0.3763***	0.3714***	0.3692***	0.1121	0.1167
	(3.9161)	(3.9063)	(3.8563)	(3.7907)	(1.0048)	(1.0407)
R&D/Total Assets	-0.1007***	-0.1003***	-0.099***	-0.0957***	-0.0259	-0.025
	(-5.3696)	(-5.3532)	(-5.283)	(-5.0772)	(-1.2619)	(-1.1994)
R&D Missing Dummy	0.4508***	0.4525***	0.4615***	0.4787***	0.3402*	0.3294*
	(2.7904)	(2.8007)	(2.8555)	(2.9435)	(1.8894)	(1.8146)
Change in Assets (%)	-1.7681***	-1.771***	-1.7817***	-1.7852***	-1.6225***	-1.5952***
	(-4.3546)	(-4.3624)	(-4.3841)	(-4.347)	(-3.4077)	(-3.3654)
Market/Book	0.2482***	0.2495***	0.2517***	0.2397***	-0.0252	-0.018
	(3.8275)	(3.8496)	(3.8826)	(3.6059)	(-0.3056)	(-0.223)
Profitability ($ thousand)	0.0033*	0.0033*	0.0035**	0.0038**	0.0043**	0.0041**
	(1.9367)	(1.9493)	(2.0018)	(2.1762)	(2.1244)	(1.9932)
Size	-0.0036	-0.0037	-0.004	-0.0031	-0.0021	-0.0035
	(-0.9732)	(-0.9871)	(-1.0853)	(-0.8291)	(-0.4893)	(-0.7993)
Retained Earnings/Total Assets	1.9203***	1.9194***	1.937***	1.9324***	1.5926***	1.5678***
	(9.6089)	(9.6027)	(9.6481)	(9.6316)	(7.2213)	(7.003)
Return volatility	-0.2205***	-0.2198***	-0.2152***	-0.2063***	-0.2703***	-0.2749***
	(-2.9479)	(-2.9416)	(-2.8738)	(-2.7489)	(-3.2076)	(-3.2301)
Intercept	-0.6102	-0.6343	-0.6315	-0.8686	-1.1922*	-1.0888
	(-0.9968)	(-1.036)	(-1.0311)	(-1.3969)	(-1.7027)	(-1.5421)

Table 7. Robustness test: First alternative definition of net payouts

This table presents the results of the logistic regression in which the dependent variable is equal to one if the value of total dividend payouts is greater than the value of stocks that are bought; otherwise, the variable is set to zer0. We estimate all regression models using industry (two-digit SIC codes) and year dummy variables. The square root of the Wald statistic, which is analogous to the *t*-value, is reported in parentheses. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Models (3) and (9) are estimated with 788 observations and all the others with 1971 observations. All models include industry and year dummies.

Dependent variable: Equals one if the value of total dividend payouts greater than the value of stocks that are bought at time *t*, and zero otherwise

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CEO Cash Comp. ($ million)	-0.0553							-0.1632	0.1825	-0.138
	(-0.4723)							(-1.2895)	(0.6384)	(-1.1197)
CEO Inside Debt ($ million)		0.1441***						0.1017***		
		(3.8615)						(2.8682)		
Log of CEO Relative Leverage			0.0812						0.0625	
			(1.6265)						(1.4184)	
CEO Relative Leverage Dummy				0.9677***						0.8243***
				(4.569)						(3.7168)
CEO Delta/Vega Ratio					0.0167***			0.0178***	0.0378***	0.0183***
					(7.2962)			(6.8397)	(6.6658)	(7.0222)
CEO Equity ($ million)						0.0001		-0.0013	0.0016	-0.0012
						(0.1117)		(-1.2316)	(0.5447)	(-1.1069)
CEO Vega ($ thousand)							-0.0014*	0.0017*	0.0023	0.0023**
							(-1.6853)	(1.6867)	(1.2456)	(2.2449)
CEO Age	-0.0209***	-0.0227***	-0.0392**	-0.0234***	-0.0217***	-0.0212***	-0.0211***	-0.0213***	-0.0461***	-0.0224***
	(-2.6848)	(-2.8934)	(-2.5692)	(-2.9816)	(-2.7493)	(-2.7184)	(-2.7148)	(-2.6792)	(-2.8325)	(-2.7997)
Log of Tenure	0.2834***	0.2238***	0.1579	0.2613***	0.2995***	0.2806***	0.298***	0.2481***	0.2322	0.2662***
	(3.5826)	(2.7986)	(1.1777)	(3.2919)	(3.6967)	(3.5351)	(3.7342)	(2.99)	(1.6115)	(3.2322)
R&D/Total Assets	-0.0233**	-0.0176	0.0113	-0.0196*	-0.0133	-0.0231**	-0.0206*	-0.0124	0.0392	-0.0144
	(-2.1283)	(-1.6064)	(0.3716)	(-1.7958)	(-1.2117)	(-2.1159)	(-1.8746)	(-1.1247)	(1.1538)	(-1.3026)
R&D Missing Dummy	0.2143	0.2675*	0.6915***	0.2819*	0.2448	0.2107	0.2086	0.303*	0.6003**	0.315*
	(1.3629)	(1.6927)	(2.9084)	(1.773)	(1.5091)	(1.3412)	(1.3263)	(1.8553)	(2.3594)	(1.9211)
Capex/Total Assets	-0.0171	-0.0152	-0.0384*	-0.0159	-0.0195*	-0.0168	-0.0158	-0.0186*	-0.0437*	-0.0198*
	(-1.567)	(-1.3999)	(-1.6686)	(-1.4666)	(-1.8464)	(-1.5369)	(-1.4629)	(-1.7284)	(-1.8051)	(-1.8409)
Change in Assets (%)	-2.9972***	-2.9167***	-3.3362***	-2.9059***	-2.8292***	-2.994***	-2.9692***	-2.8057***	-3.155***	-2.7899***
	(-9.554)	(-9.2542)	(-5.4932)	(-9.2439)	(-9.0177)	(-9.5503)	(-9.4712)	(-8.8741)	(-4.8897)	(-8.8358)
Market/Book	0.0861	0.1125**	0.2289*	0.077	0.0646	0.0869	0.0857	0.0881	0.1558	0.0651
	(1.6119)	(2.0932)	(1.7946)	(1.4297)	(1.1715)	(1.6083)	(1.6068)	(1.5559)	(1.1497)	(1.1423)
Profitability ($ thousand)	0.0061***	0.0061***	0.0045***	0.006***	0.0055***	0.0061***	0.0061***	0.0055***	0.0044***	0.0054***
	(5.1967)	(5.1398)	(2.7482)	(5.0898)	(4.7471)	(5.1889)	(5.1691)	(4.7129)	(2.6456)	(4.6524)
Size	0.0008	-0.0021	-0.0053	-0.0001	-0.002	0.0006	0.0016	-0.0044	-0.0145***	-0.0039
	(0.2951)	(-0.7351)	(-1.1041)	(-0.0497)	(-0.732)	(0.216)	(0.5868)	(-1.4917)	(-2.6516)	(-1.312)
Retained Earnings/Total Assets	0.5533***	0.5673***	1.6312***	0.5316***	0.4851***	0.5538***	0.5583***	0.4886***	1.3082***	0.4605***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	(6.7529)	(6.8993)	(6.7847)	(6.5405)	(6.1257)	(6.746)	(6.8009)	(6.1405)	(5.4474)	(5.8423)
Return Volatility	0	0	0.0002	0	0	0	0	0	0.0002	0
	(-0.0978)	(-0.0925)	(0.7337)	(-0.0981)	(0.1993)	(-0.0932)	(-0.0141)	(0.1166)	(0.7499)	(0.0728)
Intercept	1.4847***	1.6275***	2.4634***	1.5595***	1.2553**	1.4773***	1.407***	1.3851***	2.2483**	1.3918***
	(2.8782)	(3.1488)	(2.6632)	(3.0169)	(2.4002)	(2.8399)	(2.7269)	(2.591)	(2.3508)	(2.6078)

Table 8. Robustness test: Second alternative definition of net payouts

This table presents the results of the logistic regression in which the dependent variable is equal to one if the value of total dividend payouts plus the change in the value of treasury stock is positive, and zero otherwise. When the change in the value of treasury stock is missing, we replaced it with purchase of common and preferred stock less sale of common and preferred stock. We estimate all regression models using industry (two-digit SIC codes) and year dummy variables. The square root of the Wald statistic, which is analogous to the *t*-value, is reported in parentheses. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. Models (3) and (9) are estimated with 834 observations and all the others with 2116 observations. All models include industry and year dummies.

