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Passing the dividend baton: The impact of dividend policy on new CEOs' initial compensation

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Passing the dividend baton: The impact of dividend policy on newly appointed CEOs' initial compensation

ABSTRACT

We examine how firms' dividend policy affects the initial compensation of their newly appointed CEOs. We focus on newly appointed CEOs to isolate the effect of dividends on compensation and to provide new insights into an aspect largely neglected by compensation research. We show that the dividend payout is positively related to new CEO compensation. Further, the positive effect of dividends is stronger for firms with no dividend cuts over the past two, three and four years, firms with relatively high institutional ownership, and those with strong boards, consistent with new CEOs receiving higher pay as compensation for greater dividend pressure.

JEL classification: G30, G35, J33

Keywords: CEO compensation; New CEOs; Dividend policy; Corporate governance

Introduction

Among the recurring and contentious themes in the literature on compensation are the nature and form of the pay-setting process[1] and the determinants of pay,[2] in addition to the effects of CEO pay on firm behavior and performance.[3] While a substantial body of the extant literature focuses on the compensation of the incumbent CEO, little attention has been devoted to the initial compensation of the new CEO.[4] Notable exceptions are Harris and Helfat (1997), Chen (2015) and Chang et al. (2016). The former study documents that externally hired CEOs receive greater initial compensation than those promoted internally. The authors attribute the differences in pay to CEOs' differential human capital.[5] The latter two studies find that new CEOs at financially distressed firms receive higher pay, which includes a compensation premium for additional risk bearing. Our aim is to extend this line of inquiry by investigating whether the initial compensation of the newly appointed CEO is affected by the hiring firm's dividend payout — a decision made by the prior management but with lasting effects on the new CEO.

High dividends can be regarded as a mechanism to mitigate Jensen's (1986) free cash flow problem by subjecting the managers to the performance pressure that expected, continuing dividend payments entail. As high dividends reduce retained profits, the firm subjects itself to intense monitoring by the capital markets, as it needs to raise new capital more often (Rozeff, 1982; Easterbrook, 1984; Jensen, 1986). While dividend payments to shareholders are not

[1] See e.g., Jensen and Meckling (1976); Jensen and Murphy (1990); Yermack (1997); Bebchuk et al. (2002); Bebchuk and Fried (2004); and Bebchuk et al. (2010).
[2] See e.g., Aggarwal and Samwick (1999); Hartzell and Starks (2003); Chhaochharia and Grinstein (2009); Graham et al. (2012); Custódio et al. (2013); Chemmanur et al. (2013); Peters and Wagner (2014); and Focke et al. (2017).
[3] See e.g. Bizjak et al. (1993); Core et al. (1999); Coles et al. (2006); Yermack (2006); Armstrong and Vashishtha (2012); Hayes et al. (2012); Armstrong et al. (2013); and Anantharaman and Lee (2014).
[4] The 'new CEO' in this paper refers to the newly appointed (or incoming) CEO, in the case of CEO turnover, to replace the incumbent (departing) CEO.
[5] When executives switch firms, they forego the future value of their firm-specific skills in their old firm, and take on additional risk associated with their lack of firm-specific skills in relation to their new firm. To compensate for the disutility due to the switch, the firm has to pay a premium to an external successor (Harris and Helfat, 1997).

mandatory, the survey evidence in Brav et al. (2005) – which updates the seminal Lintner (1956) study – reveals that managers have a strong desire to maintain the current dividend level and are extremely reluctant to cut dividends. Specifically, managers prefer to forego profitable investment projects or to raise external funds than reducing the dividend payout. This extreme reluctance can be attributed to the large penalties incurred for reducing dividends as dividend cuts and omissions are followed by significant, negative price reactions (Healy and Palepu, 1988; Michaely et al., 1995; Benartzi et al., 1997; Jensen et al., 2010), large declines in institutional ownership (Parrino et al., 2003), an increased likelihood of CEO dismissal (Parrino et al., 2003; Schaeck et al., 2012), and fewer future external board seats for top executives (Kaplan and Reishus, 1990). Hence, to the extent that the pressure to maintain high levels of dividends increases the demands on CEOs, new CEOs at high-dividend firms should receive higher pay as compensation for the greater disutility associated with increased performance demands, in the spirit of Hermalin (2005).

A potential concern arising when attempting to identify the effect of the dividend payout on CEO compensation is that dividend policy may be endogenously determined. For example, prior research suggests that entrenched managers may voluntarily commit to a higher dividend payout as a protection against disciplinary actions by external shareholders (Fluck, 1999; Hu and Kumar, 2004). They also have substantial influence over their own compensation package (Bebchuk et al., 2002; Bebchuk and Fried, 2004). This concern, however, is difficult to address in a specification that examines incumbent CEO compensation because of the difficulty in teasing out the effect of the dividend payout from other aspects, such as managerial entrenchment, that could alter CEO pay. The primary attraction of focusing on the initial compensation of newly appointed CEOs is that it helps address this concern. Newly appointed CEOs have had little or no time to gain control over corporate decisions. Indeed, the initial pay packages of the new CEOs are likely determined before they take office (Chang et al., 2016),

i.e. at a time when the CEOs are as yet not entrenched. More importantly, the hiring firm's dividend payout essentially represents a succession context whereby the 'baton' is passed by the CEO's predecessor, along with the pressure that goes with it. Therefore, by comparing new CEOs' compensation across firms with different levels of dividend payouts, our study is able to better isolate the effect of inherited dividend pressure on compensation.

To set the stage, we first examine the relation between the dividend payout and the new CEO's compensation. As a measure of CEO pay, we use both market values and risk-adjusted values of compensation. Risk-adjusted values measure cash equivalents that CEOs are willing to accept in place of (riskier) pay packages that contain equity-based pay (Peters and Wagner, 2014). These values take into account that equity (as part and parcel of the pay package) is worth less to an undiversified, risk-averse CEO than to an optimally diversified investor. By using risk-adjusted compensation, we directly adjust CEO pay for differences in pay structure, thereby mitigating the concern that a pay premium compensating for the riskiness of equity-based pay drives our findings. Nevertheless, the two compensation measures yield qualitatively similar estimates, suggesting that differences in compensation risk cannot explain our findings.

We provide evidence of a positive relation between the dividend payout and new CEO compensation based on firm fixed effects regressions including a wide range of controls and year fixed effects. Specifically, the coefficient estimate for our main variable of interest in the baseline model suggests that a one-standard-deviation increase in the dividend-to-assets ratio is associated with 12.0% higher new CEO compensation, or an increase of $509,614 ($326,057) per year for the CEO in market value (risk-adjusted value). This finding is robust to alternative measures of dividend payouts, subsamples, and econometric specifications. In addition, we examine whether a positive relation also exists between new CEO compensation and stock repurchases, which is a more flexible method of disgorging cash to shareholders compared to dividends and which imposes no commitment on CEOs to make future payouts. As expected,

we find that firms with greater repurchases do not pay their CEO more, consistent with the compensation for dividend pressure view. Further, the results based on propensity score matching reinforce the baseline findings. Dividend-paying firms on average pay their new CEOs significantly more than their matched non-dividend-paying counterparts.

Next, to provide further evidence that the positive effect of dividends on CEO pay compensates for the performance pressure that continuing, high dividend payments entail, we explore the variation in the level of such pressure. If maintaining high levels of dividends enhances the demands on the new CEO and thus increases the pay they require, we expect the positive effect to be more pronounced when dividend pressure is great. Hence, we identify three settings, which increase the pressure on the firm to maintain a high dividend payout, thereby exerting greater pressure on the CEO.

First, firms have incentives to build a reputation for delivering regular dividends (and for not reducing dividends opportunistically) to be able to sell future equity at higher prices (La Porta et al., 2000; Shleifer, 2000; Gomes, 2000; DeAngelo and DeAngelo, 2007). Ceteris paribus, firms with a good dividend history (i.e. no dividend cuts over the past years) have stronger incentives to protect their established reputation by maintaining dividend payouts. Thus, we expect to observe a larger effect for firms with a good dividend history where the pressure to maintain the high dividend payout is greater. Consistent with this prediction, we find that the effect of dividends on new CEO compensation is positive and statistically significant for firms with no dividend cuts over the past two, three, and four years, but insignificant for firms with at least one cut during the same periods.

Second, prior studies suggest that institutional investors are effective monitors of managerial behavior (Shleifer and Vishny, 1986) and that greater institutional ownership is associated with improved sensitivity of top executive turnover to firm performance (Denis et al., 1997), higher pay-for-performance sensitivity and lower levels of fixed compensation

(Hartzell and Starks, 2003), as well as improved monitoring and better firm performance (McConnell and Servaes, 1990). In a similar vein, Crane et al. (2016) provide evidence that institutional investors pressure firms to pay more dividends to mitigate agency problems. Thus, we expect the impact of dividends on new CEO compensation to be more prominent for firms with high institutional ownership where dividend pressure is greater. Our results are consistent with this conjecture.

Finally, La Porta et al. (2000) argue that dividends are an outcome of an effective system that disgorges cash from firms to shareholders, especially when reinvestment opportunities are poor. They find empirical support for their argument. Similarly, DeAngelo et al. (2009) suggest that managers are pressured to maintain high dividend payouts through monitoring by the board. For this pressure to be taken into account in the compensation design, the board must be in a position to pressure the CEO to maintain and/or increase the dividend payout. In other words, we hypothesize that compensating for dividend-related performance pressure requires strong internal governance. Consistent with this view, we find that the positive effect of dividends on compensation only applies to firms with more independent boards and those with boards composed of fewer busy directors. Hence, strong boards exert greater pressure on the CEO to maintain high dividends and they take this pressure information into account when setting the new CEO's pay.

Our study adds to the literature on dividend policy and corporate governance more broadly. Since Lintner (1956), it has been well known that managers are reluctant to cut dividends. Brav et al. (2005) report survey evidence that confirms this observation. Further evidence by Michaely et al. (1995), Grullon et al. (2002), and many others, suggests that management's reluctance to cut dividends is partly driven by investors' negative reaction to such announcements. Given these stylized facts, high dividend payouts are likely to serve a disciplinary role by exerting pressure on managers to maintain firm performance, as predicted

by Rozeff (1982) and Easterbrook (1984). Our paper is the first to document how the disciplinary role of dividends affects (new) CEO compensation. We show that, *ceteris paribus*, a higher inherited dividend payout is associated with higher initial compensation for the new CEO. Similar to Hermalin (2005), we argue that CEOs demand higher pay to compensate for the disutility or pressure associated with increased board scrutiny. We hypothesize that firms with higher dividends pay their new CEO more to compensate for the enhanced disciplinary pressure. We find that the positive effect of dividends on new CEO pay is only observed for well-governed firms where the pressure to maintain a high dividend payout is greater.

Our study also contributes to the growing literature exploring the relation between CEO compensation and various firm characteristics. CEOs at firms with greater institutional ownership are paid less, suggesting that institutional investors assume a monitoring role in mitigating agency problems (Hartzell and Starks, 2003). Deng and Gao (2013) show that firms in polluted, high crime areas, or otherwise unpleasant locations pay higher compensation to their CEOs than firms in more livable locations. Further, Chemmanur et al. (2013) find that firm leverage has a positive effect on the level of CEO compensation. Focke et al. (2017) provide empirical evidence that CEOs of prestigious firms (firms included in *Fortune*'s ranking of America's most admired companies) earn less. More closely related to our work, Chen (2015) and Chang et al. (2016) document that new CEOs at financially distressed firms receive a compensation premium for additional risk bearing, resulting in higher total pay. Our study makes a major contribution to this literature by showing that the dividend payout is another important firm characteristic determining the compensation contract of new CEOs.

Our paper is also related to the ongoing debate on whether the executive compensation contracts we observe in practice are a result of optimal contracting or managerial rent extraction, as suggested by, e.g., Yermack (2009) and Bebchuk et al. (2010). Our results suggest that the

dividend-induced compensation premium matters in well-governed firms, an observation that provides support for efficient contracting theories for this subset of firms.

The rest of the paper is organized as follows. Section 2 explains the data sources and model specification, and presents summary statistics. Section 3 contains our analysis of the effect of the dividend payout on new CEO compensation. Section 4 reports the results from various robustness checks. Section 5 summarizes our main findings and concludes.

2. Data sources, methodology and summary statistics

2.1. Data sources and sample selection

Our sample is obtained from several sources. Data on CEO characteristics (e.g., age, tenure, and gender) and their compensation are from ExecuComp. For each year, we manually match the CEOs in ExecuComp with the profiles in the BoardEx database to extract additional data on CEO careers and education. Data on dividends and other firm characteristics is from Compustat. Data on institutional equity holdings is from the CDA Spectrum database. We obtain director characteristics from IRRC/Riskmetrics and stock returns from CRSP.

