An Empirical Investigation of Internal Governance*

Rajesh K. Aggarwal

Carlson School of Management

University of Minnesota

321 19th Avenue South, Room 3-122

Minneapolis, MN 55455

612-625-5679

aggar015@umn.edu

Huijing Fu

The Neeley School of Business

Texas Christian University

TCU BOX 298530

Fort Worth, TX 76129

817-257-7148

h.fu@tcu.edu

Yihui Pan

Carlson School of Management

University of Minnesota

321 19th Avenue South, Room 3-122

Minneapolis, MN 55455

612-626-9702

panxx056@umn.edu

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Abstract

Acharya, Myers, and Rajan (2009) theorize that self-serving actions and rent extraction by CEOs can be constrained by subordinate managers when the managers' efforts are needed in production. This force, which they call internal governance, works best when the CEO and the managers are both important to firm output, in the sense that their relative contributions to firm value are balanced. We empirically examine the effects of internal governance on firm investment and performance. We develop a measure of internal governance that captures the relative contribution of the CEO compared to non-CEO executives in firm value creation. Consistent with the theory, we find that there is a hump-shaped relation between relative contributions and corporate investment measured as either capital expenditures or R&D spending. We also find a hump-shaped relation between relative contributions and several measures of firm performance: Tobin's Q, ROA, and free cash flow. The hump-shaped relations between investment and relative contributions and between firm performance and relative contributions are more evident for firms with young managers and firms with a greater age difference between the CEO and the managers. These results are consistent with divergences in career horizons between CEOs and managers being a crucial determinant of the strength of internal governance. However, neither external governance nor board governance diminishes the importance of internal governance. Overall, our results are strongly supportive of the theory.

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1 Introduction

A self-interested chief executive officer (CEO) may want to benefit himself at the expense of the shareholders. However, unless the CEO is a singular productive figure in the company, he needs the collaboration of his subordinates. His subordinates, in turn, may very well have a long-run interest in the company's prospects, especially if they see sufficient scope for career development within the firm. In other words, subordinates who think they could one day be CEO may have different horizons relative to the preservation of firm value than does the incumbent CEO. Because the CEO needs his subordinates for current production and needs to keep them motivated, the CEO will commit to investing now to preserve value for the future. This bottom-up incentive scheme to preserve long-term firm value and increase capital stock to induce effort from subordinates is called internal governance (see Acharya, Myers, and Rajan (2010) and Morrison and Wilhelm (2004)).

We empirically examine the effect of internal governance and find support for some of the theory's key predictions. We proxy for the relative contribution of the CEO (in value creation) by the ratio of the CEO's predicted compensation to the sum of the CEO's predicted compensation and the median predicted compensation of non-CEO executives.[1] Consistent with Acharya, Myers, and Rajan (2010), we find that there is a hump-shaped relation between our measure of this relative contribution and corporate investment. At low levels of CEO's relative contribution, when the CEO is paid relatively less well than executives below the CEO (whom we dub managers), managers have little incentive to learn or exert effort and the CEO has little incentive to invest for the long-run. At very high levels of relative contribution, when the CEO is paid quite highly relative to the managers and the CEO is therefore dominant, the CEO again has little incentive to invest for the long-run. Intermediate levels of relative contribution maximize long-term investment incentives, as in Acharya, Myers, and Rajan (2010), and this is what we find empirically.

Further, we find a similar hump-shaped relation between our measure of relative contribution and industry-adjusted operating performance, measured as Tobin's Q, return on assets, and free cash flow. These results hold in both levels and changes and are robust to controls for external governance such as institutional ownership and the strength of board governance, as well as other controls.

Our results also shed some light on the opposing results of Kale, et. al., (2009) and Bebchuk, et. al., (2011). These papers find a linear yet opposite relation between a measure similar to our relative contribution measure and short-term firm performance. Kale, et.