Dependent variable: Equals one if the value of total dividend payouts plus the change in the value of treasury stock is positive at time *t*, and zero otherwise

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CEO Cash Comp. ($ million)	-0.2615**							-0.349***	-0.1872	-0.3346**
	(-2.0696)							(-2.5981)	(-0.9653)	(-2.507)
CEO Inside Debt h. ($ million)		0.0495**						0.0423**		
		(2.277)						(2.0078)		
Log of CEO Relative Leverage			0.0979**						0.1378***	
			(2.1882)						(2.6481)	
CEO Relative Leverage Dummy				0.8179***						0.7594***
				(4.629)						(4.1799)
CEO Delta/Vega Ratio					0.0074***			0.0072***	0.0075***	0.0069***
					(5.056)			(4.5096)	(3.3685)	(4.3819)
CEO Equity ($ million)						0.0012		0.0009	0.0069**	0.0013
						(1.2612)		(0.9166)	(2.0031)	(1.2421)
CEO Vega ($ thousand)							-0.0014*	-0.0001	0	0.0004
							(-1.7135)	(-0.0605)	(-0.0107)	(0.4329)
CEO Age	-0.0109	-0.0127*	-0.0189	-0.0146*	-0.0115	-0.0128*	-0.0121	-0.0107	-0.0198	-0.0128*
	(-1.4505)	(-1.6896)	(-1.3675)	(-1.9298)	(-1.5181)	(-1.7059)	(-1.6176)	(-1.4102)	(-1.28)	(-1.6694)
Capex/Total Assets	-0.0205*	-0.018*	0.0023	-0.0181*	-0.0201*	-0.0207*	-0.0184*	-0.0227**	-0.0178	-0.0234**
	(-1.9419)	(-1.7039)	(0.1095)	(-1.7134)	(-1.9112)	(-1.9451)	(-1.7471)	(-2.1291)	(-0.7011)	(-2.1923)
Log of Tenure	0.2594***	0.2223***	0.069	0.2273***	0.2622***	0.2419***	0.2671***	0.2396***	0.1692	0.2328***
	(3.4632)	(2.9387)	(0.5745)	(3.0169)	(3.4762)	(3.2257)	(3.5453)	(3.0965)	(1.3025)	(3.0171)
R&D/Total Assets	-0.001	0.0025	0.0264	0.0024	0.0052	-0.0007	0.0025	0.006	0.0354	0.0048
	(-0.0926)	(0.2344)	(0.9326)	(0.2216)	(0.4856)	(-0.0614)	(0.2283)	(0.5528)	(1.138)	(0.4408)
R&D Missing	0.0294	0.0422	0.373*	0.0748	0.0236	0.006	0.0104	0.0674	0.2595	0.0951
	(0.2119)	(0.3039)	(1.8561)	(0.5348)	(0.1685)	(0.0431)	(0.0751)	(0.4783)	(1.1105)	(0.6711)
Change in Assets (%)	-2.8119***	-2.7565***	-3.2199***	-2.6947***	-2.6913***	-2.7882***	-2.765***	-2.7208***	-3.0746***	-2.6662***
	(-8.7728)	(-8.6241)	(-5.3805)	(-8.4368)	(-8.3905)	(-8.7333)	(-8.6633)	(-8.4316)	(-4.9397)	(-8.2674)
Market/Book	0.042	0.0618	0.2301**	0.0461	0.035	0.0393	0.0495	0.0243	0.1698	0.0088
	(0.851)	(1.2509)	(2.1327)	(0.9277)	(0.6933)	(0.7853)	(1.0044)	(0.4706)	(1.5169)	(0.1683)
Profitability ($ thousand)	0.0057***	0.0056***	0.0036**	0.0056***	0.0053***	0.0056***	0.0056***	0.0054***	0.0038**	0.0053***
	(5.0319)	(5.0128)	(2.2854)	(4.9456)	(4.7121)	(4.9785)	(4.9911)	(4.7481)	(2.3283)	(4.6701)
Size	0.0039	0.0018	-0.0024	0.0022	0.0014	0.0027	0.0039	0.0018	-0.0067	0.0017

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	(1.4817)	(0.6634)	(-0.5461)	(0.8285)	(0.5305)	(1.0214)	(1.4475)	(0.6249)	(-1.4008)	(0.5887)
Retained Earnings	0.771***	0.7868***	1.5424***	0.7409***	0.7223***	0.7713***	0.7833***	0.7129***	1.3301***	0.6717***
	(7.5899)	(7.7191)	(6.4674)	(7.3296)	(7.2208)	(7.5898)	(7.6967)	(7.1139)	(5.5)	(6.7746)
Return Volatility	0.0002	0.0003	0.0001	0.0003	0.0003	0.0003	0.0003	0.0003	0.0001	0.0003
	(1.1153)	(1.1399)	(0.2173)	(1.1637)	(1.2993)	(1.1363)	(1.2161)	(1.2792)	(0.4327)	(1.2607)
Intercept	0.366	0.3587	0.6327	0.422	0.151	0.3936	0.266	0.3355	1.0124	0.4444
	(0.7796)	(0.7654)	(0.7636)	(0.8972)	(0.3206)	(0.834)	(0.5677)	(0.7004)	(1.0637)	(0.924)

Table 9. Robustness test: CEO risk tolerance and the propensity to increase dividends

This table presents the results of the logistic regression in which the dependent variable equals one if the firm increase dividends at time *t*, and zero otherwise. Presented in parentheses is the square root of the Wald statistic, which is analogous to the *t*–value. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. Models (3) and (9) are estimated with 834 observations and all the others with 2117 observations. All models include industry and year dummies.

	Dependent variable: Equals one if dividend per share at time *t*-1 is greater at time *t*, and zero otherwise									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CEO Cash Comp. ($ million)	-0.0071							0.0212	-0.0946	0.0324
	(-0.0627)							(0.1431)	(-0.5313)	(0.2205)
CEO Inside Debt ($ million)		0.0362*						0.0265		
		(1.8771)						(0.9658)		
Log of CEO Relative Leverage			0.0838*						0.0136	
			(1.9117)						(0.3785)	
CEO Relative Leverage Dummy				0.5857***						0.1179
				(3.3577)						(0.6162)
CEO Delta/Vega Ratio					0.0151***			0.0056***	0.0123***	0.0057***
					(9.6267)			(3.4999)	(4.8869)	(3.5588)
CEO Equity ($ million)						-0.001		0.0045***	0.0051*	0.0045***
						(-0.9071)		(3.0234)	(1.9228)	(2.998)
CEO Vega ($ thousand)							-0.0261***	-0.0237***	-0.0179***	-0.0236***
							(-9.8398)	(-7.7874)	(-4.4611)	(-7.7147)
CEO Age	0.0111	0.0104	0.0015	0.0089	0.0135	0.0117	0.0067	0.0052	-0.0011	0.0057
	(1.241)	(1.1657)	(0.1075)	(0.986)	(1.4334)	(1.2978)	(0.6966)	(0.5297)	(-0.0676)	(0.5823)
Log of Tenure	-0.0012	-0.0237	-0.2755**	-0.0096	0.0229	0.0081	0.1459	0.0968	-0.1368	0.1077
	(-0.0135)	(-0.2623)	(-2.2202)	(-0.1069)	(0.2438)	(0.09)	(1.5604)	(1.0028)	(-1.0082)	(1.1273)
R&D/Total Assets	-0.0822***	-0.0784***	-0.0525**	-0.0786***	-0.0556***	-0.0813***	-0.0313*	-0.0267	0.0076	-0.0286
	(-4.7594)	(-4.5545)	(-2.0602)	(-4.577)	(-3.1737)	(-4.7305)	(-1.7264)	(-1.4522)	(0.2555)	(-1.5592)
R&D Missing Dummy	0.1293	0.1658	0.1059	0.2057	0.1579	0.1415	0.1383	0.1631	0.1916	0.1538
	(0.8894)	(1.1295)	(0.5271)	(1.3914)	(1.0347)	(0.9697)	(0.9025)	(1.0289)	(0.866)	(0.9713)
Capex/Total Assets	-0.016	-0.0146	-0.0013	-0.0142	-0.0186	-0.0147	-0.0067	-0.0154	-0.0132	-0.0156
	(-1.2535)	(-1.143)	(-0.0605)	(-1.1203)	(-1.3941)	(-1.1483)	(-0.4986)	(-1.1057)	(-0.5361)	(-1.1208)
Change in Assets (%)	-1.7747***	-1.7611***	-1.4908**	-1.6877***	-1.6226***	-1.7543***	-1.5557***	-1.6359***	-1.316*	-1.6318***
	(-4.2038)	(-4.1725)	(-2.3622)	(-4.0036)	(-3.6506)	(-4.1533)	(-3.4578)	(-3.5493)	(-1.8375)	(-3.537)
Market/Book	0.0765	0.089	0.1603	0.0812	0.05	0.0843	0.1121*	0.08	0.2115*	0.0724
	(1.3958)	(1.6176)	(1.6369)	(1.4888)	(0.8387)	(1.521)	(1.8551)	(1.261)	(1.8766)	(1.1461)
Profitability ($ thousand)	0.0023	0.0024	0.0011	0.0024	0.0022	0.0023	0.0037**	0.0035**	0.0027	0.0034**
	(1.55)	(1.5887)	(0.6195)	(1.614)	(1.4223)	(1.5521)	(2.173)	(2.0176)	(1.2236)	(1.9794)
Size	0.009**	0.0079**	0.0089*	0.0082**	0.0056	0.0093***	0.0136***	0.0102**	0.0074	0.0107***
	(2.5446)	(2.2277)	(1.8703)	(2.3369)	(1.5056)	(2.6349)	(3.6376)	(2.5575)	(1.3457)	(2.7277)
Retained Earnings/Total Assets	1.1444***	1.1469***	0.7468***	1.0621***	1.0317***	1.1502***	1.0344***	0.9849***	0.7229***	0.9705***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	(6.3709)	(6.3773)	(3.1536)	(5.9069)	(5.5018)	(6.4005)	(5.4945)	(5.1504)	(2.7447)	(5.0332)
Return Volatility	-0.3245***	-0.3261***	-0.2929***	-0.3241***	-0.2211***	-0.3212***	-0.3488***	-0.3171***	-0.171	-0.3136***
	(-3.935)	(-3.9471)	(-2.6945)	(-3.9104)	(-2.604)	(-3.8932)	(-4.0317)	(-3.5661)	(-1.4567)	(-3.5321)
Intercept	-1.5068**	-1.4635**	-0.1889	-1.4348**	-2.2781***	-1.5894**	-1.3358**	-1.3401*	-1.072	-1.3957**
	(-2.4074)	(-2.3344)	(-0.1996)	(-2.2761)	(-3.4547)	(-2.5114)	(-1.9979)	(-1.9086)	(-1.0007)	(-1.9991)