As previously discussed, we focus on newly appointed CEOs and their initial compensation packages to help isolate the effect of the dividend payout on compensation. We define CEO turnover as a firm-year *t* when the ExecuComp database lists a different CEO than in year *t*-1. We end up with 2,135 new-CEO observations for 1,373 unique firms between 1996 and 2014 for which the required data on dividend payouts and the control variables is available. Of the 1,373 firms in our sample, 59.4% (815) had only one CEO change and 40.6% (558) had two or more CEO changes.

2.2. Empirical specification

To examine how the firm's dividend policy, as measured by the dividend payout, affects the initial compensation of its newly appointed CEO, we examine the following baseline empirical specification:[6]

$$Ln\,(Compensation)_{i,t} = \alpha + \beta\, Dividend\ payout_{i,t} + \gamma Z_{i,t} + \lambda_i + \lambda_t + \varepsilon_{i,t} \qquad (1)$$

where *Dividend payout* is a measure of the dividend payout, including the ratio of dividends over net income and dividends over total assets. The findings are robust to alternative measures, i.e. dividends over sales, dividends per share, and the dividend yield (i.e. the ratio of dividends per share to the fiscal year-end stock price). *Z* is a vector of control variables that have been shown to affect CEO compensation by the extant literature. *Ln* (*Compensation*) is the logarithm of total compensation received during the newly appointed CEO's first year. We use two measures of CEO compensation, namely, market values of compensation and risk-adjusted values of compensation. They, along with the control variables, are specified in Sections 2.2.1−2.2.2. Further, λ_i captures firm fixed effects. This fixed-effects specification makes use only of within-firm variation. That is, we estimate the effect of dividends on CEO compensation using only variation in the dividend payout within firms and between CEO change years.[7] The fixed-effects approach allows us to eliminate the impact of any time-invariant firm characteristics on compensation, although only firms with at least two CEO changes are used in the estimation. We also include year fixed effects, denoted as λ_t, to account

[6] An alternative specification focuses on changes instead of levels. The results suggest that dividend increases are associated with increases in the compensation of new CEOs, albeit less significantly so.

[7] Alternatively, we could include CEO fixed effects and control for unobserved time-invariant CEO heterogeneity. Since this specification makes use only of within-CEO variation, only CEOs that switch at least twice between firms in our sample during the period of study are used to identify the effect of interest and there are only 38 such CEOs (out of 2,095 unique CEOs in the sample). Given the small number of utilizable cases, it is not surprising that the effect of dividend policy on new CEO compensation is no longer significant when using CEO fixed effects.

for any trends in compensation practices across firms.[8] We cluster standard errors at the firm level to account for heteroskedasticity and auto-correlation.

2.2.1 Dependent variables

Our dependent variable is the new CEO's total compensation, which is defined as the sum of the salary, bonus, long-term incentive plans, restricted stocks, option grants and all other compensation received during the CEO's first year.[9] We extract total compensation from ExecuComp (item *tdc1*) and convert it into year 2000 dollars using the Consumer Price Index obtained from the Bureau of Labor Statistics. A major imperfection of this compensation measure, based on market values, is that compensation structure varies considerably across firms and that market values of compensation include a compensating differential for the riskiness of stock and option grants, making it difficult to tease out the effect of the dividend payout. Hence, greater market values of compensation in firms with higher dividend payouts may not only reflect differences in payout levels, but also differences in the fraction of equity-based pay.

To address this concern, we compute risk-adjusted values of compensation, which convert market values into lower cash equivalents that CEOs would be willing to receive in place of pay packages that contain risky equity-based pay. By using risk-adjusted compensation, we explicitly take into account the fact that the equity from equity-based pay is worth less to a risk-averse, under-diversified CEO than to a well-diversified investor. This approach allows us to adjust the level of compensation for differences in compensation structure, thereby mitigating the concern that the observed effect of the dividend payout on compensation is driven by the pay-structure related risk premium.

[8] The results are robust to accounting for industry-year fixed effects, such as industry-specific changes in labor market conditions.
[9] We identify the CEO's starting date using both the *becameceo* item in ExecuComp and the proxy statements.

Specifically, to compute risk-adjusted values of compensation we use the Ingersoll (2006) model.[10] The implementation of the model strictly follows that described in Peters and Wagner (2014). The two unobservable model parameters that require attention are the manager's degree of relative risk aversion, ρ, and the portfolio constraint, θ.[11] Following Peters and Wagner (2014), we use $\rho = 3$ and $\theta = 50\%$ for our main analysis. Our robustness analysis in Section 4 shows that the results hold for alternative values for the two parameters.

2.2.2 Control variables

We control for a number of firm- and CEO-specific determinants of CEO compensation identified by the literature. It is crucial to control for firm size and performance in compensation regressions (Jensen and Murphy, 1990; Murphy, 1999), but even more so in our setting because larger firms and more profitable firms tend to pay higher dividends. We measure firm size as the natural logarithm of sales. We proxy for firm performance using both market (*Stock return*) and operating measures (*ROA*). Next, we include *Firm age*, the number of years since the firm's CRSP listing date, to control for the stage in the firm's lifecycle, which may have implications for both compensation and dividend policies. We also include *Tobin's Q* as a measure of the firm's growth opportunities to account for the potential matching between higher-quality managers and firms with greater growth opportunities (Smith and Watts, 1992). Moreover, Chemmanur et al. (2013) find that firms with higher leverage pay their CEOs more. We define *Leverage* as the ratio of total debt to total assets. Following Ittner et al. (2003), we include

[10] As argued by Peters and Wagner (2015), the Ingersoll (2006) model has two major advantages. First, it provides a valuation framework that allows the CEO to optimally respond to risk exposure. For example, the model allows the CEO to reduce his risk exposure by exercising options early or by allocating less outside wealth to the market portfolio. In contrast, the Hall and Murphy (2002) model does not incorporate these features. Second, the Ingersoll (2006) model provides closed-form solutions for most expressions and does not require numerical computations of integrals. This makes the model more appealing than that of Cai and Vijh (2005). The Stata program provided by Peters and Wagner (2015) to implement this model is available at: http://www.uva.nl/en/profile/p/e/f.s.peters/f.s.peters.html.

[11] The portfolio constraint is defined as the fraction of wealth that the manager is forced to hold in his firm's stock beyond that which he would voluntarily hold. This parameter is determined primarily by the CEO's unvested holdings of company stock and options.

Cash, the ratio of cash and short-term investments to total assets, as a measure of cash constraints that may affect compensation levels. To mitigate the effects of outliers, we winsorize all accounting variables at the 1st and 99th percentiles.

We incorporate four controls for board structure and institutional presence because of prior evidence that they are important determinants of CEO compensation and/or the dividend payout (Hartzell and Starks, 2003; Fich and Shivdasani, 2006; Chhaochharia and Grinstein, 2009; Chen et al., 2017). *Board busyness* is the fraction of busy directors on the board, with busy directors being those who hold three or more directorships, following Fich and Shivdasani (2006). *Fraction female directors* is the fraction of female directors on the board, and *Board independence* is the fraction of independent directors. *Institutional ownership* is the proportion of equity owned by 13-F institutional investors.

Graham et al. (2012) show that managerial attributes explain most of the variation in CEO compensation. Hence, we include the following CEO characteristics to account for manager-specific heterogeneities in compensation. First, we use the following two demographic traits: *CEO age* is the age of the CEO in years, and *Female CEO* is an indicator variable that equals one if the CEO is a woman, and zero otherwise. Second, we use the following three proxies for the CEO's talent as suggested in the literature (e.g. Graham et al., 2012; Custódio et al., 2013): *MBA*, an indicator variable for CEOs who have a MBA degree; *Ivy League*, an indicator variable for CEOs who attended an Ivy League school at any academic level; and *Fast track,* the age at which the executive became a CEO for the first time. *External hire* is an indicator variable that equals one if the CEO was hired from outside the firm, and zero otherwise. Following Weisbach (1988) and Peters and Wagner (2014), we classify a CEO as an outside hire if he joined the firm no earlier than one year before his appointment as CEO.[12]

[12] To identify externally hired CEOs, we first use ExecuComp items *joined_co* (the date when the executive joined the company) and *becameceo* (the date when the executive became CEO of the firm) and then supplement these items using hand-collected data from the proxy statements.

Fourth, Schoar and Zuo (2017) document that CEOs who started their careers during recessions tend to have different career trajectories than those who started in economically prosperous periods: They become CEOs more quickly, but ultimately end up heading smaller firms and receiving lower compensation. Therefore, following Schoar and Zuo (2017) we include an indicator variable, *Recession CEO*, set to one if there was a recession[13] during the year when the CEO reached the age of 24, and zero otherwise.[14] Finally, *Military CEO* is an indicator variable that takes a value of one if the CEO has any military experience, and zero otherwise. Benmelech and Frydman (2015) show that military experience is important to the formation of managers as CEOs with such experience are associated with more conservative financial policies. To construct these variables, we manually match (by company name and CEO name) the executives in ExecuComp who are identified as CEOs in a specific year with the detailed profiles in the BoardEx database. This enables us to obtain detailed data on CEO characteristics, including demographics, educational background, career path (i.e. the firms where the CEO worked in the past as well as the positions assumed in these firms), and military service.

2.2.3 Summary statistics

Table 1 reports summary statistics for our main variables. Panel A focuses on the CEO compensation characteristics. The mean (median) total compensation of newly appointed CEOs in our sample is $4,246,785 ($2,717,141). The mean and median risk-adjusted compensation is $3,178,830 and $2,004,248, respectively. The lower risk-adjusted values compared to the market values reflect the discount for the riskiness of equity-based pay. Panel B presents the descriptive statistics for the firm characteristics. On average, a firm in our sample

[13] Recession years are identified using the business cycle dating database of the National Bureau of Economic Research (NBER). To be classified as a recession year, the (calendar) year must either include the trough of a business cycle or fully fall within a recession period.

[14] Following Schoar and Zuo (2017), we proxy for the exogenous starting date by using the manager's birth year plus 24. This approach allows us to avoid the endogenous selection of when a manager chose to enter the labor market.

has a dividend payout ratio of 26.8%, dividends-to-assets ratio of 1.4%, sales of $6,069 million, a Tobin's Q of 1.9, leverage of 22.2%, a return on assets of 8.8%, a stock return of 15.4%, a cash-to-assets ratio of 13.5%, and an age of 27 years. Panel C reports descriptive statistics on the governance characteristics. The average board is composed of 30.7% of busy directors. The average percentage of independent directors is 72.5%, and that of female directors is 11.1%. The average institutional ownership is 70.6%. These descriptive statistics are similar to those reported by previous studies on CEO compensation (e.g., Custódio et al., 2013; Peters and Wagner, 2014; Chang et al., 2016).

Insert Table 1 about here

Regarding the other CEO characteristics reported in Panel D, 3.6% of the newly appointed CEOs in our sample are female, and 27.5% of the CEOs are hired from outside the firm. The average CEO age is 53 years and the average age at which a CEO becomes CEO for the first time is about 49 years. Additionally, the CEO holds an MBA degree for 36.6% of all observations. The CEO has military experience for 5.3% of the firm-years and has attended an Ivy League university for 15.4% of the firm-years. Finally, 22.4% of the CEOs experienced a recession when they were aged 24. These CEO characteristics have values in line with those reported by Custódio et al. (2013) and Schoar and Zuo (2017).

Table 2 compares the means of various firm, governance, and CEO characteristics across firm-years with dividends and those without. Consistent with our prediction, the average market value (risk-adjusted value) of new CEO compensation for firms with dividends is $4,653,666 ($3,655,521), which is 29.4% (51.7%) higher than the average value of $3,596,865 ($2,409,305) for firms with no dividend payments. The results are qualitatively similar when we conduct a parallel univariate analysis for the entire ExecuComp-Compustat merged universe that includes both new and incumbent CEOs. We find that the average market value

(risk-adjusted value) of CEO compensation for firms with dividends is $4,670,199 ($3,867,025), which is 21.3% (65.2%) higher than the equivalent average of $3,851,580 ($2,340,984) for firms with no dividends.[15]

Insert Table 2 about here

With respect to the firm and governance characteristics, firms that pay dividends are larger, more mature, have a lower Tobin's q, higher leverage, have better performance in terms of ROA, smaller cash holdings, a higher fraction of busy directors, a higher fraction of independent directors, a higher fraction of female directors, and higher institutional ownership. In terms of the CEO characteristics, new CEOs at dividend-paying firms are older and became CEO for the first time at a later age. Additionally, they are more likely to be hired from inside the firm, to have military experience, to hold an MBA degree than those at non-dividend-paying firms. These patterns suggest that the dividend policy may be related to firm, governance, and CEO characteristics, highlighting the importance of controlling for these characteristics in our analysis, which we do.