[1] We use the median instead of the maximum because we assume the non-CEO senior executives have equal probabilities of contributing to cash flow generation and being promoted to be the next CEO.

al., (2009) interpret their measure as a measure of tournament incentives (the difference between CEO pay and other executives' pay), and find that firm performance is increasing in the pay differential. Bebchuk, et. al., (2011) interpret their measure as a measure of CEO dominance or centrality relative to the other executives (again looking at the difference between CEO pay and other executives' pay) and find that firm performance is decreasing in the pay differential. These contrasting findings disappear when we investigate the relation between our measure of internal governance and long-term firm performance. A nonlinear, hump-shaped relation is better able to explain the pattern of the data, and is consistent with the internal governance theory of Acharya, Myers, and Rajan (2010).

In addition, we find that internal governance is more effective when the CEO has less firm specific human capital, and therefore needs the rest of the management team more. Internal governance is also more effective when the rest of the management team is younger, when the firm's industry is growing, and when the firm is more likely to promote internally to the CEO position. We also find that internal governance is more effective when firm-specific skills or effort are more important for managers. These results provide support for the internal governance theory.

Much of the corporate governance literature focuses on how boards can curb CEOs taking actions that are detrimental to shareholders. However, the current literature provides little consensus that the independence of boards improves profitability or firm value, although some research does find that boards can be efficient tools of corporate governance when it comes to CEO turnover or compensation. One rationale behind these two seemingly opposing findings is that strong or independent boards could be valuable in times of crises, but are too far away from day-to-day operations to add much value to a firm.

By contrast, a firm's junior managers are critically important to a firm's day-to-day operations. Further, their potentially longer time horizon can be a useful governance mechanism. Acharya, Myers, and Rajan (2010) argue that junior managers' different horizons relative to CEOs will result in different preferences in investment, payout, and other corporate policies. This paper looks at the impacts of managers' different horizons on corporate investment and firm performance. The paper is organized as follows. In Section 2, we present our hypotheses. In Section 3, we describe our data and measure of internal governance. In Section 4, we present our results. Section 5 concludes.

2 Hypothesis Development

Kale, et. al., (2009) show that tournament incentives are positively related to firm performance. From the corporate governance perspective, this suggests that tournament incentives (e.g., promotion to CEO) could effectively elicit effort from managers. At the same time though, it is important to note that the effectiveness of such incentives comes from promising future payoffs to the next generation leader of the company. Therefore, the incumbent CEO will have to preserve firm value and even increase capital stock, which he may have incentives to do if he needs the cooperation of his subordinates (other members of the executives team).

This second strand of disciplinary force coming from the different appropriation horizons may serve as an effective (internal) governance mechanism to reduce CEO's agency costs (as in Acharya, Meyers, and Rajan (2010)) and have important implications for the firm's dividend payout and investment policies as well. According to Acharya, Myers, and Rajan (2010), internal governance works best when both CEO and other key employees are important to firm value creation and neither the CEO nor the managers are dominant. If the CEO is very powerful, he does not need his subordinates' cooperation and internal governance will not constrain the CEO's extraction of rents. If the incumbent CEO is weak (in the sense of being relatively unimportant for production), then the internal governance effect is also weak because the CEO will not invest and the manager will therefore not exert a lot of effort to learn about the firm's specific issues. If the power is balanced, internal governance will have an impact on firm performance.

Further, for the internal governance mechanism to work effectively in practice, there must be a real divergence between CEO's and the manager's appropriation horizon: it is exactly the prospect of the manager's future career that gives rise to the bottom-up internal disciplinary force to increase capital stock and preserve firm value. Since age serves as a proxy for appropriation horizon, internal governance should be more effective in firms where there is a clear age difference between the CEO and the managers.[2] Other governance forces aside from internal governance, such as career or reputational concerns, may be more operative for younger CEOs. Acharya, Myers, and Rajan (2010) also hypothesize that internal governance is more likely to be effective in firms that are growing, as there is no pressure to invest and less need for effort in firms that are declining.

Another key component for the effectiveness of internal governance is how much firm-specific learning or effort the manager engages in prior to becoming CEO. In industries in which general skills dominate firm-specific skills, internal governance is unlikely to be effective because the manager has the option to exit. Further, independent of industry, managers who do not possess firm-specific skills are unlikely to effectively pressure CEOs to invest.