Table 10. Robustness test: CEO risk tolerance and the propensity to initiate dividends

This table presents the results of the logistic regression in which the dependent variable equals one if the firm initiates dividends at time *t*, and zero otherwise. Presented in parentheses is the square root of the Wald statistic, which is analogous to the *t*–value. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. Models (3) and (9) are estimated with 414 observations and all the others with 1462 observations. All models include industry and year dummies.

	Dependent variable: Equals one if dividend per share is equal zero at time *t*-1 and greater than zero at time *t*, and zero otherwise									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CEO Cash Comp. ($ million)	-0.0668							-0.0275	-1.6161	-0.0353
	(-0.2599)							(-0.0997)	(-1.3807)	(-0.1235)
CEO Inside Debt ($ million)		-0.0842						-0.1024		
		(-0.6586)						(-0.747)		
Log of CEO Relative Leverage			-0.206						-0.2811**	
			(-1.515)						(-1.9597)	
CEO Relative Leverage Dummy				-0.9398						-1.0822
				(-0.9024)						(-1.0296)
CEO Delta/Vega Ratio					0.0052***			0.0043**	0.0156**	0.0042**
					(2.8558)			(2.0841)	(2.4922)	(2.0153)
CEO Equity ($ million)						0.0009		0.0021	-0.0013	0.002
						(0.4334)		(0.8447)	(-0.2522)	(0.7952)
CEO Vega ($ thousand)							-0.0072**	-0.0073**	-0.0056	-0.0076**
							(-2.1068)	(-2.0499)	(-0.9006)	(-2.1125)
CEO Age	0.0105	0.0108	0.0205	0.0117	0.0099	0.0099	0.007	0.0088	0.0099	0.0092
	(0.5047)	(0.5207)	(0.5455)	(0.5646)	(0.4783)	(0.4764)	(0.3392)	(0.4276)	(0.2549)	(0.4468)
Log of Tenure	-0.2096	-0.1835	-0.3336	-0.2012	-0.1831	-0.2191	-0.0656	-0.0381	-0.1128	-0.0506
	(-0.9054)	(-0.7836)	(-0.9184)	(-0.8671)	(-0.7933)	(-0.9424)	(-0.279)	(-0.1614)	(-0.2939)	(-0.2161)
R&D/Total Assets	-0.0289	-0.0304	0.0912	-0.0292	-0.0269	-0.0289	-0.0154	-0.018	0.0992	-0.0157
	(-0.8734)	(-0.9147)	(1.5796)	(-0.8886)	(-0.8257)	(-0.8777)	(-0.4804)	(-0.5595)	(1.595)	(-0.4939)
R&D Missing Dummy	0.615*	0.581	0.339	0.5585	0.6012*	0.5868	0.6608*	0.6054*	0.4575	0.5833
	(1.6945)	(1.5999)	(0.5415)	(1.5394)	(1.665)	(1.6093)	(1.8324)	(1.6623)	(0.6864)	(1.6071)
Capex/Total Assets	-0.0112	-0.0119	-0.0014	-0.0105	-0.0104	-0.0114	-0.0143	-0.0194	-0.0191	-0.0177
	(-0.41)	(-0.4351)	(-0.0248)	(-0.3876)	(-0.3852)	(-0.4158)	(-0.5179)	(-0.6773)	(-0.3147)	(-0.6207)
Change in Assets (%)	-1.8519**	-1.8651**	-1.4903	-1.8411**	-2.1246**	-1.8341**	-2.1711**	-2.4387**	-2.787	-2.4179**
	(-2.0177)	(-2.0334)	(-0.9283)	(-2.0128)	(-2.2611)	(-1.9999)	(-2.2774)	(-2.5099)	(-1.4767)	(-2.4944)
Market/Book	-0.1163	-0.1216	0.0118	-0.111	-0.1071	-0.1198	-0.0791	-0.1112	0.1044	-0.0944
	(-0.7267)	(-0.7596)	(0.0385)	(-0.7016)	(-0.6709)	(-0.7506)	(-0.4909)	(-0.6707)	(0.3207)	(-0.5788)
Profitability ($ thousand)	0.002	0.0021	0.0051	0.0022	0.0022	0.002	0.003	0.0035	0.0079	0.0038
	(0.6304)	(0.6602)	(1.1306)	(0.7042)	(0.674)	(0.6363)	(0.8767)	(1.0063)	(1.4573)	(1.0763)
Size	0.0071	0.0076	-0.0142	0.007	0.0061	0.0062	0.0105	0.0102	-0.009	0.0095
	(0.849)	(0.9097)	(-1.1178)	(0.8451)	(0.7365)	(0.7424)	(1.2527)	(1.175)	(-0.6135)	(1.1128)
Retained Earnings/Total Assets	0.2293	0.2281	0.5229	0.2416	0.2355	0.2235	0.2719	0.2631	0.6131	0.283
	(0.9115)	(0.9056)	(1.0022)	(0.942)	(0.9355)	(0.8936)	(1.0566)	(1.0232)	(1.1458)	(1.0756)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Return Volatility	-0.0836	-0.0838	-0.0038	-0.0812	-0.0894	-0.0856	-0.1563	-0.156	-0.0047	-0.1559
	(-0.4216)	(-0.4222)	(-0.1618)	(-0.409)	(-0.4451)	(-0.4315)	(-0.7583)	(-0.7483)	(-0.1649)	(-0.745)
Intercept	-2.8856**	-2.9424**	-3.2041	-2.9881**	-2.9312**	-2.8374*	-2.6792*	-2.726*	-2.2642	-2.7418*
	(-1.9647)	(-2.0015)	(-1.4259)	(-2.0358)	(-1.9991)	(-1.9331)	(-1.8118)	(-1.8342)	(-0.9586)	(-1.8487)

Table 11. Robustness test: Propensity to pay in the 1996 though 2008 period

This table presents the results of the logistic regression in which the dependent variable equals one if the firm pays dividends at time *t* and zero otherwise. Presented in parentheses is the square root of the Wald statistic, which is analogous to the *t*-value. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. All models are estimated with 3895 observations. All models include industry and year dummies.

Dependent variable: Equals one if the firm pays dividends at time *t*, and zero otherwise					
	(1)	(2)	(3)	(4)	(5)
CEO Cash Comp. ($ million)	0.0624				0.2375**
	(0.7413)				(2.3337)
CEO Delta/Vega Ratio		0.0018**			0
		(2.1082)			(0.1389)
CEO Equity ($ million)			-0.0031***		0.0032***
			(-4.326)		(3.7312)
CEO Vega ($ thousand)				-0.0303***	-0.0338***
				(-14.167)	(-13.7357)
CEO Age	0.0097*	0.0095*	0.0136**	0.0097	0.0055
	(1.7846)	(1.745)	(2.4724)	(1.6424)	(0.9196)
Log of Tenure	0.1723**	0.1723**	0.2045***	0.3437***	0.319***
	(2.5101)	(2.5113)	(2.9657)	(4.6636)	(4.3101)
R&D/Total Assets	-0.1162***	-0.1141***	-0.1178***	-0.1182***	-0.1153***
	(-7.76)	(-7.6124)	(-7.8145)	(-7.3004)	(-7.1217)
R&D Missing Dummy	-0.1607	-0.167	-0.1476	-0.1651	-0.1751
	(-1.3218)	(-1.3731)	(-1.2114)	(-1.2782)	(-1.3495)
Capex/Total Assets	-0.0156**	-0.0149*	-0.0154**	-0.0106	-0.0093
	(-2.0283)	(-1.9345)	(-1.9957)	(-1.3173)	(-1.1614)
Change in Assets (%)	-0.0744	-0.0687	-0.0789	-0.0642	-0.0585
	(-0.8524)	(-0.7856)	(-0.8944)	(-0.7038)	(-0.6408)
Market/Book	-0.2152***	-0.2188***	-0.194***	-0.1733***	-0.1752***
	(-5.1271)	(-5.2409)	(-4.5756)	(-3.9467)	(-3.9568)
Profitability ($ thousand)	0.0078***	0.0078***	0.0078***	0.0093***	0.009***
	(5.9659)	(6.0211)	(6.0104)	(6.5294)	(6.3577)
Size	-0.0024	-0.0025	-0.0007	0.0036	0.0012
	(-0.9275)	(-0.9773)	(-0.2888)	(1.3253)	(0.4323)
Retained Earnings/Total Assets	3.2568***	3.1804***	3.2855***	3.0832***	3.0602***
	(17.6024)	(17.0881)	(17.7564)	(15.7749)	(15.4624)
Return Volatility	-0.0002	-0.0002	-0.0002	-0.0001	-0.0001
	(-0.5649)	(-0.5457)	(-0.5797)	(-0.1542)	(-0.177)
Intercept	-0.754**	-0.7629**	-1.0325***	-0.7485**	-0.562
	(-2.1482)	(-2.171)	(-2.8815)	(-1.9929)	(-1.4722)