3. Empirical results

3.1. Baseline regressions

Panel A of Table 3 presents our main test on whether firms with higher dividends pay their new CEOs more than those with lower dividends. In columns (1) and (2), we estimate the baseline specification in which the dependent variable is the natural logarithm of the market value of new CEO compensation. The main variable of interest is the firm's dividend payout, as measured by both dividends over net income (*Dividend payout*) and dividends over total

[15] While this observation confirms the tabulated results, the inclusion of incumbent CEOs, as aforementioned, could fuel the endogeneity problem and thus introduce additional bias into the estimation of the dividend-compensation relation. Therefore, we focus on new CEOs for further regression analysis.

assets (*Dividend/TA*). The results show that total compensation received by the new CEO is positively associated with the firm's dividend payout, consistent with the notion that new CEOs at high-dividend firms receive higher pay, compensating for greater dividend pressure. The coefficient on the dividend variable is statistically significant at the 5% level in both specifications. In terms of economic significance, the coefficient on *Dividend/TA* in column (2) indicates that a one-standard-deviation increase in the dividend-to-assets ratio is associated with 12.0% higher new CEO compensation ($e^{4.736 \times 0.024} - 1 = 0.120$), ceteris paribus. This magnitude is economically significant: 12.0% of the mean (median) market value of new CEO compensation is $509,614 ($326,057).

Insert Table 3 about here

It is likely that, at least in part, the results discussed above are driven by compensation for the riskiness of equity-based pay. To alleviate this concern, we use the natural logarithm of risk-adjusted compensation as the dependent variable. This risk-adjusted measure adjusts the value of compensation for differences in pay structure. The results are shown in columns (3) and (4). The coefficients on the dividend variables are somewhat smaller in magnitude (as one would expect) but remain significantly positive, confirming that differences in the riskiness of pay packages do not drive our results.

As expected, firm size measured by the natural logarithm of sales is significantly and positively related to CEO compensation. The coefficient on *External hire* is also significantly positive, similar to the findings in Fee and Hadlock (2003) and Custódio et al. (2013). Interestingly, after controlling for other factors, there is a positive association between *Female CEO* and risk-adjusted compensation. The association of *Female CEO* with the market value of compensation is less significant. Taken together, the latter two results confirm prior studies suggesting that female CEOs are less optimistic (Huang and Kisgen, 2013) and that less

optimistic CEOs receive higher fixed compensation because they are less likely to overestimate the value of compensation claims that are contingent on successful future outcomes (Otto, 2014).

In Panel B of Table 3, we examine if the relation between dividend payout and new CEO compensation is nonlinear. To do this, we classify firm-years using *Dividend payout* (*Dividend/TA*) into quartiles. In columns (1) and (3) (columns (2) and (4)), we replace the continuous *Dividend payout* (*Dividend/TA*) variable with three dummies for the 4th (top), 3rd, and 2nd quartiles of the dividend measure, with the 1st (bottom) quartile being the base group. Only the coefficient on the top-quartile dummy is consistently positive and significant across all four specifications. The coefficient on the third quartile is positive and significant in the first two specification. In contrast, the coefficient on the 2nd-quartile dummy is never significant. In terms of economic significance, the estimates in, e.g., column (2) imply that the initial compensation of new CEOs at firms in the top quartile of *Dividend/TA* is 28.8% higher than those in the bottom quartile. Overall, the results suggest that new CEO compensation increases with dividends, but primarily so at high levels of dividend payout.

We perform a further analysis for stock repurchases in Panel C of Table 3.[16] As expected, we do not find a significant relation between repurchases and new CEO compensation, regardless of how we define the repurchase variable. While both dividends and repurchases are methods of distributing cash to shareholders, repurchases do not constitute a commitment to make future payouts and hence provide managers with greater flexibility than dividends in terms of the amount and timing of distributions (Guay and Harford, 2000; Jagannathan et al., 2000; Brav et al., 2005). Thus, the finding that the positive and significant

[16] We measure the dollar volume of repurchases using Compustat data item *Purchases of Common and Preferred Stock*. This item, however, likely overstates stock repurchases because it includes not only repurchases of stock but also other components such as conversions of preferred stock into common stock and retirement of preferred stock. We therefore reduce *Purchases of Common and Preferred Stock* for year *t* by any decrease in preferred stock that occurs between *t-1* and *t*, following Dittmar (2000).

effect observed for dividends is not observed for repurchases provides further support for the compensation for dividend pressure view. In addition, in Appendix B, we exclude firm-years with repurchases to eliminate any impact of stock repurchases. Our results are robust to this exclusion.[17]

3.2. Alternative dividend measures

Prior literature suggests that industry peers play an important role in determining a firm's dividend policy (Lintner 1956; Popadak, 2014). Thus, we use industry-adjusted dividend measures to capture the magnitude of the firm's dividends relative to its industry peers. The industry-adjusted dividend payout (dividend-to-assets) ratio is defined as the difference between the actual value of *Dividend payout* (*Dividend/TA*) and the mean value[18] of all firms in the same Fama-French 49 industry.[19] As alternative approaches, we employ two other measures of the dividend variables. *Residual dividend payout* (*Residual dividend/TA*) is the residual from a firm fixed effects regression of *Dividend payout* (*Dividend/TA*) on all control variables used in Table 3 and year fixed effects. *CDF dividend payout* (*CDF dividend/TA*) is the empirical cumulative distribution function (CDF) of *Dividend payout* (*Dividend/TA*).[20]

Table 4 presents the estimation results. For the sake of brevity, we report only the coefficient estimates for the main variables of interest. The results show that both market values and risk-adjusted values of new CEO compensation are positively related to alternative measures of dividends. All coefficients on the dividend variables are positive and statistically

[17] The significance of the dividend coefficient is higher in two of the four specifications and the magnitude of the dividend coefficient is greater in all four specifications compared to Table 3.
[18] The results are not materially affected when we use industry-adjusted dividend measures based on the median value of all firms in the same Fama-French 49 industry.
[19] In alternative specifications (see Appendix C), we regress industry-adjusted compensation variables on industry-adjusted dividend measures along with other controls. The results continue to hold.
[20] By using the CDF variable, we estimate the effect of dividends on compensation for firms at different percentiles of the distribution of the dividend payout. For example, a firm whose dividend payout equates the median dividend payout has a CDF value of 0.5. The CDF values of zero and one correspond to the minimum and maximum dividend payouts in the sample. Following Aggarwal and Samwick (1999), the CDF variable is computed on an annual basis.

significant, suggesting that firms with higher dividend payouts pay their new CEOs relatively more.

Insert Table 4 about here

3.3. Propensity score matching

While the results so far are consistent with the hypothesis, we are mindful that the observed relation between the dividend payout and new CEO compensation could be spurious as the dividend policy may be endogenously determined. To mitigate this concern, we employ propensity score matching whereby firm-years with dividends are matched with those without. In the discussion and robustness section, we provide further evidence that reduces concerns about potential omitted variables as well as alternative interpretations.

A perfect experiment for examining the impact of dividends on compensation would be one that compares new CEO compensation of firms that pay dividends in a particular year with that of the same firm in the same year, had it not paid any dividends. However, since this counterfactual cannot be observed, we have to rely on second-best experiments based on matching, whereby we compare new CEO compensation of a dividend-paying firm with that of another, sufficiently similar non-dividend-paying firm.

We proceed in two steps to identify a matched sample of firm-years without dividends that exhibit no significant differences in observable characteristics with those with dividends.[21] In the first step, we estimate the probability that a firm pays dividends by running a logit regression, reported in column (1) of Panel A of Table 5,[22] that includes the same controls as the regressions in Table 3. The results show that on average dividend-paying firms are larger

[21] As a robustness check, we define the treatment group as firms with above-sample-median dividend payouts and the control group as otherwise indistinguishable firms with below-sample-median dividend payouts. Consistent with our prediction, the untabulated results suggest that high-dividend firms pay their new CEOs significantly more.

[22] The results are qualitatively similar when we use a probit model in the first step.

and more profitable in terms of ROA, have lower leverage, less cash holdings, more independent boards, and greater institutional ownership, and are more likely to appoint fast track career CEOs and CEOs from inside the firm. Additionally, the pseudo R^2 of 35.5% indicates that the specification explains a significant amount of variation in the presence of dividends. In the second step, we construct matched samples using the nearest-neighbor method based on propensity scores calculated from the first-step logit model. Specifically, each firm-year with dividends (the treatment group) is matched with the firm-year without dividends (the control group) with the closest propensity score.[23] To ensure that observations in the treatment and control groups are sufficiently indistinguishable, we require that the maximum difference (i.e. the caliper) in the propensity score between each firm-year with dividends and that of its matched peer does not exceed 0.001 in absolute value.

Insert Table 5 about here

We conduct two diagnostic tests to confirm that the observations in the treatment and control groups are truly comparable. We re-estimate the first-step logit model using the matched sample in column (2) of Panel A of Table 5. The results show that none of the coefficient estimates is statistically significant, suggesting no distinguishable differences between the two groups. Relatedly, the pseudo R^2 drops considerably from 35.5% in the pre-match model to only 1.9% in the post-match model. The second test involves examining the differences in means between the treatment and control groups across the various observable characteristics. The results are shown in Panel B of Table 5. Again, none of the differences is statistically significant. Overall, the test results suggest that the propensity score matching removes observable differences other than the difference in dividend policy, thereby increasing

[23] As an alternative, we restrict the control group to firms that have not yet initiated dividends given the year. This restriction reduces the number of observations in the control group from 278 to 147, and that in the matched sample from 901 to 431. The resulting estimates remain positive, but with less significance.

the likelihood that any difference in new CEO compensation between the two groups is due to differences in dividend policy.

Finally, Panel C of Table 5 reports the propensity score matching estimates.[24] The results suggest that new CEOs at firms with dividends receive 20.0% (26.4%) higher compensation based on market values (risk-adjusted values), which corresponds to an increase of approximately $849,357 ($839,211). Thus, we conclude that potential matching between CEOs and firms—at least based on observable characteristics—does not drive our findings.

While the matching estimates increase confidence in the validity of the results, one might be concerned that dividend-paying and non-dividend-paying firms are not comparable. To address this possibility, we implement an alternative matching approach that focuses on dividend-paying firms. We compare new CEO compensation of high-dividend-paying firms with that of matched, low-dividend-paying firms. The matching procedure is the same as previously described, except that the treatment, high-dividend-paying group now consists of firms in the top quartile of dividends, as measured by either *Dividend payout* or *Dividend/TA*. Using both dividend measures, we confirm that firms with high dividends pay their new CEOs more than their matched counterparts with low dividends.

3.4. Dividend pressure and the effect of the dividend payout on new CEO compensation

To investigate whether the positive effect of dividends on CEO pay is due to compensation for the performance pressure that a continuing high dividend payout entails, we explore the variation in the level of such pressure faced by the CEO. If pressure to maintain high levels of dividends increases the demands on the CEO and thus increases the pay that is required, we expect this positive link to be more pronounced when dividend pressure is greater.

[24] The propensity score matching estimate of the average treatment effect on the treated (ATT) is the difference in means between the treatment and matched control groups.

We identify settings in which firms have stronger incentives to maintain, or even increase, the payout, thereby exerting greater pressure on the CEO. Specifically, we divide the sample into three subsamples along the following dimensions in order to capture the cross-sectional differences in the dividend-related pressure: the firm's dividend history, institutional ownership, and internal governance.

3.4.1. Dividend history

Firms commit to stable dividend payouts to convey to investors their implicit commitment not to cut dividends opportunistically. La Porta et al. (2000), Shleifer (2000), Gomes (2000), and DeAngelo and DeAngelo (2007) discuss the importance of establishing a reputation for long-term, stable dividend payouts. The benefit from such a reputation stems from an enhanced ability to sell future equity and at higher prices. Thus, ceteris paribus, firms with a good dividend history have stronger incentives to protect their reputation by maintaining dividend payouts. If the positive effect of dividends on CEO pay is due to compensation for the dividend-related performance pressure, then we expect to observe a larger such effect for firms with a good dividend history where the pressure of maintaining the level of dividend payment is higher.

Insert Table 6 about here

In Table 6, we separately estimate the effect of dividends on new CEO compensation for firms with a good dividend history and those with a poor dividend history. We classify dividend history as "bad" if dividends (i.e. dividends per share) were cut at least once over the past two, three, and four years, respectively. If dividends were maintained or increased (no dividend cuts), then dividend history is classified as "good". As expected, the coefficients on the dividend variables are positive and statistically significant for firms with no dividend cuts

over the past two, three and four years, but insignificant for firms with at least one cut during the same periods.

3.4.2. Institutional ownership

Institutional investors play a vital role in monitoring the management of their investee firms and determining firm performance (Shleifer and Vishny, 1986). A strand of the literature demonstrates that the presence of institutional investors is associated with improved sensitivity of top executive turnover to firm performance (Denis et al., 1997), lower levels of compensation (Hartzell and Starks, 2003), improved corporate monitoring and better firm performance (McConnell and Servaes, 1990). As a result of better monitoring, institutional investors may pressure firms to pay more dividends to mitigate agency problems. Crane et al. (2016) show that higher institutional ownership causes firms to pay more dividends. Their identification relies on the exogenous variation in institutional ownership driven by the sharp difference in index weights around the Russell 1000/2000 cut-off.[25] We thus expect the impact of dividends on new CEO compensation to be concentrated in the subsample of firms with high institutional ownership where institutional monitoring, through the threat of selling (exit) or active management (voice), such as voting and direct communication, increases dividend pressure. In contrast, in firms with low institutional ownership such pressure is significantly lower.

[25] The Russell 1000 and Russell 2000 are value-weighted indexes of the largest 1000 US-listed firms and the subsequent largest 2000 firms, respectively. Firms around the 1000/2000 cut-off exhibit remarkable differences in their relative index weights that are not driven by their firm characteristics. This is because the Russell 2000 is the principal Russell index benchmarked by fund managers (i.e. more fund managers benchmark to the Russell 2000 index than the Russell 1000). This means that the largest firms in the Russell 2000 are likely to be held by any institutional investor tracking the index in order to keep tracking error metrics within reasonable limits. In contrast, the smallest firms in the Russell 1000 could be excluded given that they have little impact on the overall index value. As a result, institutional investors hold a larger proportion of firms that just about did not make it into the Russell 1000 compared to those that just made it into the Russell 1000. See Crane et al. (2016) for more details.

Insert Table 7 about here

Panel A of Table 7 presents the compensation regressions for the subsamples of firms with high and low institutional ownership. A firm is included in the high institutional ownership subsample if its institutional ownership is above the sample median, and is included in the low institutional ownership subsample otherwise. The positive relation between the dividend payout and new CEO compensation is statistically significant only for the above-median institutional ownership firms. These results are consistent with the view that institutional investors pressure firms to maintain, or even increase, dividend payouts, thereby increasing the compensation the CEO requires.

3.4.3. Internal governance

La Porta et al. (2000) show that dividends are an outcome of an effective system that disgorges cash from firms to shareholders, thereby mitigating Jensen's (1986) free cash flow problem. Similarly, DeAngelo et al. (2009) indicate that managers are encouraged to make and continue dividend payments through monitoring by the board. The board must be in a position to pressure the CEO to maintain and increase dividend payouts for dividend policy to be taken into account when setting the CEO's compensation. In other words, we hypothesize that paying the CEO more due to dividend-related performance pressure requires strong internal governance. Thus, we expect the positive effect of dividends on compensation to be more pronounced for firms with strong boards.

We use two measures of board strength: The fraction of independent directors on the board (*Board independence*) and the fraction of busy directors (*Board busyness*), with busy directors being defined as those who hold three or more directorships. In Panels B and C of Table 7, we split firms into high and low subsamples based on the sample median of a given governance variable. The results suggest that the positive effect of dividends on compensation

is concentrated in firms with more independent boards and those with boards composed of fewer busy directors, consistent with the view that strong boards exert greater pressure on the CEO to pay dividends and take this information into account when setting the new CEO's pay.

4. Discussion and robustness

The results presented so far support the compensation for dividend pressure hypothesis. Nevertheless, several limitations remain, including potential omitted variables as well as various forms of model misspecification. While it is almost impossible to rule out completely the endogeneity of dividend policy, we can still explore whether the data is consistent with particular concerns. Therefore, in this section we first provide evidence that substantially restricts the set of alternative explanations for our results and then examine whether the results are robust to alternative choices in variable construction and sample selection.

4.1. Alternative explanations and additional investigation

A challenge encountered when drawing inferences in the CEO turnover setting is that the timing of CEO turnover may be endogenously determined by the manager and the board and may coincide with firm performance or other cycles within firms. Following Nguyen and Nielsen (2014) and Jenter et al. (2016), we identify a subsample of CEO turnover events following sudden deaths that are plausibly exogenous and beyond the control of the board. We define sudden death as an unexpected, non-traumatic death that occurs abruptly, such as strokes, heart attacks, and accidents. We identify cases of CEO deaths and sudden deaths through an extensive search of news and information sources in Lexis-Nexis and Edgar Online.

Of the 331 deceased CEOs in our sample, 106 (32.0%) of the deaths were sudden. Specifically, 54 (50.7%) of the CEOs who suddenly died suffered from heart attack/failure and 7 (6.4%) died from a stroke. Car accidents, plane crashes, and murders account for 22.3% of

the sudden deaths (24 cases). Finally, 22 deaths (20.6%) are described in the news as sudden and unanticipated without specific details about the cause of death.

In Panel A of Table 8, we re-estimate the effect of dividends on new CEO compensation using a subsample of CEO turnover events (or new CEOs) following sudden deaths. While estimated using much fewer observations, the estimates from this sample restriction approach are arguably less affected by endogeneity problems. We use simple ordinary least squares (OLS) regressions for this analysis due to the small sample size. The coefficient on the dividend variables remains positive and generally significant. Thus, endogenous timing of CEO turnover events is unlikely to account for our results.

Insert Table 8 about here

To take a further step toward mitigating the concerns, we explore the state-by-state transition from Prudent Man to Prudent Investor legislation. Under the Prudent Man rules, dividend payments serve as a safe harbor for fiduciary prudence. In contrast, the Prudent Investor rules do not explicitly favor dividends. Thus, switching from the Prudent Man rules to the less stringent Prudent Investor rules results in a decline in dividends (Hankins et al., 2008), and in turn we expect a decrease in dividends to be associated with a decrease in new CEO compensation around the regulatory change.

To test this conjecture, we first define treatment firms as those incorporated in switching states that have at least two CEO changes, one within the three-year window before the adoption of Prudent Investor legislation and the other one within the three years after adoption. For each treatment, we identify a control firm, incorporated in a nonswitching state (i.e. a state in which no switch in fiduciary law occurred), that has CEO changes in the same years and is closest in size, as measured by sales, to the treatment firm. We then compute and compare the changes in dividends and new CEO compensation between the treatment and control groups around the legislation. Panel B of Table 8 presents the results. Consistent with

our prediction, we observe a decrease in both dividends and new CEO compensation for treatment firms in switching states. Also consistent with our prediction, the increase in dividends and compensation for control firms in nonswitching states, and the differences in dividend change and compensation change between treatment and control firms are statistically significant. While the results are as expected, we have only a very small sample because most states switched from Prudent Man to Prudent Investor in the late 1980s and early 1990s, predating our period of study, and hence our results should be interpreted with caution.

Another possible concern is that our finding is just an artifact of the size or performance effect. Large, well-performing firms with higher dividends tend to pay their new CEOs more, resulting in the observed positive relation between dividends and compensation. Throughout the empirical analysis, we have included controls for firm performance and size, which helps alleviate this concern. To further rule out alternative explanations related to performance and size, we perform several tests. First, in the baseline specifications, we measure firm size as *Ln(Sales)* and use both accounting and stock performance measures (i.e. *ROA* and *Stock return*). In untabulated results, we confirm that the positive effect of dividends on new CEO compensation persists when (i) a different measure is used for firm size, namely *Ln(MV)* and *Ln(TA)*; (ii) no controls are included for firm size; (iii) only one of the performance measures is included as a control; and (iv) no performance controls are included. In particular, the estimated effect is rather stable across all specifications. The coefficient on *Dividend payout* ranges from 0.075 to 0.084, and the coefficient on *Dividend/TA* ranges from 3.804 to 4.897. The stability of our coefficients provides additional confidence that any potential bias arising from bad proxies for performance and size is likely to be low (Oster, 2016).

Next, if our compensation for dividend pressure hypothesis is valid, then the positive relation between dividends and compensation should be stronger in small, low performance firms where there might be greater difficulties in maintaining dividend payouts. The

performance/size effect view, however, does not yield such a prediction. If anything, the positive relation should be more prominent in large, high performance firms had the performance/size effect explanation dominated. We proceed by first extracting common components, using principal component analysis (PCA), from the three variables that proxy for firm performance and size, namely *Ln(Sales)*, *ROA*, and *Stock return*. The resulting composite index is the first component from PCA, with higher (lower) values indicating large (small), high (low) performance firms.[26] We then separately estimate the effect of dividends on new CEO compensation for firms with above- and below-median index values. We find some evidence in Panel C of Table 8 that the dividend-compensation relation is more prominent in small, low performance firms, consistent with the compensation for dividend pressure explanation.

Finally, we also address the possibility that the dividend variables merely reflect private information about the firm's prospects. We construct two residual dividend measures. *Dividend payout_resid1* (*Dividend/TA_resid1*) is the residual from a regression of *Dividend payout* (*Dividend/TA*) on *ROA* and *Stock return* from year t+1. *Dividend payout_resid2* (*Dividend/TA_resid2*) is the residual from a regression of *Dividend payout* (*Dividend/TA*) on *Ln(Sales)* from year t+1. These measures represent the proportion of dividends that does not merely reflect future performance or size. The unreported results are robust to using the alternative measures, suggesting that private information about prospects does not appear to drive our results.

[26] We obtain only one component with an eigenvalue higher than one (eigenvalue of 1.673). An eigenvalue above one means that the extracted component has more explanatory power than any of the original proxies on their own. The eigenvalue of the second component is less than one. As expected, all the three original variables have positive loadings, implying a positive correlation with the composite index. The loadings are 0.660, 0.705, and 0.261 respectively for *Ln(Sales)*, *ROA*, and *Stock return*.

4.2. Further robustness tests

We perform an extensive set of robustness checks of our main findings. First, we adopt a wide range of alternative parameter values for calculating risk-adjusted compensation. The two key parameters are the CEO's degree of relative risk aversion, ρ, and the portfolio constraint, θ (i.e. the fraction of wealth that the CEO holds in his firm's stock beyond the fraction he would voluntarily hold). We vary the parameter of relative risk aversion from one to five, and vary the value of the portfolio constraint parameter from 20% to 80%. The resulting risk-adjusted values, based on various combinations of the two varying parameters, are then used to re-estimate the effect of the dividend payout on compensation. The results are shown in Table 9. For the sake of brevity, for each regression we only report the coefficient on the dividend variable while the same set of control variables and year fixed effects as in Table 3 are included. We find a positive and significant effect of the dividend payout on new CEO compensation across these parameter variations. Importantly, we observe that the magnitude of the reported coefficients decreases (increases) as we increase (decrease) CEO risk aversion and the portfolio constraint CEOs face. These patterns are consistent with those reported by Peters and Wagner (2014), which is reassuring.

Insert Table 9 about here

Second, we check whether the results are robust to three alternative measures of dividends: *Dividend/Sales*, which is the ratio of dividends to sales; *DPS*, which is the dividend per share; and *Dividend yield*, which is the dividend per share divided by the fiscal year-end share price. In Panel A of Table 10, we estimate our baseline models using these alternative measures and find qualitatively similar results.

Third, a concern is that new CEOs assume office at different times throughout their firm's fiscal years and hence the reported initial compensation may reflect the amount received

for periods of different lengths. Moreover, this timing issue is more severe for cash compensation paid to external hires. This is because salary and bonus are more likely to be pro rata than equity-based pay. For internally promoted CEOs, reported salary and bonus values reflect the amounts earned over the entire fiscal year, and not just the proportion earned during the time the executive served as CEO. As a result, the magnitude of timing differences is much smaller for internal CEOs than external CEOs. To address this concern, we follow Chang et al. (2016) and adjust the compensation variables by replacing the reported cash compensation with the annualized cash compensation. In Panel B of Table 10 we use the annualized salary for external CEOs instead of the reported salary, and in Panel C we use both the annualized salary and annualized bonus for external CEOs.[27] In all of these regressions, the coefficients on the dividend variables remain positive and statistically significant, indicating that timing differences do not drive our findings.

Insert Table 10 about here

Fourth, Custódio et al. (2013) show that CEOs with general managerial skills are paid more than those with specific skills. Therefore, in Panel D we include the general ability index (*GAI*) constructed by Custódio et al. (2013) as an additional control.[28] The results are largely unaffected by this inclusion.

Fifth, Denis and Denis (1995) and Huson et al. (2004) find that the average post-turnover increase in performance is greater following forced turnover compared to voluntary turnover. Thus, if firms with higher dividend payouts force out their CEOs more frequently, then it is likely that the documented positive association between the dividend payout and

[27] The annualized salary is computed as (reported salary/days as CEO) × 365 and the annualized bonus is computed as (reported bonus/days as CEO) × 365.