Table 12. Relative dividend premium (RDP) and the propensity to pay dividends

This table presents the results of the logistic regression in which the dependent variable equals one if the firm pays dividends at time *t* and zero otherwise. The models are estimated using industry (two-digit SIC codes) and year dummy variables. Presented in parentheses is the square root of the Wald statistic, which is analogous to the *t*-value. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. *Relative Dividend Premium* is the value-weighted average of dividend paying firms' market-to-book ratio less the market-to-book ratio of firm *i* at time *t*. Other company and CEO variable definitions are explained in detail in Appendix 1 and 2, respectively. All models are estimated using 3895 observations. All models include industry and year dummies.

	Dependent variable: Equals one if the firm pays dividends at time *t*, and zero otherwise											
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Relative Div. Premium (VW)	3.7348***	3.7145***	3.7811***	3.5624***	2.8033***	2.8653***						
	(4.6642)	(4.638)	(4.7185)	(4.4366)	(3.3739)	(3.446)						
Relative Div. Premium							2.0488***	2.0377***	2.0742***	1.9543***	1.5378***	1.5719***
							(4.6642)	(4.638)	(4.7185)	(4.4366)	(3.3739)	(3.446)
CEO Cash Comp. ($ million)		0.0624				0.2375**		0.0624				0.2375**
		(0.7413)				(2.3337)		(0.7413)				(2.3337)
CEO Delta/Vega Ratio			0.0018**			0			0.0018**			0
			(2.1082)			(0.1389)			(2.1082)			(0.1388)
CEO Equity ($ million)				-0.0031***		0.0032***				-0.0031***		0.0032***
				(-4.326)		(3.7312)				(-4.326)		(3.7312)
CEO Vega ($ million)					-0.0303***	-0.0338***					-0.0303***	-0.0338***
					(-14.167)	(-13.7357)					(-14.167)	(-13.7357)
CEO Age	0.0101*	0.0097*	0.0095*	0.0136**	0.0097	0.0055	0.0101*	0.0097*	0.0095*	0.0136**	0.0097	0.0055
	(1.8591)	(1.7846)	(1.745)	(2.4724)	(1.6424)	(0.9196)	(1.8591)	(1.7846)	(1.745)	(2.4724)	(1.6424)	(0.9196)
Capex/Total Assets	-0.016**	-0.0156**	-0.0149*	-0.0154**	-0.0106	-0.0093	-0.016**	-0.0156**	-0.0149*	-0.0154**	-0.0106	-0.0093
	(-2.0746)	(-2.0283)	(-1.9345)	(-1.9957)	(-1.3173)	(-1.1614)	(-2.0746)	(-2.0283)	(-1.9345)	(-1.9957)	(-1.3173)	(-1.1614)
Log of Tenure	0.1763**	0.1723**	0.1723**	0.2045***	0.3437***	0.319***	0.1763**	0.1723**	0.1723**	0.2045***	0.3437***	0.319***
	(2.5747)	(2.5101)	(2.5113)	(2.9657)	(4.6636)	(4.3101)	(2.5747)	(2.5101)	(2.5113)	(2.9657)	(4.6636)	(4.3101)
R&D/Total Assets	-0.117***	-0.1162***	-0.1141***	-0.1178***	-0.1182***	-0.1153***	-0.117***	-0.1162***	-0.1141***	-0.1178***	-0.1182***	-0.1153***
	(-7.8321)	(-7.76)	(-7.6124)	(-7.8145)	(-7.3004)	(-7.1217)	(-7.8321)	(-7.76)	(-7.6124)	(-7.8145)	(-7.3004)	(-7.1217)
R&D Missing Dummy	-0.1649	-0.1607	-0.167	-0.1476	-0.1651	-0.1751	-0.1649	-0.1607	-0.167	-0.1476	-0.1651	-0.1751
	(-1.3579)	(-1.3218)	(-1.3731)	(-1.2114)	(-1.2782)	(-1.3495)	(-1.3579)	(-1.3218)	(-1.3731)	(-1.2114)	(-1.2782)	(-1.3495)
Change in Assets (%)	-0.0743	-0.0744	-0.0687	-0.0789	-0.0642	-0.0585	-0.0743	-0.0744	-0.0687	-0.0789	-0.0642	-0.0585
	(-0.8507)	(-0.8524)	(-0.7856)	(-0.8944)	(-0.7038)	(-0.6408)	(-0.8507)	(-0.8524)	(-0.7856)	(-0.8944)	(-0.7038)	(-0.6408)
Market/Book	3.5169***	3.4993***	3.5623***	3.3685***	2.63***	2.6902***	1.8309***	1.8225***	1.8554***	1.7603***	1.3645***	1.3967***
	(4.3989)	(4.3767)	(4.4519)	(4.202)	(3.1695)	(3.2413)	(4.1714)	(4.1525)	(4.2234)	(4)	(2.9946)	(3.0657)
Profitability ($ thousand)	0.0079***	0.0078***	0.0078***	0.0078***	0.0093***	0.009***	0.0079***	0.0078***	0.0078***	0.0078***	0.0093***	0.009***
	(6.06)	(5.9659)	(6.0211)	(6.0104)	(6.5294)	(6.3577)	(6.06)	(5.9659)	(6.0211)	(6.0104)	(6.5294)	(6.3577)
Size	-0.002	-0.0024	-0.0025	-0.0007	0.0036	0.0012	-0.002	-0.0024	-0.0025	-0.0007	0.0036	0.0012
	(-0.795)	(-0.9275)	(-0.9773)	(-0.2888)	(1.3253)	(0.4323)	(-0.795)	(-0.9275)	(-0.9773)	(-0.2888)	(1.3253)	(0.4323)
Retained Earnings/Total Assets	3.2458***	3.2568***	3.1804***	3.2855***	3.0832***	3.0602***	3.2458***	3.2568***	3.1804***	3.2855***	3.0832***	3.0602***

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	(17.6135)	(17.6024)	(17.0881)	(17.7564)	(15.7749)	(15.4624)	(17.6135)	(17.6024)	(17.0881)	(17.7564)	(15.7749)	(15.4624)
Return Volatility	-0.0002	-0.0002	-0.0002	-0.0002	-0.0001	-0.0001	-0.0002	-0.0002	-0.0002	-0.0002	-0.0001	-0.0001
	(-0.5715)	(-0.5649)	(-0.5457)	(-0.5797)	(-0.1542)	(-0.177)	(-0.5715)	(-0.5649)	(-0.5457)	(-0.5797)	(-0.1542)	(-0.177)
Intercept	-7.4957***	-7.4685***	-7.5979***	-7.4721***	-5.8158***	-5.7415***	-5.7744***	-5.7565***	-5.8551***	-5.8302***	-4.5238***	-4.4209***
	(-4.8548)	(-4.8378)	(-4.917)	(-4.8284)	(-3.6185)	(-3.5767)	(-4.8639)	(-4.8498)	(-4.9278)	(-4.8982)	(-3.6548)	(-3.5766)

Table 13. Sample distribution omitting and initiating firms

This table shows the sample distribution by years. Payers and non-payers are the firms that paid and not paid dividends at time t. Initiating firms are the ones that did not pay dividends for at least 36 months and kept paying dividends for 36 months after the initiation month. Similarly, omitting firms are the ones that paid dividends for at least 36 months prior to the omission month and did not start paying dividends for 36 months after the omission month. Surviving non-payers are the firms that did not pay dividends at time t-1 and are still listed at time t. Surviving non-payers are the firms that did not pay dividends at time t-1 and still listed at time t. Percentage of initiating firms is calculated by dividing the number of initiating firms by the number of surviving non-payers. Percentage of omitting firms is calculated by dividing the number of omitting firms by the number of surviving payers.

Year	All	Payers	Non-payers	Initiating firms	Omitting firms	Surviving payers	Surviving non-payers	% of initiating firms	% of omitting firms
1980	3576	2056	1520	4	15	2060	1164	0.34	0.73
1981	3980	1944	2036	10	18	1944	1418	0.71	0.93
1982	3829	1821	2008	3	25	1839	1748	0.17	1.36
1983	4373	1739	2634	5	9	1745	1919	0.26	0.52
1984	4482	1693	2789	11	6	1624	2332	0.47	0.37
1985	4383	1582	2801	4	9	1577	2434	0.16	0.57
1986	4469	1445	3024	4	15	1458	2414	0.17	1.03
1987	4428	1389	3039	10	13	1326	2567	0.39	0.98
1988	4427	1332	3095	9	6	1276	2820	0.32	0.47
1989	4252	1299	2953	14	7	1258	2707	0.52	0.56
1990	4153	1263	2890	12	10	1243	2606	0.46	0.8
1991	4214	1206	3008	10	14	1242	2586	0.39	1.13
1992	4348	1258	3090	10	13	1193	2655	0.38	1.09
1993	4788	1258	3530	11	14	1232	2916	0.38	1.14
1994	5088	1281	3807	11	10	1234	3249	0.34	0.81
1995	5235	1292	3943	17	15	1236	3443	0.49	1.21
1996	5660	1247	4413	11	7	1232	3602	0.31	0.57
1997	5689	1205	4484	8	4	1175	3924	0.2	0.34
1998	5237	1148	4089	4	6	1138	3748	0.11	0.53
1999	4763	1069	3694	5	14	1050	3281	0.15	1.33
2000	4222	945	3277	1	9	973	2876	0.03	0.92
2001	4169	863	3306	3	8	888	3054	0.1	0.9
2002	3949	802	3147	9	4	824	2992	0.3	0.49
2003	3684	907	2777	60	4	781	2798	2.14	0.51
2004	3657	973	2684	33	2	882	2561	1.29	0.23
2005	3619	997	2622	24	4	922	2494	0.96	0.43
2006	3568	983	2585	16	2	946	2415	0.66	0.21
2007	3457	954	2503	11	2	904	2313	0.48	0.22
2008	2850	852	1998	5	0	844	1919	0.26	0
2009	3098	815	2283	8	7	897	2097	0.38	0.78
2010	3021	858	2163	17	1	794	2080	0.82	0.13

Table 14. Descriptive statistics: Returns after dividend initiations and omissions

Panel B of this table reports the descriptive statistics (i.e., number of observations, mean, standard deviation, and minimum and maximum values) of stock returns before and after dividend initiations and omissions. The pre-event period is the 36-month period before the policy change. The post-event period consists of the event month as well as the 36-month period subsequent to the event, which consists of 37 monthly observations per event. Taken together, our sample includes 73 observation for each event. The first (second) row in both panels shows the statistics of the stock returns prior (subsequent) to initiations and omissions.

	Initiations					**Omissions**				
	N	*Mean*	*SD*	*Min*	*Max*	*N*	*Mean*	*SD*	*Min*	*Max*
Pre	12960	2.0286	12.3557	-40.4153	62.1622	9648	-0.4228	11.2312	-48.7634	58.1871
Post	13320	1.2700	10.3241	-40.4145	60.0000	9916	0.9667	12.7694	-40.2299	62.3656

Table 15. Average cumulative abnormal returns subsequent to dividend initiations and omissions

This table reports ACARs in up to 36-month periods before and after initiations and omissions in Panel A and B, respectively. Our sample consists of observations from 1980 through 2010. We present results for the entire sample and for each decade separately. We calculate the cumulative abnormal return for asset as follows: $CAR_i = \prod_{t=1}^{T}(1 + R_{i,t}) - \prod_{t=1}^{T}(1 + R_{M,t})$, where $R_{i,t}$ is asset i's return (the percentage change in the price of the asset from time $t - 1$ to t) and $R_{M,t}$ is the return on the market for month t. Therefore, the average cumulative abnormal returns, $ACAR$, after omissions and initiations are calculated as follows: $ACAR_t = \frac{1}{N}\sum_{i}^{N} CAR_{i,t}$, where N is the number of firms that initiate or omit dividends. Note that *ACARs* corresponding to -36 (-24, -18, etc.) are the *ACARs* that initiating or omitting firms generated over the 36 (24, 18, etc.) –period prior to the event month. Post event *ACARs* calculated over the 37-month period including the event month and 36 months following the event month. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Initiations					Panel B. Omissions				
t	*Entire Sample*	*2010-2001*	*2000-1991*	*1990-1980*	*t*	*Entire Sample*	*2010-2001*	*2000-1991*	*1990-1980*
-36	63.6905***	74.1429***	46.2070**	58.9742***	-36	-69.0265***	-35.7161***	-73.2475***	-72.9232***
-24	39.7803***	40.7496***	30.0513**	47.6392***	-24	-52.5852***	-32.7380***	-51.2857***	-57.9989***
-18	29.7025***	27.4901***	25.7463**	38.5357***	-18	-41.8966***	-25.3698***	-42.7753***	-44.8152***
-12	17.9695***	14.9342***	14.4505***	28.1349***	-12	-31.4318***	-21.2560***	-30.2998***	-34.5849***
-6	10.1666***	8.1879***	8.2850**	16.3716***	-6	-20.1644***	-16.2464***	-18.3845***	-22.4680***
-3	7.2803***	6.5835***	5.3527**	10.7595***	-3	-12.0970***	-8.2497**	-10.8343***	-13.9658***
-1	2.6115***	2.5521***	1.0790	4.3082***	-1	-6.1914***	-4.9913**	-6.8631***	-5.9106***
0	1.6280***	1.3746**	4.5657***	-0.8299	0	-3.1402***	0.6275	-3.13227**	-3.9743***
+1	2.7318***	2.0511**	6.1645***	0.6913	+1	-4.5514***	-0.2672	-4.70965***	-5.3644***
+3	4.4442***	4.0807***	6.1796**	3.4545	+3	-5.7230***	0.5513	-5.48606**	-7.2934***
+6	5.7442***	5.0651***	8.4962**	4.3971	+6	-7.5688***	2.7843	-7.09461**	-10.2278***
+12	7.1863***	5.8570***	8.9200*	8.2873*	+12	-7.8392***	9.0069	-5.61934	-13.3397***
+18	11.5487***	10.1475**	12.9609	13.1341*	+18	-9.1607***	13.9889	-5.35170	-17.3342***
+24	14.5345***	11.7472***	14.0881	21.0197*	+24	-9.7606**	22.0615	-0.51171	-24.2491***
+36	11.3378**	10.1780***	1.5715	23.8396	+36	-16.6472***	31.2247	-9.32603	-33.0990***

Table 16. Post-omission and post-initiation risk-adjusted returns: Augmented Fama–French regressions

This table reports the changes in Fama–French factor loadings subsequent to dividend initiations and omissions based on the following model specification:

$$R_{i,t} - R_{f,t} = \alpha_i + \alpha_{\Delta i} D_t + b_i(R_{M,t} - R_{f,t}) + b_{\Delta i} D_t(R_{M,t} - R_{f,t}) + s_i SMB_t + s_{\Delta i} D_t SMB_t + h_i HML_t + h_{\Delta i} D_t HML_t + o_i MOM_t + o_{\Delta i} D_t MOM_t + \varepsilon_t$$

where R_i is the stock return of firm i, R_M is the market return, R_f is the risk-free rate, SMB is the small-minus-big size factor, HML is the high-minus-low book-to-market factor, MOM is the momentum factor. The variable D is a dummy (equal to one in the post-event months and zero otherwise) added to the model in addition to its products with factor loadings to capture the effect of dividend initiations and omissions on risk-adjusted returns and factor loadings. The term α_i is the risk-adjusted return; b_i, s_i, and h_i are the factor loadings before the dividend policy change; $a_{\Delta,i}$ is the change in the risk-adjusted return; $b_{\Delta i}, s_{\Delta i}, h_{\Delta i}$, and $o_{\Delta i}$ are the changes in factor loadings subsequent to dividend initiations and omissions. We estimate this model for initiating and omitting firms and save the regression coefficients (i.e., factor loadings) separately for initiating and omitting firms. Next, we run two-tailed *t*-tests to test whether these coefficients are significantly different from zero. The *t*-values are presented in parentheses. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Initiations

Samples	α	α_Δ	b	b_Δ	s	s_Δ	h	h_Δ	o	o_Δ
Entire Sample	0.9513 (10.22)***	-0.4729 (-3.54)***	0.9721 (28.25)***	-0.0629 (-1.48)	0.8505 (17.26)***	-0.1118 (-1.82)*	0.2319 (3.8)***	-0.1669 (-2.37)**	-0.023 (-0.57)	0.0176 -0.31
2007-2003	1.0839 (8.21)***	-0.7343 (-4.52)***	0.8511 (15.08)***	0.0675 -0.94	0.754 (11.29)***	-0.1364 (-1.66)*	0.2666 (2.87)***	-0.2046 (-1.9)*	-0.0465 (-0.92)	0.0537 -0.71
2010-2001	1.0698 (9.69)***	-0.673 (-4.74)***	0.8551 (17.95)***	0.0448 -0.76	0.6917 (11.94)***	-0.0583 (-0.76)	0.2383 (3.14)***	-0.2152 (-2.41)**	-0.0635 (-1.55)	0.071 -1.12
2000-1991	0.6193 (3.15)***	-0.0791 (-0.26)	1.1485 (16.23)***	-0.274 (-3.16)***	1.0406 (10.7)***	-0.202 (-1.54)	0.4289 (3.2)***	-0.0521 (-0.35)	-0.1156 (-1.1)	0.0335 -0.25
1990-1980	1.0349 (4.46)***	-0.4431 (-1.29)	1.0446 (16.09)***	-0.0797 (-0.97)	0.9995 (7.93)***	-0.1352 (-0.93)	0.0165 -0.12	-0.1796 (-1.11)	0.1594 (1.65)*	-0.114 (-0.88)