[28] The general ability index (*GAI*) is the first factor obtained from applying principal component analysis to the following five proxies of general managerial ability: past number of positions, number of firms, number of industries, CEO experience, and conglomerate experience. We thank Cláudia Custódio, Miguel Ferreira, and Pedro Matos for sharing their data on the general ability index (Custódio et al., 2013). The data spans the period 1996-2007.

compensation is driven by greater expected performance improvements following forced turnover. To address this possibility, we account for the nature of the prior turnover by including the *Forced turnover* indicator variable, which equals one if the incumbent CEO was forced out, and zero otherwise.[29] The results, presented in Panel E of Table 10, show that the positive effect of dividends on compensation remains after we control for *Forced turnover* as well as its interaction term with the corresponding dividend variable, suggesting that our main findings cannot be explained by the nature of the prior turnover.

Sixth, in Panel F we include *Predecessor's total pay* (the predecessor's last annual compensation) as well as its interaction term with *External hire* in the regressions to predict the new CEO's initial compensation. Possibly reflecting that this inclusion takes into account additional aspects of the firm's compensation policy not captured in our baseline specifications, the predecessor's pay is highly correlated with the new CEO's pay. In addition, we use the interaction term to account for the possibility that the predecessor's compensation has a greater effect on the choice and compensation of an internally promoted CEO. Still, we find that the coefficients on the dividend variables remain positive and generally significant. Not surprisingly, the magnitudes of the coefficients are lower.

Seventh, the results in Panel G suggest that the relation between dividend payout and new CEO compensation remains positive, albeit less significantly so, after controlling for *New CEO's last total pay* (the new CEO's last annual compensation in their previous firm) and its interaction with *External hire* to capture additional CEO-specific factors that may influence the initial compensation received from their new firm. In Panel H we show that our results are

[29] We are grateful to Florian Peters and Alexander Wagner for providing us with their forced turnover dataset. Their dataset records forced CEO turnover events of all firms included in the ExecuComp database between 1993 and 2014. The methodology is as follows. Departures for which the press states that the CEO was fired, forced out, or retired or resigned due to policy differences or pressure are classified as forced. Turnover of CEOs below the age of 60 that has not been classified as forced by the above criterion is classified as forced if the press does not report the reason to be death, poor health, or acceptance of another position or the press reports that the CEO is retiring but the company does not announce the retirement date at least six months before departure. For more details, see Peters and Wagner (2014).

also robust to excluding financial firms. Eighth, to mitigate the possibility that our findings are driven by unobserved heterogeneity between dividend-paying and non-dividend-paying firms, we exclude firm-years without dividends in Panel I and find that the results continue to hold.

Finally, another possible concern is that firms with high dividend payouts attract more talented CEOs who demand higher compensation. The baseline models already account for several CEO characteristics that may reflect the CEO's talent or ability such as *MBA*, *Ivy league*, and *Fast track*. Nevertheless, we include additional controls to further ensure that our results are not driven by differences in managerial quality. In Panel J we add further controls for CEO quality, including the managerial ability score of Demerjian et al. (2012),[30] the average ROA and the average stock return over the past three years of the new CEO's previous firm. The latter two measures are proxies for the new CEO's performance in their previous firm. In Panel K we account for differences in education and qualifications between the predecessor and new CEO by replacing *MBA* and *Ivy League* in the baseline model with a set of indicator variables. *MBA replaces non-MBA* (*Non-MBA replaces MBA*) is an indicator variable stating whether the departing CEO without (with) an MBA degree is replaced by a new CEO with (without) an MBA degree; *Non-Ivy replaces Ivy* (*Ivy replaces non-Ivy*) is an indicator variable stating whether the departing CEO who attended (did not attend) an Ivy-League university is replaced by a new CEO who did not (did). Overall, we find that our estimated effect is not much affected when we include the above additional controls. Of course, we cannot control for unobservable CEO quality differences. However, the stability of the coefficients after the inclusion of several additional observable CEO quality controls suggests that unobservable selection due to CEO quality is likely to be limited (Oster, 2016). In a supplementary analysis, we regress measures of CEO quality including the managerial ability score of Demerjian et al. (2012), *MBA*, *Ivy*

[30] The data is downloadable at: http://faculty.washington.edu/pdemerj/data.html.

league, and *Fast track* on dividends along with other controls. We do not find reliable evidence that dividends are correlated with CEO quality.

5. Conclusion

We examine the effect of the dividend payout on the initial compensation of new CEOs. We focus our analysis on newly appointed CEOs because this allows us to isolate the effect of dividends on compensation and, more importantly, this allows us to provide new insights into an aspect of compensation that has been largely neglected in the literature. We find that new CEOs at firms with higher dividend payouts earn significantly more. The results are robust to alternative measures of dividend payouts, subsample analysis, and alternative model specifications. Next, we exploit the cross-sectional heterogeneity in the effect of dividends on compensation. The results suggest that the positive effect of the dividend payout is more pronounced when firms have a good dividend history, when institutional ownership is higher, and when boards are strong. These findings provide evidence that new CEOs receive higher pay as compensation for greater dividend pressure.

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Table 1
Summary statistics

This table reports summary statistics for the main variables. *Total compensation* is the market value of total compensation (ExecuCo
is the risk-adjusted value of total compensation computed using the Ingersoll (2006) model. *Dividend payout* is dividends over net i
assets. *Sales* is the firm's sales. *Tobin's Q* is the sum of the book value of total assets plus market value of equity minus the book v
total assets. *Leverage* is total debt divided by total assets. *ROA* is earnings before interest and taxes divided by total assets. *Stock re*
and short-term investments divided by total assets. *Firm age* is the number of years since the firm has had its shares listed. *Board*
Board independence is the fraction of independent directors. *Fraction female directors* is the fraction of female directors. *Institut*
owned by 13-F institutional investors. *CEO age* is the age of the CEO in years. *Female CEO* is a dummy variable that takes a val
otherwise. *External hire* is a dummy variable that takes a value of one if the CEO was hired from outside the firm, and zero otherw
value of one if the CEO has an MBA degree, and zero otherwise. *Ivy League* is a dummy variable that takes a value of one if the
academic level, and zero otherwise. *Fast track* is the age at which the CEO became a CEO for the first time. *Military CEO* is a dum
CEO has any military experience, and zero otherwise. *Recession CEO* is a dummy variable that takes a value of one if there was
reached the age of 24, and zero otherwise.

Variable	N	mean	Median	Standard deviation
Panel A. CEO compensation				
Total compensation ($ thousands)	2135	4246.785	2717.141	5240.526
Risk-adjusted compensation ($ thousands)	2047	3178.830	2004.248	3905.348
Panel B. Firm characteristics				
Dividend payout	2135	0.268	0.112	0.597
Dividend/TA	2135	0.014	0.005	0.024
Sales ($ millions)	2135	6069.303	1504.352	16,875.370
Tobin's Q	2135	1.864	1.478	1.275
Leverage	2135	0.222	0.210	0.175
ROA	2135	0.088	0.083	0.099
Stock return	2135	0.154	0.110	0.485
Cash	2135	0.135	0.073	0.154
Firm age	2135	27.490	22.000	19.969
Panel C. Corporate governance				
Board busyness	2135	0.307	0.250	0.282
Board independence	2135	0.725	0.750	0.173
Fraction female directors	2135	0.111	0.111	0.107
Institutional ownership	2135	0.706	0.724	0.182

Panel D. CEO characteristics				
CEO age	2135	53.074	53.000	6.624
Female CEO	2135	0.036	0.000	0.186
External hire	2135	0.275	0.000	0.447
MBA	2135	0.366	0.000	0.482
Ivy league	2135	0.154	0.000	0.361
Fast track	2135	49.270	50.000	7.000
Military CEO	2135	0.053	0.000	0.225
Recession CEO	2135	0.224	0.000	0.417

Table 2
Univariate analysis

This table reports the means and standard deviations of the main variables for the subsamples of firms with and without dividends. between the two subsamples are reported along with the *t*-statistics based on the two-sample *t*-test. Appendix A contains the detaile

	Firm-year obs. With no dividend			Firm-year obs. With dividend		
	N	Mean	Std. dev.	N	Mean	Std
Total compensation ($ thousands)	822	3596.865	4901.141	1313	4653.666	540
Risk-adjusted compensation ($ thousands)	783	2409.305	3650.228	1264	3655.521	398
Sales ($ millions)	822	2454.486	5974.504	1313	8332.349	20,6
Tobin's Q	822	2.023	1.518	1313	1.765	1.
Leverage	822	0.196	0.198	1313	0.238	0.
ROA	822	0.072	0.127	1313	0.098	0.
Stock return	822	0.190	0.638	1313	0.131	0.
Cash	822	0.202	0.189	1313	0.093	0.
Firm age	822	18.356	13.864	1313	33.208	21
Board busyness	822	0.268	0.262	1313	0.332	0.
Board independence	822	0.703	0.187	1313	0.738	0.
Fraction female directors	822	0.090	0.108	1313	0.124	0.
Institutional ownership	822	0.730	0.179	1313	0.749	0.
CEO age	822	52.203	7.202	1313	53.620	6.
Female CEO	822	0.036	0.188	1313	0.036	0.
External hire	822	0.371	0.483	1313	0.215	0.
MBA	822	0.344	0.475	1313	0.380	0.
Ivy league	822	0.156	0.363	1313	0.152	0.
Fast track	822	47.658	7.403	1313	50.280	6.
Military CEO	822	0.043	0.202	1313	0.060	0.
Recession CEO	822	0.236	0.425	1313	0.217	0.

Table 3
Payout policy and new CEO compensation

This table examines how new CEO compensation is affected by the firm's payout policy. The dependent variables include: *Ln*(*Total compensation*) is the natural logarithm of total compensation (ExecuComp item *tdc1*). *Ln*(*Risk-adjusted compensation*) is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main independent variables of interest include: *Dividend payout* is dividends over net income. *Dividend/TA* is dividends over total assets. In Panel B, we replace the continuous dividend variable with three indicator variables for firms within the 4th (top), 3rd, and 2nd quartiles of the dividend measure. The 1st (bottom) quartile is the base group. Measures of stock repurchases in Panel C include: *Repurchase/NI* is repurchases over net income. *Repurchase/TA* is repurchases over total assets. *Repurchase dummy* is a dummy variable that equals one if the firm repurchases stock, and zero otherwise. All other variables are defined in Appendix A. Year effects are included. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: Dividend payout and new CEO compensation

	Ln(Total compensation)		Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
Dividend payout	0.081**		0.078**	
	(0.038)		(0.036)	
Dividend/TA		4.736**		4.474**
		(2.242)		(2.196)
Ln(Sales)	0.527***	0.530***	0.585***	0.586***
	(0.178)	(0.176)	(0.193)	(0.191)
Tobin's Q	0.094	0.086	0.058	0.049
	(0.059)	(0.058)	(0.058)	(0.056)
Leverage	-0.458	-0.525	-0.387	-0.452
	(0.328)	(0.330)	(0.330)	(0.332)
ROA	-2.142	-2.283	-1.998	-2.126
	(2.172)	(2.175)	(2.366)	(2.374)
Stock return	0.032	0.035	0.116	0.119
	(0.085)	(0.084)	(0.085)	(0.085)
Cash	0.437	0.545	0.559	0.668
	(0.551)	(0.575)	(0.549)	(0.578)
Firm age	-0.004	-0.002	-0.009	-0.007
	(0.007)	(0.006)	(0.012)	(0.012)
Board busyness	0.077	0.111	-0.068	-0.038
	(0.178)	(0.174)	(0.161)	(0.160)
Board independence	-0.144	-0.168	0.041	0.022
	(0.363)	(0.359)	(0.360)	(0.355)
Fraction female directors	-0.348	-0.413	-0.104	-0.177
	(0.384)	(0.381)	(0.341)	(0.338)
Institutional ownership	0.819	0.870	0.760	0.805
	(0.708)	(0.716)	(0.698)	(0.705)
CEO age	-0.014*	-0.013*	-0.013*	-0.013*
	(0.007)	(0.007)	(0.007)	(0.007)
Female CEO	0.208*	0.215*	0.210**	0.218**
	(0.110)	(0.114)	(0.097)	(0.100)
External hire	0.227***	0.227***	0.198***	0.198***
	(0.062)	(0.062)	(0.058)	(0.058)
MBA	0.100	0.104	0.053	0.057
	(0.072)	(0.073)	(0.068)	(0.069)
Ivy league	-0.159	-0.155	-0.170*	-0.168*
	(0.100)	(0.098)	(0.099)	(0.098)
Fast track	0.008	0.007	0.007	0.006
	(0.006)	(0.006)	(0.006)	(0.006)
Military CEO	0.040	0.019	0.074	0.057
	(0.105)	(0.102)	(0.097)	(0.095)
Recession CEO	0.015	0.016	0.036	0.036

	(0.073)	(0.073)	(0.071)	(0.071)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	2135	2135	2047	2047
Adjusted R^2	0.146	0.150	0.169	0.173

Panel B: Nonlinearity in the relation between dividend payout and new CEO compensation

	Ln(Total compensation)		Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
2nd Qtile Dividend payout	0.013		-0.011	
	(0.269)		(0.268)	
3rd Qtile Dividend payout	0.376***		0.374***	
	(0.135)		(0.128)	
4th Qtile Dividend payout	0.315**		0.357**	
	(0.153)		(0.143)	
2nd Qtile Dividend/TA		-0.162		-0.122
		(0.143)		(0.139)
3rd Qtile Dividend/TA		0.071		0.097
		(0.127)		(0.122)
4th Qtile Dividend/TA		0.253*		0.292**
		(0.146)		(0.140)
All Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	2135	2135	2047	2047
Adjusted R^2	0.159	0.147	0.186	0.172

Panel C: Share repurchase and new CEO compensation

	Ln(Total compensation)			Ln(Risk-adjusted compensation)		
	(1)	(2)	(3)	(4)	(5)	(6)
Repurchase/NI	0.077			0.080		
	(0.062)			(0.060)		
Repurchase/TA		0.640			0.797	
		(1.241)			(1.274)	
Repurchase dummy			0.058			0.066
			(0.072)			(0.073)
All controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	2135	2135	2135	2047	2047	2047
Adjusted R^2	0.143	0.142	0.142	0.167	0.165	0.165

Table 4
Using alternative dividend measures

This table examines the effect of dividends on new CEO compensation using alternative dividend measures. The dependent variables
is the natural logarithm of total compensation (ExecuComp item *tdc1*). *Ln*(*Risk-adjusted compensation*) is the natural logarithm of r
Ingersoll (2006) model. The main independent variables of interest include the following: *Industry-adj. dividend payout* (*Industry-a*
firm's *Dividend payout* (*Dividend/TA*) and the mean value for all firms in the same Fama-French 49 industry. *Residual dividend payou*
firm fixed effects regression of *Dividend payout* (*Dividend/TA*) on all control variables used in Table 3 and year dummies. *CDF divid*
cumulative distribution function (CDF) of *Dividend payout* (*Dividend/TA*). The same set of control variables and year fixed effects as i
we only report the coefficients on the dividend variables. Statistical significance is based on the heteroscedasticity robust firm-cluster
** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Ln(Total compensation)							Ln(R
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Industry-adj. dividend payout	0.081**						0.078**	
	(0.038)						(0.036)	
Industry-adj. dividend/TA		4.736**						4.474**
		(2.242)						(2.196)
Residual dividend payout			0.081**					
			(0.038)					
Residual dividend/TA				4.708**				
				(2.278)				
CDF dividend payout					0.261**			
					(0.132)			
CDF dividend/TA						0.319**		
						(0.139)		
All controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	2135	2135	2135	2135	2135	2135	2047	2047
Adjusted R^2	0.146	0.150	0.146	0.150	0.141	0.148	0.169	0.173

Table 5
Propensity score matching estimates

This table reports the propensity score matching estimation results. Panel A reports parameter estimates from the logit model used to estimate propensity scores. The dependent variable is an indicator variable equal to one for dividend-paying firms, and zero otherwise. All independent variables are defined in Appendix A. Industry effects are constructed based on the Fama-French 49-industry classification. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in parentheses. Panel B reports the univariate comparisons of firm characteristics between firms with and without dividends. Panel C reports the average treatment effect estimates. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A. Prematch propensity score regression and postmatch diagnostic regression

	Dependent variable: Dummy equals one for dividend-paying firms and zero otherwise	
	Pre-match (1)	Post-match (2)
Ln(Sales)	0.383***	0.134
	(0.065)	(0.089)
Tobin's Q	-0.098	0.137
	(0.084)	(0.117)
Leverage	-1.758***	-0.368
	(0.467)	(0.584)
ROA	5.525***	1.110
	(1.292)	(1.456)
Stock return	-0.292**	-0.097
	(0.132)	(0.203)
Cash	-3.719***	-1.383
	(0.642)	(0.870)
Firm age	0.036***	0.014
	(0.006)	(0.009)
Board busyness	-0.155	-0.543
	(0.362)	(0.479)
Board independence	0.719*	0.568
	(0.391)	(0.607)
Fraction female directors	1.168*	0.264
	(0.683)	(0.959)
Institutional ownership	1.348*	1.106
	(0.784)	(0.869)
CEO age	-0.016	-0.009
	(0.012)	(0.016)
Female CEO	0.110	-0.064
	(0.344)	(0.412)
External hire	-0.300**	0.034
	(0.142)	(0.200)
MBA	0.093	0.000
	(0.131)	(0.175)
Ivy league	-0.143	-0.018
	(0.178)	(0.230)
Fast track	0.027**	-0.000
	(0.011)	(0.015)
Military CEO	0.437	0.163
	(0.284)	(0.357)
Recession CEO	-0.219	-0.242
	(0.152)	(0.188)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Number of observations	2100	901
Pseudo R^2	0.355	0.019

Panel B. Differences in firm characteristics

Variables	Firm-year obs. With dividends N= 623	Firm-year obs. With no dividends N=278	Diff	t-stat
Ln(Sales)	21.337	21.207	0.130	1.275
Tobin's Q	1.799	1.769	0.030	0.393
Leverage	0.234	0.219	0.015	1.191
ROA	0.096	0.092	0.004	0.748
Stock return	0.142	0.157	-0.015	-0.475
Cash	0.117	0.133	-0.016	-1.455
Firm age	28.087	25.860	2.227	1.471
Board busyness	0.309	0.296	0.013	0.656
Board independence	0.736	0.724	0.012	1.042
Fraction female directors	0.117	0.104	0.013	1.529
Institutional ownership	0.733	0.727	0.006	0.693
CEO age	53.302	53.277	0.025	0.051
Female CEO	0.037	0.040	-0.003	-0.193
External hire	0.254	0.277	-0.023	-0.737
MBA	0.376	0.356	0.019	0.559
Ivy league	0.159	0.158	0.001	0.024
Fast track	49.708	49.385	0.323	0.637
Military CEO	0.056	0.054	0.002	0.135
Recession CEO	0.236	0.270	-0.034	-1.088

Panel C. Propensity score matching estimator

Variable	Firm-year obs. With dividends N= 623	Firm-year obs. With no dividends N=278	Difference	T-stat
Ln(Total compensation)	14.802	14.620	0.182*	1.710
Ln(Risk-adjusted compensation)	14.616	14.382	0.234**	1.990

Table 6

The effect of the dividend payout on new CEO compensation and dividend hi

In this table, we separately estimate the effect of dividends on new CEO compensation for firms with a good dividend history and t dividend history as "bad" if dividends are cut at least once over the past two, three, and four years. If dividends are maintained or incre classified as "good". The dependent variables include: *Ln*(*Total compensation*) is the natural logarithm of total compensation (ExecuCo is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main independent variables of over net income. *Dividend/TA* is dividends over total assets. The same set of control variables and year fixed effects as in our baseline r the coefficients on the dividend variables. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors significance at the 1%, 5% and 10% level, respectively.

Panel A. Past two years

	Good: no cuts				B	
	Ln(Total compensation)		Ln(Risk-adjusted compensation)		Ln(Total compensati	
	(1)	(2)	(3)	(4)	(5)	(6
Dividend payout	0.123***		0.120***		0.062	
	(0.034)		(0.031)		(0.095)	
Dividend/TA		3.018*		1.909		-6.8
		(1.697)		(1.507)		(9.7
All controls	Yes	Yes	Yes	Yes	Yes	Ye
Firm FE	Yes	Yes	Yes	Yes	Yes	Ye
Year FE	Yes	Yes	Yes	Yes	Yes	Ye
Number of observations	988	988	975	975	1147	114
Adjusted R^2	0.343	0.330	0.352	0.336	0.240	0.2

Panel B. Past three years

	Good: no cuts				B	
	Ln(Total compensation)		Ln(Risk-adjusted compensation)		Ln(Total compensati	
	(1)	(2)	(3)	(4)	(5)	(6
Dividend payout	0.134***		0.112***		0.031	
	(0.043)		(0.040)		(0.098)	
Dividend/TA		3.849*		2.265		0.1
		(2.247)		(2.093)		(8.8
All controls	Yes	Yes	Yes	Yes	Yes	Ye
Firm FE	Yes	Yes	Yes	Yes	Yes	Ye
Year FE	Yes	Yes	Yes	Yes	Yes	Ye
Number of observations	871	871	862	862	1264	126
Adjusted R^2	0.370	0.362	0.378	0.369	0.210	0.2

Panel C. Past four years

	Good: no cuts				B	
	Ln(Total compensation)		Ln(Risk-adjusted compensation)		Ln(Total compensati	
	(1)	(2)	(3)	(4)	(5)	(6
Dividend payout	0.153***		0.125**		0.037	
	(0.055)		(0.050)		(0.074)	
Dividend/TA		2.611*		0.983		7.8
		(1.496)		(3.434)		(6.8
All controls	Yes	Yes	Yes	Yes	Yes	Ye
Firm FE	Yes	Yes	Yes	Yes	Yes	Ye
Year FE	Yes	Yes	Yes	Yes	Yes	Ye
Number of observations	754	754	748	748	1381	138
Adjusted R^2	0.409	0.393	0.399	0.386	0.197	0.2

Table 7

The effect of the dividend payout on new CEO compensation and corporate gov

This table presents the firm fixed effects regression results separately for the following subsamples: Firms with high and low levels of i levels of board busyness, and firms with high and low levels of board independence. Firms are split into high and low subsamples ba For example, a firm is included in the high institutional ownership subsample if its institutional ownership is above the sample median, a subsample otherwise. The dependent variables include the following: *Ln*(*Total compensation*) is the natural logarithm of total compensa *compensation*) is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main indepen *Dividend payout* is dividends over net income. *Dividend/TA* is dividends over total assets. The same set of control variables and y included. For brevity, we only report the coefficients on the dividend variables. Statistical significance is based on the heteroscedasticit in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A. Institutional ownership

	High institutional ownership				Lov	
	Ln(Total compensation)		Ln(Risk-adjusted compensation)		Ln(Total compensa	
	(1)	(2)	(3)	(4)	(5)	(6
Dividend payout	0.121***		0.114***		0.093	
	(0.044)		(0.039)		(0.060)	
Dividend/TA		3.219***		2.197**		3.3
		(1.158)		(1.036)		(5.2
All controls	Yes	Yes	Yes	Yes	Yes	Y
Firm FE	Yes	Yes	Yes	Yes	Yes	Y
Year FE	Yes	Yes	Yes	Yes	Yes	Y
Number of observations	1068	1068	1026	1026	1067	10
Adjusted R^2	0.146	0.144	0.245	0.235	0.358	0.3

Panel B. Board busyness

	High board busyness					
	Ln(Total compensation)		Ln(Risk-adjusted compensation)		Ln(Total compensa	
	(1)	(2)	(3)	(4)	(5)	(6
Dividend payout	0.089		0.079		0.065	
	(0.056)		(0.051)		(0.066)	
Dividend/TA		-0.910		-0.337		6.82
		(1.540)		(1.417)		(3.1
All controls	Yes	Yes	Yes	Yes	Yes	Ye
Firm FE	Yes	Yes	Yes	Yes	Yes	Ye
Year FE	Yes	Yes	Yes	Yes	Yes	Ye
Number of observations	1120	1120	1067	1067	1015	10
Adjusted R^2	0.193	0.183	0.221	0.209	0.283	0.2

Panel C. Board independence

	High board independence					Lo
	Ln(Total compensation)		Ln(Risk-adjusted compensation)		Ln(Total compensa	
	(1)	(2)	(3)	(4)	(5)	(6
Dividend payout	0.070*		0.095***		0.037	
	(0.039)		(0.034)		(0.075)	
Dividend/TA		2.529**		1.650*		2.6
		(1.075)		(0.931)		(4.3
All controls	Yes	Yes	Yes	Yes	Yes	Ye
Firm FE	Yes	Yes	Yes	Yes	Yes	Ye
Year FE	Yes	Yes	Yes	Yes	Yes	Ye
Number of observations	1186	1186	1137	1137	949	94
Adjusted R^2	0.247	0.248	0.300	0.292	0.200	0.2