Panel B. Omissions

Samples	α	α_Δ	b	b_Δ	s	s_Δ	h	h_Δ	o	o_Δ
Entire Sample	-1.5703 (-14.94)***	1.2706 (7.54)***	0.936 (24.35)***	0.0123 -0.22	0.8334 (15.51)***	0.0977 -1.38	0.3491 (6.09)***	0.0889 -1.07	-0.1683 (-3.99)***	-0.0366 (-0.55)
2007-2003	-1.8536 (-7.81)***	2.2684 (3.44)***	0.5309 (2.49)**	0.0303 -0.13	0.8944 (3.34)***	-0.5282 (-2.52)**	0.9538 (6.63)***	-0.5749 (-1.93)*	-0.1208 (-1.3)	0.1068 -0.57
2010-2001	-1.4927 (-4.27)***	1.5287 (2.49)**	0.7743 (5.45)***	0.1837 -1.28	0.661 (4.38)***	-0.0464 (-0.25)	0.7756 (6.21)***	-0.5109 (-2.58)***	-0.1699 (-1.88)*	0.1959 -1.52
2000-1991	-1.4016 (-8.14)***	1.4103 (5.33)***	0.9007 (15.94)***	0.0802 -0.89	0.7751 (8.67)***	-0.0129 (-0.13)	0.393 (4.68)***	0.1542 -1.23	-0.2699 (-3.89)***	0.0213 -0.2
1990-1980	-1.7242 (-12.15)***	1.1007 (4.75)***	1.0001 (18.3)***	-0.0804 (-1.00)	0.9185 (12.37)***	0.2191 (2.00)**	0.2199 (2.49)**	0.1677 -1.34	-0.0856 (-1.41)	-0.1346 (-1.36)

Table 17. Auxiliary cash flow statements of dividend omitting firms

This table reports the simplified cash flow statements of selected firms at the omission year, as well as one year before and after the omission year. All values are hand-collected from firms' 10Ks. We derive the *Cash from other Financing Activities* as *Cash from Financing Activities − Total Dividends Paid*. All values are in thousand dollars. Values in parentheses indicate negative cash flow.

Firm name	Year	Total dividends paid	Cash from other financing activities	Net investments	Cash from operations
Arctic Cat Inc.	2011	-	(946)	(11,674)	(5,123)
	2010	-	221	(6,540)	29,315
	2009	(3,796)	0	(14,226)	19,591
Carmike Cinemas	2010	-	(27,457)	(12,858)	27,685
	2009	-	(24,515)	(10,509)	49,853
	2008	(6,732)	(30,052)	604	25,072
Pier 1 Imports	2009	-	2,161	91,838	(31,634)
	2008	-	2,911	6,418	(83,074)
	2007	(17,398)	4,436	31,830	(104,905)
Furniture Brands Int'l., Inc.	2010	-	(18,000)	(19,151)	5,301
	2009	-	(95,000)	(5,297)	77,599
	2008	(5,844)	(110,800)	43,086	41,382
Tempur-Pedic International	2010	-	(106,376)	(37,517)	184,122
	2009	-	(118,721)	(14,303)	134,986
	2008	(17,993)	(182,217)	(5,368)	198,394
Wabash National Corp.	2010	-	50,752	31	(30,691)[60]
	2009	-	(20,963)	(681)	(7,014)
	2008	(5,510)	(24,214)	(12,400)	30,671
Winnebago Industries Inc.	2011	-	500	4,235	(10,119)[61]
	2010	-	(9,248)	14,334	33,039
	2009	(3,489)	1,968	4,986	8,272

[60] Invested $59,062,000 in inventories, because orders increased for the next year.

[61] Invested $23,792,000 in inventories. This is mostly due to a market slowdown.

Table 18. Descriptive statistics of non-distressed and distressed firms

This table reports the descriptive statistics of distressed and other firms (i.e., stable firms and firms in the zone of ignorance) in Panel A and Panel B, respectively. Financial distress is measured by Z-Score. Firms with a Z-Score less than 1.80 are considered distressed. Note that the column titled Panel C shows the *t*-values of two-tailed *t*-tests for the differences in sample means of distressed firms and others (non-distressed, less distressed). The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Variable definitions are explained in the Appendix 3.

	Panel A. Non-distressed firms (ND)						Panel B. Distressed firms (D)						Panel C. ND-D
	N	MEAN	Q1	MEDIAN	Q3	STD	N	MEAN	Q1	MEDIAN	Q3	STD	*t*-value
CEO Vega/Delta Ratio	2179	0.428	0.035	0.168	0.455	2.06	394	0.81	0.214	0.474	0.791	3.219	(-3.065)***
CEO Inside Debt ($ million)	2179	0.843	0	0	0.572	2.534	394	0.299	0	0	0	0.945	(4.202)***
CEO Equity ($ million)	2179	25.264	3.867	8.732	21.758	55.795	394	15.675	1.538	4.038	9.276	103.263	(2.6815)***
CEO Age	2179	54.769	50	54	60	7.5	394	54.52	49	54	60	7.758	-0.6018
Log of CEO Tenure	2179	1.424	1.099	1.386	1.946	0.752	394	1.398	0.693	1.386	2.079	0.817	-0.6172
Capex/Total Assets	2179	0.048	0.017	0.032	0.058	0.053	394	0.039	0.01	0.021	0.046	0.057	(3.1358)***
Change in Assets (%)	2179	0.062	-0.047	0.06	0.176	0.557	394	-0.156	-0.268	-0.063	0.098	0.788	(6.6692)***
Dividend Payout Ratio	2179	0.085	0	0	0.05	1.693	394	0.085	0	0	0	1.409	(-0.0023)
Dividend Yield	2179	0.01	0	0	0.01	0.05	394	0.01	0	0	0	0.091	-0.0528
Cost of Debt	964	1.311	0	1.04	2.243	1.422	198	2.343	0.336	2.263	3.902	1.921	(-8.7182)***
Firm Size	2179	724.043	315.909	559.319	930.896	632.896	394	274.843	60.111	175.838	353.523	385.962	(13.6359)***
Market/Book Ratio	2179	2.091	1.228	1.694	2.524	1.325	394	1.814	0.983	1.259	1.899	1.923	(3.5344)***
Profitability ($ million)	2179	0.069	0.031	0.078	0.126	0.13	394	-0.193	-0.255	-0.075	0.023	0.79	(14.455)***
Free Cash Flow/Total Assets	2164	0.105	0.056	0.102	0.156	0.110	389	-0.062	-0.064	0.041	0.100	1.016	(7.4163)***
R&D/Total Assets Ratio	2179	0.046	0	0.015	0.074	0.065	394	0.154	0	0.05	0.16	0.761	(-6.4892)***
	N	**%**					**N**	**%**					
Dividend payers	2179	34.5					394	6.9					

Table 19. Correlations between firm distress and dividend payouts

This table reports the Pearson Correlation coefficients of the main variables. Values in parentheses are *p*-values. Variable definitions are explained in detail in the Appendix 3.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1 *Capex/Assets*												
2 *Dividend per Share*	0.0153											
	(0.4381)											
3 *Profitability*	-0.0047	0.056										
	(0.811)	(0.0045)										
4 *Free Cash Flow/Assets*	0.0271	-0.0479	0.8997									
	(0.1718)	(0.0154)	(<0.001)									
5 *Inside Debt*	-0.0184	0.0952	0.0413	0.01								
	(0.35)	(<0.001)	(0.0362)	(0.614)								
6 *Market/Book*	0.0668	0.0321	-0.0112	-0.0523	-0.0498							
	(0.0007)	(0.104)	(0.5707)	(0.0082)	(0.0116)							
7 *Firm Size*	0.1055	0.0745	0.2497	0.1427	0.1648	0.4492						
	(<0.001)	(0.0002)	(<0.001)	(<0.001)	(<0.001)	(<0.001)						
8 *Payout Ratio*	0.0026	0.3266	0.0048	-0.0059	0.0402	-0.0097	0.0009					
	(0.896)	(<0.001)	(0.8059)	(0.7645)	(0.0414)	(0.6214)	(0.9653)					
9 *R&D/Assets*	0.0022	-0.0331	-0.8737	-0.9382	-0.0353	0.1443	-0.0493	-0.0079				
	(0.9112)	(0.0931)	(<0.001)	(<0.001)	(0.0736)	(<0.001)	(0.0124)	(0.6901)				
10 *CEO Vega/Delta*	-0.0073	-0.0138	-0.3636	-0.392	-0.0389	0.0002	-0.0732	-0.0084	0.3941			
	(0.7103)	(0.4839)	(<0.001)	(<0.001)	(0.0485)	(0.9901)	(0.0002)	(0.6714)	(<0.001)			
11 *Cost of Debt*	0.0338	-0.022	-0.159	-0.0271	0.0717	-0.1352	-0.1132	-0.026	-0.092	-0.0326		
	(0.2501)	(0.4536)	(<0.001)	(0.3598)	(0.0145)	(<0.001)	(0.0001)	(0.3751)	(0.0017)	(0.2662)		
12 *Dividend Yield*	0.0049	0.7273	0.0139	-0.0716	0.0628	-0.0402	-0.0466	0.2137	-0.0224	-0.005	-0.0197	
	(0.8049)	(<0.001)	(0.4806)	(0.0003)	(0.0014)	(0.0412)	(0.0182)	(<0.001)	(0.256)	(0.801)	(0.5029)	
13 *Z-Score*	-0.0198	0.023	0.7606	0.7652	-0.0051	0.1091	0.2754	-0.0014	-0.7433	-0.3161	-0.2962	-0.0012
	(0.3156)	(0.2427)	(<0.001)	(<0.001)	(0.7977)	(<0.001)	(<0.001)	(0.9436)	(<0.001)	(<0.001)	(<0.001)	(0.9502)

Table 20. CEO risk preferences, firm distress, and the propensity to omit dividends

This table reports the results of eight logistics regressions. The dependent variable is 1.0 if the firm is financially stable at time *t*, and 0.0 otherwise. A firm is considered to be financially distressed if its Z-Score is equal to or less than 1.80. *Distressed Firm*CEO Equity*, *Distressed Firm* High CEO Relative Leverage*, and *Distressed Firm*CEO Vega/Delta Ratio* are interaction variables. They capture whether CEO risk preferences affect the propensity to omit dividends in dividend paying and non-dividend paying firms. Numbers in parentheses are *t*-values. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10%, respectively. Variable definitions are explained in the Appendix 3.

Dependent variable: Equals one if the firm omits dividends at time *t*, and zero otherwise.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CEO Equity	0.0045	0.0044					0.0041	0.0041
	(1.5638)	(1.5131)					(1.3582)	(1.3968)
*Distressed Firm*CEO Equity*		0.0616						-0.0332
		(1.441)						(-0.6114)
CEO Vega/Delta			0.0396	0.0457			0.0401	0.0467
			(1.3299)	(1.5338)			(1.3397)	(1.5587)
*Distressed Firm*CEO Vega/Delta*				15.7149***				17.5697***
				(3.5164)				(2.9766)
High CEO Relative Leverage					-1.7519**	-1.6785**	-1.709**	-1.4238*
					(-2.2067)	(-2.1064)	(-2.145)	(-1.741)
*Distressed Firm*High CEO Relative Leverage*						-12.4343		-13.6995
						(-0.0094)		(-0.0096)
CEO Age	-0.0019	-0.0013	-0.0015	0.0011	0.0033	0.003	-0.0024	0.0006
	(-0.0586)	(-0.0407)	(-0.0459)	(0.0343)	(0.1025)	(0.0954)	(-0.0737)	(0.0183)
Log(Tenure)	-0.4575*	-0.4863*	-0.41	-0.5199*	-0.4031	-0.4031	-0.3676	-0.4967*
	(-1.7828)	(-1.8765)	(-1.5816)	(-1.8936)	(-1.5719)	(-1.5738)	(-1.4211)	(-1.8039)
Capex/Total Assets Ratio	-12.6636*	-12.1612*	-10.7244	-7.1267	-11.4388*	-11.4067*	-12.4593*	-9.3145
	(-1.8416)	(-1.765)	(-1.5798)	(-1.0322)	(-1.6705)	(-1.6655)	(-1.7718)	(-1.3021)
R&D/Total Assets Ratio	11.0055*	10.7845	12.3402*	12.7192*	10.776	10.7269	9.4356	10.0453
	(1.6871)	(1.6221)	(1.8742)	(1.8512)	(1.6227)	(1.6176)	(1.4604)	(1.4777)
R&D Missing Dummy	1.1125**	1.0634**	1.0506**	0.972*	0.9497*	0.9465*	0.8003	0.7956
	(2.0993)	(1.9871)	(1.9654)	(1.7743)	(1.7636)	(1.7579)	(1.4764)	(1.4182)
Change in Assets (%)	0.3432	0.3088	0.3704	0.3266	0.3428	0.3467	0.3152	0.2789
	(0.8061)	(0.7015)	(0.896)	(0.7743)	(0.7936)	(0.8059)	(0.7026)	(0.6175)
Market/Book Ratio	0.3436	0.3485	0.2953	0.2101	0.3812	0.378	0.355	0.2567
	(1.2537)	(1.2753)	(1.0711)	(0.7439)	(1.4242)	(1.4119)	(1.2619)	(0.8783)
Profitability ($ million)	-2.8582**	-2.8311**	-2.9975**	-3.0214**	-2.9406**	-2.9555**	-3.0527**	-3.2821**
	(-2.1936)	(-2.1613)	(-2.2794)	(-2.2367)	(-2.1661)	(-2.1739)	(-2.228)	(-2.3464)
Firm Size	-0.0567***	-0.0561***	-0.0527***	-0.0413***	-0.0544***	-0.0543***	-0.0542***	-0.0409***
	(-4.5167)	(-4.4535)	(-4.284)	(-3.2737)	(-4.3206)	(-4.3137)	(-4.1941)	(-3.067)
Intercept	-0.8591	-0.9155	-1.0549	-1.8845	-1.093	-1.0779	-0.8019	-1.7787
	(-0.4592)	(-0.4917)	(-0.5621)	(-0.9669)	(-0.5898)	(-0.582)	(-0.4235)	(-0.8939)

Table 21. CEO risk preferences, firm distress, and the propensity to pay dividends

This table reports the results of five logistics regressions to determine the effect of managerial risk preferences on the propensity to pay dividends when the firm is in financial distress. In these regressions, the dependent variable is 1.0 if the firm pays dividends at time *t*, and 0.0 otherwise. *Distressed Firm* is a binary variable, which is 1 if the firm's Z-Score is less than 1.8, and 0 otherwise. *Distressed Firm*CEO Equity*, *Distressed Firm*High CEO Relative Leverage*, and *Distressed Firm*CEO Vega/Delta* are interaction variables. They capture the propensity to pay dividends of CEOs with high equity compensation, relative leverage (i.e., inside debt), or vega/delta ratio in distressed firms. Numbers in parentheses are *t*-values. The superscripts ***, **, and * indicate significance at 1%, 5%, and 10%, respectively. Variable definitions are explained in the Appendix 3.

Dependent variable: Equals one if the firm pays dividends at time *t*, and zero otherwise.					
	(1)	(2)	(3)	(4)	(5)
*Distressed Firm*CEO Equity*	-0.0209			-0.0418	
	(-0.8071)			(-1.4907)	
*Distressed Firm*CEO Vega/Delta*		-6.0449***		-6.0725***	-5.5216***
		(-3.7802)		(-3.7971)	(-3.5213)
*Distressed Firm*High CEO Relative Leverage*			2.4629***	1.2618	1.7098**
			(3.1685)	(1.3977)	(1.982)
Distressed Firm	-1.3037***	0.1445	-1.658***	0.4624	-0.0974
	(-4.3642)	(0.3902)	(-6.3674)	(0.9433)	(-0.2467)
CEO Age	0.0163**	0.0168**	0.0162**	0.0165**	0.0166**
	(2.2215)	(2.2831)	(2.2002)	(2.228)	(2.2534)
Log(CEO Tenure)	0.3381***	0.3417***	0.3363***	0.3445***	0.3406***
	(4.4437)	(4.4967)	(4.4063)	(4.5222)	(4.4722)
Capex/Total Assets Ratio	-3.1604***	-3.2473***	-3.1764***	-3.2221***	-3.2389***
	(-2.9038)	(-2.9946)	(-2.9178)	(-2.9448)	(-2.9812)
R&D/Total Assets Ratio	-11.9783***	-11.9963***	-11.9454***	-11.8285***	-11.9031***
	(-8.1949)	(-8.1728)	(-8.1721)	(-8.0389)	(-8.1068)
R&D Missing Binary	0.2226*	0.2283*	0.2328*	0.2337*	0.2403*
	(1.645)	(1.6823)	(1.7163)	(1.7163)	(1.7668)
Change in Assets (%)	-0.0814	-0.082	-0.0826	-0.0883	-0.0833
	(-0.8812)	(-0.8809)	(-0.8901)	(-0.9424)	(-0.8926)
Market/Book Ratio	-0.1217**	-0.1138**	-0.1171**	-0.1158**	-0.1128**
	(-2.2691)	(-2.1191)	(-2.1832)	(-2.1535)	(-2.0995)
Profitability ($ million)	1.4333***	1.3461***	1.398***	1.3453***	1.3281***
	(2.8367)	(2.6301)	(2.7488)	(2.6134)	(2.5874)
Firm Size	0.0142***	0.0139***	0.0141***	0.0142***	0.014***
	(5.8786)	(5.7597)	(5.8368)	(5.8369)	(5.7759)
Intercept	-2.2299***	-2.2584***	-2.21***	-2.2459***	-2.2459***
	(-4.9596)	(-5.0056)	(-4.9069)	(-4.9704)	(-4.9732)

Table 22. CEO risk preferences, low payout policy, and firm financial stability

This table reports the results of eight logistics regressions in which the dependent variable is 1.0 if the firm is financially stable (i.e., Z-Score is equal to or more than 3.0) at time *t*, and 0.0 otherwise. *Retain Earnings*CEO Equity*, *Retain Earnings*High CEO Relative Leverage*, and *Retain Earnings*CEO Vega/Delta Ratio* are interaction variables. They capture how CEOs with high equity compensation, relative leverage (i.e., inside debt), or vega/delta ratio affect the firm's financial stability in non-dividend paying firms. Numbers in parentheses are *t*-values. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10%, respectively. Variable definitions are explained in the Appendix 3.