Table 8
Alternative explanations and additional investigation

This table provides additional evidence on the positive relation between dividends and new CEO compensation. The dependent variables include the following: *Ln*(*Total compensation*) is the natural logarithm of total compensation (ExecuComp item *tdc1*). *Ln*(*Risk-adjusted compensation*) is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main independent variables of interest include the following: *Dividend payout* is dividends over net income. *Dividend/TA* is dividends over total assets. Panel A estimates the effect of dividends on compensation using a subsample of CEO turnover events following sudden deaths, where sudden death is defined as an unexpected, non-traumatic death that occurs abruptly, such as strokes, heart attacks, and accidents. Industry effects are based on the Fama-French 12 industry classification. Panel B examines the effect of the switch from Prudent Man (PM) to Prudent Investor (PI) legislation. We compare changes in dividends and new CEO compensation for firms in switching states to changes in firms in states in which no switch in fiduciary law occurred. Panel C presents the firm fixed effects regression results separately for firms with high and low composite index values, where the composite index is the first factor of the principal component analysis of the three performance/size proxies including *Ln(Sales)*, *ROA*, and *Stock return*. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A. New CEOs following sudden deaths

	Ln(Total compensation)		Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
Dividend payout	0.139*		0.160**	
	(0.078)		(0.079)	
Dividend/TA		6.305		6.367*
		(4.272)		(3.767)
All controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	106	106	102	102
Adjusted R^2	0.253	0.282	0.290	0.321

Panel B. Change in dividends and compensation: Prudent Investor legislation

	Treatment: Change from PM to PI		Control: No PM change			
	N	Mean	N	Mean	Diff	t-Stat
ΔDividend payout	28	-0.047	28	0.152	-0.199*	1.947
ΔDividend/TA	28	-0.007	28	0.014	-0.021***	2.791
ΔLn(Total compensation)	28	-0.153	28	0.143	-0.296**	2.581
ΔLn(Risk-adjusted compensation)	28	-0.136	28	0.262	-0.398**	2.733

Panel C. The effect of dividends on new CEO compensation by the composite index

	High index: Large and high performance				Low index:	
	Ln(Total compensation)		Ln(Risk-adjusted compensation)		Ln(Total compensati	
	(1)	(2)	(3)	(4)	(5)	(6)
Dividend payout	0.121*		0.118*		0.164**	
	(0.068)		(0.066)		(0.071)	
Dividend/TA		0.788		1.660		9.856*
		(2.751)		(2.544)		(4.458
All controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1067	1067	1015	1015	1068	1068
Adjusted R^2	0.228	0.215	0.256	0.245	0.292	0.307

Table 9

The impact of CEO risk aversion and the portfolio constraint

This table presents summary results from firm fixed effects regressions of risk-adjusted compensation on the dividend payout and control variables. The dependent variable, *Ln*(*Risk-adjusted compensation*), is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main independent variables of interest include the following: *Dividend payout* is dividends over net income. *Dividend/TA* is dividends over total assets. The table varies the CEO's degree of relative risk aversion, ρ, and the portfolio constraint, θ, which is defined as the fraction of wealth that the manager holds in his firm's stock beyond the fraction he would voluntarily hold. The same set of control variables and year fixed effects as in our baseline models are included. For brevity, we only report the coefficients on the dividend variables. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Dependent variable: Ln(Risk-adjusted compensation) Calculated with varying risk aversion (ρ) and portfolio constraint (θ)			
	θ=20% (1)	θ=40% (2)	θ=60% (3)	θ=80% (4)
Panel A. Dividend payout				
ρ=1	0.083**	0.082**	0.082**	0.081**
	(0.039)	(0.038)	(0.038)	(0.038)
ρ=3	0.081**	0.079**	0.077**	0.077**
	(0.037)	(0.037)	(0.036)	(0.036)
ρ=5	0.079**	0.076**	0.074**	0.074**
	(0.037)	(0.036)	(0.036)	(0.036)
Panel B. Dividend/TA				
ρ=1	4.532**	4.529**	4.522**	4.470**
	(2.224)	(2.213)	(2.209)	(2.209)
ρ=3	4.516**	4.493**	4.456**	4.421**
	(2.199)	(2.194)	(2.198)	(2.207)
ρ=5	4.497**	4.467**	4.425**	4.399**
	(2.193)	(2.198)	(2.208)	(2.220)
All controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	2047	2047	2047	2047

Table 10
Robustness checks

This table contains a number of checks testing the robustness of the relationship between the dividend payout and new CEO compensation to alternative model specifications, subsamples, dividend measures, and variable definitions. For each robustness check, we estimate the firm fixed effects regressions separately for alternative measures of the dividend payout and for both market values and risk-adjusted values of compensation. The same set of control variables and year fixed effects as in our baseline regressions are included. For brevity, we only report the coefficients on the dividend variables, unless otherwise specified. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in brackets. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Ln(Total compensation) (1)	Ln(Risk-adjusted compensation) (2)
Panel A. Alternative measures of dividends		
Dividend/Sales	2.149*	2.243*
	(1.218)	(1.170)
DPS	0.149**	0.158**
	(0.075)	(0.075)
Dividend yield	2.850*	2.551*
	(1.547)	(1.485)
Number of observations	2135	2047
Panel B. Using the annualized salary for external CEOs instead of the reported salary		
Dividend payout	0.081**	0.076**
	(0.039)	(0.038)
Dividend/TA	4.296*	3.758*
	(2.412)	(2.208)
Number of observations	2135	2047
Panel C. Using both annualized salary and annualized bonus		
Dividend payout	0.089**	0.085**
	(0.040)	(0.039)
Dividend/TA	4.176*	3.607*
	(2.471)	(2.080)
Number of observations	2135	2047
Panel D. Controlling for GAI (*1996-2007*)		
Dividend payout	0.065*	0.070*
	(0.038)	(0.037)
Dividend/TA	4.779**	4.393**
	(2.058)	(1.893)
Number of observations	1248	1194

Panel E. Controlling for the forced turnover indicator and its interaction term with the corresponding dividend variable

Dividend payout	0.113***	0.107***
	(0.042)	(0.040)
Dividend payout × Forced turnover	-0.112*	-0.104*
	(0.057)	(0.057)
Forced turnover	-0.120	-0.118
	(0.100)	(0.096)
Dividend/TA	4.674*	4.570*
	(2.411)	(2.395)
Dividend/TA × Forced turnover	0.517	0.035
	(2.360)	(2.355)
Forced turnover	-0.158	-0.147
	(0.101)	(0.097)
Number of observations	2135	2047

Panel F. Controlling for predecessor's total pay and its interaction term with the external hire indicator

Dividend payout	0.062**	0.055*
	(0.031)	(0.030)
Predecessor's total pay	0.201***	0.265***
	(0.044)	(0.046)
Predecessor's total pay × External hire	0.127	0.105
	(0.136)	(0.137)
Dividend/TA	1.703*	0.949
	(0.973)	(0.897)
Predecessor's total pay	0.198***	0.262***
	(0.044)	(0.045)
Predecessor's total pay × External hire	0.129	0.108
	(0.136)	(0.137)
Number of observations	2096	1973

Panel G. Controlling for the new CEO's last total pay and its interaction term with the external hire indicator

Dividend payout	0.053*	0.041*
	(0.029)	(0.023)
New CEO's last total pay	0.401***	0.468***
	(0.068)	(0.069)
New CEO's last total pay × External hire	-0.056	-0.113**
	(0.062)	(0.055)
Dividend/TA	1.740	1.484*
	(1.157)	(0.849)
New CEO's last total pay	0.402***	0.472***
	(0.068)	(0.070)
New CEO's last total pay × External hire	-0.055	-0.114**
	(0.062)	(0.055)
Number of observations	1299	1202

Panel H. Excluding financial firms (*SIC codes 6000-6999*)		
Dividend payout	0.110***	0.104***
	(0.040)	(0.039)
Dividend/TA	4.785**	4.414**
	(2.248)	(2.192)
Number of observations	1862	1788
Panel I. Excluding observations with no dividend payments		
Dividend payout	0.059*	0.058*
	(0.033)	(0.033)
Dividend/TA	3.559**	2.798*
	(1.795)	(1.469)
Number of observations	1313	1264
Panel J. Controlling for the new CEO's previous firm performance and Demerjian et al. (2012) managerial ability score		
Dividend payout	0.100***	0.099***
	(0.037)	(0.036)
Dividend/TA	3.730**	3.103**
	(1.492)	(1.373)
Number of observations	1632	1616
Panel K. Controlling for differences in qualification between the predecessor and new CEO		
Dividend payout	0.081**	0.077**
	(0.037)	(0.036)
Dividend/TA	4.523**	4.314**
	(2.159)	(2.110)
Number of observations	2135	2047

Appendix A
Variable definitions

Variable Name	Definition
Ln(Total compensation)	Natural logarithm of total compensation (ExecuComp item *tdc1*). Total comp converted into year 2000 dollars using the Consumer Price Index obtained from of Labor Statistics.
Ln(Risk-adjusted compensation)	Natural logarithm of risk-adjusted compensation computed using the Ingers model. Risk-adjusted total compensation is calculated by replacing the marke restricted stock grants and stock option grants given by ExecuComp with the ris values.
Dividend payout	Dividends over net income.
Dividend/TA	Dividends over total assets.
Ln(Sales)	Natural logarithm of sales (Compustat *SALE*). Sales is converted into year 20 using the Consumer Price Index obtained from the Bureau of Labor Statistics.
Tobin's Q	Sum of book value of total assets plus market value of equity minus book valu divided by book value of total assets [Compustat (*AT* + *CSHO* × *PRCC_F* - *CE*
Leverage	Total debt divided by total assets, where total debt is defined as current liabilities term debt [Compustat (*DLC* + *DLTT*)/*AT*].
ROA	Earnings before interest and taxes divided by total assets [Compustat *EBIT/AT*]

Stock return	Annual stock return [Compustat (*PRCC_F*(*t*)/*AJEX*(*t*) + *DVPSX_F*(/(*PRCC_F*(*t-1*)/*AJEX*(*t-1*)) - 1].
Cash	Cash and short-term investments divided by total assets (Compustat *CHE*/*AT*).
Firm age	Number of years since the firm has had its shares listed.
Industry volatility	Industry stock return volatility computed from monthly equally-weighted ret Fama and French 49 industries.
Industry rating	Industry average of S&P long-term issuer credit rating.
Board busyness	Ratio of the number of busy directors to board size, where busy directors are hold three or more directorships.
Fraction female directors	Ratio of the number of female directors to board size
Board independence	Ratio of the number of independent directors to board size.
Institutional ownership	Proportion of equity owned by 13-F institutional investors.
CEO age	Age of the CEO in years.
Female CEO	Dummy variable that takes a value of one if the CEO is a woman, and zero othe
External hire	Dummy variable that takes a value of one if the CEO was hired from outside th zero otherwise.
MBA	Dummy variable that takes a value of one if the CEO has a Master's o Administration (MBA) degree, and zero otherwise.
Ivy League	Dummy variable that takes a value of one if the CEO attended an Ivy League sch University, Columbia University, Cornell University, Dartmouth College University, Princeton University, University of Pennsylvania, and Yale Univer academic level, and zero otherwise.

Fast track	Age at which the CEO became a CEO for the first time.
Military CEO	Dummy variable that takes a value of one if the CEO has any military experienc otherwise.
Recession CEO	Dummy variable that takes a value of one if there was a recession during the yea CEO reached the age of 24, and zero otherwise, following Schoar and Zuo (201

Appendix B

Robustness check: Excluding observations with repurchases

This table examines how new CEO compensation is affected by the firm's dividends after excluding firm-years with repurchases. The dependent variables include: *Ln*(*Total compensation*) is the natural logarithm of total compensation (ExecuComp item *tdc1*). *Ln*(*Risk-adjusted compensation*) is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main independent variables of interest include: *Dividend payout* is dividends over net income. *Dividend/TA* is dividends over total assets. All other variables are defined in Appendix A. Year effects are included. Statistical significance is based on the heteroskedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Ln(Total compensation)		Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
Dividend payout	0.187***		0.166***	
	(0.071)		(0.061)	
Dividend/TA		23.821**		23.439**
		(10.767)		(10.666)
All controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	961	961	920	920
Adjusted R^2	0.420	0.445	0.467	0.495

Appendix C

Robustness check: Industry-adjusted compensation and dividend measures

This table examines the effect of dividend payout on new CEO compensation using industry-adjusted compensation and dividend measures. The dependent variables include the following: *Industry-adj. Ln*(*Total compensation*) (*Industry-adj. Ln*(*Risk-adjusted compensation*)) is the difference between the CEO's *Ln*(*Total compensation*) (*Ln*(*Risk-adjusted compensation*)) and the mean value for all CEOs in the same Fama-French 49 industry. The main independent variables of interest include the following: *Industry-adj. dividend payout* (*Industry-adj. dividend/TA*) is the difference between the firm's *Dividend payout* (*Dividend/TA*) and the mean value for all firms in the same Fama-French 49 industry. All other variables are defined in Appendix A. Year effects are included. Statistical significance is based on the heteroskedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Industry-adj. Ln(Total compensation)		Industry-adj. Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
Industry-adj. dividend payout	0.081**		0.078**	
	(0.038)		(0.036)	
Industry-adj. dividend/TA		4.736**		4.474**
		(2.242)		(2.196)
All controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	2135	2135	2047	2047
Adjusted R^2	0.146	0.150	0.169	0.173