Dependent variable: Equals one if the firm is financially stable at time *t*, and zero otherwise.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CEO Equity	0.0002	0.0297***					0.0005	0.0259***
	(0.2129)	(3.2074)					(0.5504)	(3.0186)
*Retain Earnings*CEO Equity*		-0.03***						-0.0259***
		(-3.2557)						(-3.0255)
CEO Vega/Delta Ratio			-0.0047	2.7406***			-0.0047	1.9455**
			(-0.2015)	(2.8303)			(-0.1992)	(2.0001)
*Retain Earnings*CEO Vega/Delta Ratio*				-2.7607***				-1.959**
				(-2.8542)				(-2.0155)
High CEO Relative Leverage					1.0681***	1.1627***	1.0777***	1.1156***
					(4.3459)	(3.9385)	(4.3765)	(3.7555)
*Retain Earnings*High CEO Relative Leverage*						-0.3091		-0.1233
						(-0.6135)		(-0.2444)
CEO Age	0.0112	0.0086	0.0112	0.01	0.0078	0.0081	0.0077	0.0044
	(1.423)	(1.0893)	(1.4263)	(1.2696)	(0.99)	(1.0222)	(0.9801)	(0.5562)
Log(CEO Tenure)	-0.0257	-0.0603	-0.025	-0.0255	-0.0515	-0.0519	-0.0576	-0.0908
	(-0.3204)	(-0.7454)	(-0.312)	(-0.3163)	(-0.6427)	(-0.6467)	(-0.7125)	(-1.1098)
Capex/Total Assets Ratio	0.8734	1.0491	0.87	0.8546	0.9479	0.9413	0.9205	1.0856
	(0.7465)	(0.8976)	(0.7437)	(0.7351)	(0.8111)	(0.8056)	(0.786)	(0.9309)
R&D/Total Assets Ratio	-2.1598**	-1.9073**	-2.1426**	-1.9503**	-1.7436**	-1.7322**	-1.7885**	-1.4331*
	(-2.5398)	(-2.2579)	(-2.5327)	(-2.3024)	(-2.0716)	(-2.0582)	(-2.1133)	(-1.7042)
R&D Missing Dummy	-0.2163	-0.2931**	-0.2159	-0.2258	-0.1373	-0.1375	-0.1359	-0.2139
	(-1.487)	(-1.9837)	(-1.4841)	(-1.5446)	(-0.9315)	(-0.9318)	(-0.9212)	(-1.4236)
Profitability ($ million)	5.5749***	5.4766***	5.583***	5.585***	5.6287***	5.6364***	5.5968***	5.4999***
	(10.9684)	(10.8171)	(11.0297)	(11.0305)	(11.0015)	(11.0092)	(10.8966)	(10.7409)
Firm Size	0.0319***	0.0304***	0.0319***	0.0319***	0.0313***	0.0313***	0.0311***	0.0298***
	(13.9077)	(13.1777)	(13.9844)	(13.9382)	(13.6064)	(13.6092)	(13.4093)	(12.7686)
Intercept	-1.3635***	-1.1776**	-1.3631***	-1.3631***	-1.2161***	-1.233***	-1.2017***	-1.0212**
	(-2.9771)	(-2.5546)	(-2.9763)	(-2.9749)	(-2.6558)	(-2.6883)	(-2.6182)	(-2.2023)

Table 23. CEO risk preferences, free cash flow, and firm financial stability

This table reports the results of five logistics regressions. In these models, the dependent variable is 1.0 if the firm is financially stable (i.e., Z-Score is equal or above 3.0) at time *t*, and 0.0 otherwise. *FCF*CEO Equity*, *FCF*High CEO Relative Leverage*, and *FCF*CEO Vega/Delta Ratio* are interaction variables. They capture how CEOs with high equity compensation, relative leverage (i.e., inside debt), or vega/delta ratio affect the firm's financial stability in firms with high free cash flow. The numbers in parentheses are *t*-values. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10%, respectively. Variable definitions are explained in the Appendix 3.

Dependent variable: Equals one if the firm is financially stable at time *t*, and zero otherwise.

	(1)	(2)	(3)	(4)	(5)
Free Cash flow ($ million) (FCF)	1.4308**	1.4396**	1.518**	0.9634	1.0256
	(2.3061)	(2.277)	(2.4274)	(1.542)	(1.5949)
*FCF*CEO Equity*		-0.0004			0.0008
		(-0.0728)			(0.1547)
*FCF*CEO Vega/Delta*			-0.137***		-0.1268***
			(-5.5063)		(-4.957)
*FCF*High CEO Relative Leverage*				8.048***	8.0376***
				(3.613)	(3.5975)
CEO Age	0.0101	0.0101	0.0099	0.008	0.0078
	(1.2774)	(1.2763)	(1.2573)	(1.0063)	(0.9901)
Log(Tenure)	-0.0418	-0.0415	-0.0426	-0.0599	-0.0614
	(-0.5369)	(-0.532)	(-0.5473)	(-0.7668)	(-0.7838)
Capex/Total Assets Ratio	0.3055	0.3053	0.2714	0.338	0.3056
	(0.2575)	(0.2574)	(0.2287)	(0.2852)	(0.2577)
R&D/Total Assets Ratio	-1.9998**	-1.996**	-2.0247**	-1.9004**	-1.9317**
	(-2.3553)	(-2.3464)	(-2.3867)	(-2.2429)	(-2.2776)
R&D Missing Dummy	-0.1673	-0.1674	-0.1683	-0.1186	-0.1194
	(-1.1583)	(-1.159)	(-1.1655)	(-0.8137)	(-0.819)
Profitability ($ million)	5.0362***	5.0391***	5.033***	5.1479***	5.1374***
	(9.2681)	(9.2489)	(9.2652)	(9.3851)	(9.3468)
Firm Size	0.0319***	0.0319***	0.0318***	0.0316***	0.0315***
	(13.8226)	(13.8226)	(13.7973)	(13.6125)	(13.577)
Intercept	-1.2542***	-1.2541***	-1.2431***	-1.1159**	-1.1058**
	(-2.7599)	(-2.7597)	(-2.7334)	(-2.4506)	(-2.4266)

VITA

DEREN CALISKAN

Strome College of Business, Finance Department, Constant Hall 2056

757-286-5196 • mcaliska@odu.edu • www.deren.us

EDUCATION

Ph.D. in Finance, Old Dominion University, Norfolk, VA, USA, 2015
Outstanding Doctoral Student in Finance
M.A. in Economics, Old Dominion University, Norfolk, VA, USA, 2015
M.B.A., Old Dominion University, Norfolk, VA, USA, 2008
B.B.A., Istanbul University, Istanbul, Turkey, 2005

PUBLICATIONS

"Stock returns and the price of gold" (with Mohammad Najand), *Journal of Asset Management*, forthcoming

PRESENTATIONS & WORKSHOPS

External

Southwestern Finance Association Conference, Houston, TX, **"Stock returns and the price of gold,"** 2015

Internal

Invited to host a training workshop on CRSP and Compustat for the Finance Department, Old Dominion University, 2015
Old Dominion University Dean's Research Seminar, **"CEO risk preferences and dividend policy decision,"** 2015
Invited to host a training workshop on SAS for the Doctoral Student Association, Old Dominion University, 2013

TEACHING EXPERIENCE

Adjunct faculty at Old Dominion University, Norfolk, VA, USA, 2011-2015
Managerial economics (4.18/5)
Intro corporate finance (4.6/5)
Principles of macroeconomics (4.5/5)
Principles of microeconomics (4.22/5)
Teaching assistant at Old Dominion University, Norfolk, VA, USA, 2007-2008
International finance, MBA
Accounting for managers, MBA

SERVICE

Session chair and discussant at the Southwestern Finance Association Conference, 2015
Referee for the Financial Management Association Venice Conference, 2015

SCHOLARSHIPS

Earned full scholarship for the Ph.D. program in Finance, Old Dominion University, 2008
Earned summer grant in the MBA program, Old Dominion University, 2008
Earned Graduate Assistantship for the MBA program, Old Dominion University, 2006