Supporting documentation for manuscript

"Passing the dividend baton: The impact of dividend payouts on new CEOs' initial compensation"

NOT FOR PUBLICATION

Available from the authors on request

Table A1

Propensity score matching estimates based on dividend-paying firms

This table reports the results from propensity score matching estimation that compares new CEO compensation of high-dividend-paying firms with that of matched, low-dividend-paying firms. The high-dividend-paying group in Panel A consists of firms in the top quartile of *Dividend payout*. The high-dividend-paying group in Panel B consists of firms in the top quartile of *Dividend/TA*. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A. high-dividend-paying group defined as firms in the top quartile of dividend payout

Variable	Firm-year obs. with high dividends N= 303	Firm-year obs. with low dividends N=198	Difference	T-stat
Ln(Total compensation)	14.836	14.643	0.193*	1.670
Ln(Risk-adjusted compensation)	14.702	14.502	0.200*	1.820

Panel B. high-dividend-paying group defined as firms in the top quartile of dividend/TA

Variable	Firm-year obs. with high dividends N= 278	Firm-year obs. with low dividends N=149	Difference	T-stat
Ln(Total compensation)	15.109	14.875	0.235*	1.870
Ln(Risk-adjusted compensation)	14.938	14.688	0.250**	2.090

Table A2

The effect of the dividend payout on new CEO compensation with industry-year effects

This table examines the effect of the dividend payout on new CEO compensation accounting for industry-year effects. The dependent variables include: *Ln*(*Total compensation*) is the natural logarithm of total compensation (ExecuComp item *tdc1*). *Ln*(*Risk-adjusted compensation*) is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main independent variables of interest include: *Dividend payout* is dividends over net income. *Dividend/TA* is dividends over total assets. The same set of control variables and year fixed effects as in our baseline models are included. For brevity, we only report the coefficients on the dividend variables. Industry-year effects are constructed based on the Fama-French 49-industry classification. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Ln(Total compensation)		Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
Dividend payout	0.098**		0.093**	
	(0.041)		(0.039)	
Dividend/TA		6.001***		4.895***
		(1.934)		(1.788)
All controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes
Number of observations	2135	2135	2047	2047
Adjusted R^2	0.567	0.572	0.585	0.588

Table A3
Managerial ability and dividend payout

This table examines whether the qualifications/ability of a newly appointed CEO are correlated with the firm's payout policy. D
managerial ability. *MBA* is an indicator variable that takes a value of one if the CEO has a Master's of Business Administration (M
is an indicator variable that takes a value of one if the CEO attended an Ivy League school at any academic level, and zero otherw
became a CEO for the first time. *Ability score* is the managerial ability score of Demerjian et al. (2012). For brevity, we only repor
The same set of controls as in the baseline models are included, except the above managerial ability variables. Statistical significan
firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectivel

	MBA	Ivy league	Fast track	Ability score	MBA	Ivy leag
	(1)	(2)	(3)	(4)	(5)	(6)
Dividend payout	-0.010	0.007	0.127	0.007		
	(0.021)	(0.016)	(0.238)	(0.005)		
Dividend/TA					-1.071	-0.270
					(0.810)	(1.096
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	2135	2135	2135	1700	2135	2135
Adjusted R^2	0.060	0.030	0.391	0.158	0.061	0.030

Table A4
Alternative performance and size controls

This table examines the robustness of our results to specifications with alternative controls or no controls for firm performance and size. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Ln(Total compensation) (1)	Ln(Risk-adjusted compensation) (2)
Panel A. Replace Ln(sales) with Ln(MV)		
Dividend payout	0.079*	0.075*
	(0.043)	(0.042)
Dividend/TA	4.332*	4.214*
	(2.389)	(2.356)
Number of observations	2135	2047
Panel B. Replace Ln(sales) with Ln(TA)		
Dividend payout	0.084**	0.081**
	(0.040)	(0.038)
Dividend/TA	4.897**	4.684**
	(2.349)	(2.329)
Number of observations	2135	2047
Panel C. No controls for firm size		
Dividend payout	0.081**	0.081**
	(0.039)	(0.038)
Dividend/TA	4.647**	4.492*
	(2.314)	(2.302)
Number of observations	2135	2047
Panel D. Include only ROA as a measure of firm performance		
Dividend payout	0.081**	0.078**
	(0.038)	(0.037)
Dividend/TA	4.718**	4.418**
	(2.238)	(2.193)
Number of observations	2135	2047
Panel D. Include only Stock return as a measure of firm performance		
Dividend payout	0.077**	0.075**
	(0.037)	(0.035)
Dividend/TA	3.973**	3.829**
	(1.947)	(1.875)
Number of observations	2135	2047
Panel D. No controls for firm performance		
Dividend payout	0.077**	0.075**
	(0.037)	(0.035)
Dividend/TA	3.970**	3.804**
	(1.942)	(1.882)
Number of observations	2135	2047

Table A5
Alternative residual dividend measures

This table examines the effect of the dividend payout on new CEO compensation using alternative, residual-based measures. The dependent variables include: *Ln*(*Total compensation*) is the natural logarithm of total compensation (ExecuComp item *tdc1*). *Ln*(*Risk-adjusted compensation*) is the natural logarithm of risk-adjusted compensation computed using the Ingersoll (2006) model. The main independent variables of interest include: *Dividend payout_resid1* (*Dividend/TA_resid1*) is the residual from a regression of *Dividend payout* (*Dividend/TA*) on *ROA* and *Stock return* from year t+1. *Dividend payout_resid2* (*Dividend/TA_resid2*) is the residual from a regression of *Dividend payout* (*Dividend/TA*) on *Ln(Sales)* from year t+1. The same set of control variables and year fixed effects as in our baseline models are included. For brevity, we only report the coefficients on the dividend variables. Statistical significance is based on the heteroscedasticity robust firm-clustered standard errors reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A. Residual dividend measures based on ROA and Stock return from year t+1

	Ln(Total compensation)		Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
Dividend payout_resid1	0.069*		0.070*	
	(0.041)		(0.040)	
Dividend/TA_resid1		4.014**		3.549**
		(1.827)		(1.784)
All controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	2052	2052	1968	1968
Adjusted R^2	0.146	0.150	0.172	0.175

Panel B. *Residual dividend measures based on Ln(Sales) from year t+1*

	Ln(Total compensation)		Ln(Risk-adjusted compensation)	
	(1)	(2)	(3)	(4)
Dividend payout_resid2	0.065*		0.072*	
	(0.037)		(0.040)	
Dividend/TA_resid2		4.794**		4.542**
		(2.255)		(2.205)
All controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Number of observations	2052	2052	1968	1968
Adjusted R^2	0.146	0.153	0.173	0.178

Calculation of risk-adjusted compensation

Risk-adjusted compensation is computed using the Ingersoll (2006) model. In this section, we describe the implementation of the model and summarize the key equations needed for the computation. We replicate exactly the implementation described in Peters and Wagner (2014). A Stata program that implements the model is provided by Peters and Wagner (2015), which is available at: http://www.uva.nl/en/about-the-uva/organisation/staff-members/content/p/e/f.s.peters/f.s.peters.html.

Calculating risk-adjusted values of restricted stock grants

The risk-adjusted value of a share with continuously paid dividends restricted until time T_S is

$$\hat{S}(S,T) = S\left[\frac{q}{\hat{q}} + e^{-\hat{q}T_S}\left(1 - \frac{q}{\hat{q}}\right)\right] \quad \text{(A1)}$$

where $\hat{q}$ is the adjusted dividend yield derived by Ingersoll (2006). It equals $\hat{q} = q + \rho(1-\theta)\theta v^2$. Other primitives in equation (A1) include:

1. S is the share price at the grant date.
2. q is the dividend yield. We use ExecuComp item bs_div for the period 1993-2005. For 2006 onwards, this item no longer exists in ExecuComp. Thus, we use the dividend yield data from Compustat and compute q as an average dividend yield over the previous four years.
3. ρ is the coefficient of relative risk aversion.
4. θ is the portfolio constraint, defined as the fraction of wealth that the manager holds in his firm's stock beyond that he would voluntarily hold.

5. v^2 is the residual variance of the stock. It equals $v^2 = \sigma^2 - \beta^2\sigma_M^2$, where σ^2 is the total stock variance, β is the CAPM-β of the stock, and σ_M^2 is the variance of the market return. Following Peters and Wagner (2014), we calculate the variances and estimate the CAPM-β using monthly stock and market returns on four-year rolling windows.
6. T_S is the vesting period for the restricted stock grant. Following Peters and Wagner (2014), we assume T_S = 3 years.

The risk-adjusted value of an entire restricted stock grant is

$$N_S S\left[\frac{q}{\hat{q}} + e^{-\hat{q}T_S}\left(1 - \frac{q}{\hat{q}}\right)\right] \tag{A2}$$

where N_S is the number of shares granted. We use ExecuComp item $rstkgrnt$, the market value of the stock grant, for $N_S S$.

Calculating risk-adjusted values of stock option grants

The risk-adjusted valuation of stock options with optimal exercise of the executive is discussed in Ingersoll (2006). A barrier derivative approach, originally developed by Ingersoll (1998), is employed in Ingersoll (2006) to price American options. The approximate value of a call option computed for a constant exercise policy is

$$C \gtrapprox \max_k C_{barr}(S, T, k) \tag{A3}$$

Where $C_{barr} = \tilde{S}(S, T; \{S_T > X\} \,\&\, \{S_{max} < k\})$

$$- X\tilde{D}(S, T; \{S_T > X\}\&\{S_{max} < k\}) + (k - X)\tilde{T}(S, T, k) \tag{A4}$$

$\tilde{S}$ is a digital share and $\tilde{D}$ is a digital option. $\tilde{T}$ is a first-touch digital option. The formulas for these three digital contracts, as provided in Ingersoll (2006), are

$$\tilde{S}(S,T;\{S_T > X\}\ \&\ \{S_{max} < k\}) = \qquad Se^{-\hat{q}T}$$

$$\left\{\Phi\left(h\,{}^{+}_{X}\right) - \Phi\left(h\,{}^{+}_{k}\right) - \left(\frac{k}{S}\right)^{2(\zeta+1)}\left[\Phi\left(h_{XS}{}^{+}_{k^2/}\right) - \Phi\left(h_{S}{}^{+}_{k^2/}\right)\right]\right\} \qquad \text{(A5)}$$

$$\tilde{D}(S,T;\{S_T > X\}\ \&\ \{S_{max} < k\}) =$$

$$e^{-\hat{r}T}\left\{\Phi\left(h\,{}^{-}_{X}\right) - \Phi\left(h\,{}^{-}_{k}\right) - \left(\frac{k}{S}\right)^{2\zeta}\left[\Phi\left(h_{XS}{}^{-}_{k^2/}\right) - \Phi\left(h_{S}{}^{-}_{k^2/}\right)\right]\right\} \qquad \text{(A6)}$$

$$\tilde{T}(S,T,k) = \left(\frac{k}{S}\right)^{\zeta-k}\Phi\left(H\,{}^{+}_{k}\right) + \left(\frac{k}{S}\right)^{\zeta+k}\Phi\left(H\,{}^{-}_{k}\right) \qquad \text{(A7)}$$

where

$$h\,{}^{\pm}_{X} = \frac{\ln(S/X) + \left(\hat{r} - \hat{q} \pm \frac{1}{2}\sigma^2\right)T}{\sigma\sqrt{T}}$$

$$\hat{r} = r - \rho\theta^2 v^2$$

$$\zeta = \left[(\hat{r} - \hat{q})/\sigma^2\right] - \frac{1}{2}$$

$$H\,{}^{\pm}_{k} = \frac{\ln(S/k) + \kappa\sigma^2 T}{\sigma\sqrt{T}}$$

and

$$\kappa = \sqrt{\zeta^2 + \left(2\hat{r}/\sigma^2\right)}$$

In addition to the variables already defined and used in equation (A1), the following primitives are needed to compute the above terms:

1. X is the strike price. We follow Peters and Wagner (2014) and assume that options are granted at the money. So the strike price is equal to the stock price on the grant date.

2. r is the risk-free rate. We use ExecuComp item $bs\_interest$ for the period 1993-2005. For 2006 onwards, we use the one-year treasure rate.
3. T is the option maturity. We follow Peters and Wagner (2014) and assume a stock option maturity of 10 years.

Finally, the risk-adjusted value of a stock option grant is calculated by multiplying the risk-adjusted value of a given stock option with the number of options granted (ExecuComp item $option\_awards\_num$).