[2] It is important to note that the Acharya, Myers, and Rajan (2009) model does not imply that there is a hump-shaped relation between the difference in appropriation horizon (proxied by the age difference between CEOs and managers) and investment or performance. The non-linear relation is between the relative importance of the CEO and investment or performance.

Conversely, CEOs who do not possess firm specific skills are more likely to be pressured to invest because they need the cooperation of their subordinate managers. Finally, for firms in industries in which CEO succession is more likely to happen from outside of the firm, internal governance is unlikely to be effective since managers are unlikely to be induced to exert effort for no reward.

In sum, we hypothesize the following.

Hypothesis 1: There is a hump-shaped relation between the ratio of the CEO's predicted compensation to the sum of the CEO's predicted compensation and the median predicted compensation of non-CEO executives ("delta") and long-term corporate investments, conditional on the strength of external governance.

Hypothesis 2: There is a hump-shaped relation between delta and firm performance (both short-term and long-term), conditional on the strength of external governance.

Hypothesis 3: In firms with larger age differences between the CEO and the managers, the hump-shaped relations between investment and delta and firm performance and delta are more pronounced (internal governance is more effective).

Hypothesis 4: In firms in growing industries, the hump-shaped relations between investment and delta and firm performance and delta are more pronounced

Hypothesis 5: Firms in heterogeneous industries (those industries in which skills are not transferable) will have more pronounced hump-shaped relations between investment and delta and firm performance and delta.

Hypothesis 6: Firms with CEOs who possess fewer firm-specific skills will have more pronounced hump-shaped relations between investment and delta and firm performance and delta.

Hypothesis 7: Firms in industries that rely on internal succession will have more pronounced hump-shaped relations between investment and delta and firm performance and delta.

3 Data and Sample Construction

The data on executives used in this study come primarily from ExecuComp, which provides information on the identity and compensation packages of the top five executives at publicly traded US firms each year. The financial data for the firms come from Compustat and CRSP. Data on institutional holdings are provided by Thomson Reuters's CDA/Spectrum database. Information on corporate boards is obtained from the RiskMetrics database. All data used are annual. Both ExecuComp and RiskMetrics cover S&P 500, S&P MidCap 400, and S&P SmallCap 600 firms. All institutional money managers filing 13F reports with the Securities and Exchange Commission are covered in the CDA/Spectrum database. The sample period for our main analysis starts from 1996, as that is the starting point for the board characteristics that are provided by RiskMetrics.

3.1 Governance Measures and Performance Measures

Internal governance is, of course, not the only form of corporate governance that may be used or be effective. In most of our specifications, we control for other types of governance, such as board governance, institutional monitoring, executive ownership, takeover pressure or entrenchment, and the presence of a dual-class share ownership structure.

To capture the proportion of institutional investors in the overall shareholders, we define:[3]

$$Institutional = \frac{\text{Number of shares owned by institutional investors}}{\text{Total number of shares outstanding}}$$

The variables that capture board characteristics are: Dir_{sum}, which measures the number of directors on the board (in logarithm) and $Outdir_{pcnt}$, which measures the percentage of outside directors. To capture takeover pressure or entrenchment, we include the $G-index$ of Gompers, Ishii, and Metrick (2003). To measure executive ownership, we include the fraction of direct stock ownership, restricted stock holdings, shares acquired by option exercises, and options that have vested relative to total shares outstanding. We also include a dummy variable equal to one if the firm has a dual-class share ownership structure.

We use standard measures of firm-year level investment and performance. For investment, we use capital expenditures and R&D expenditures. Both variables are scaled by beginning of period total assets. For firm performance, we use Tobin's Q, return on assets (ROA), and free cash flow. We winsorize the firm level performance measures at the left and right tail (1%, 99%). One-year performance measures are contemporaneous while three year performance measures are three-year averages. Table 1 lists descriptive statistics for the variables used in this study.

3.2 Measure of Internal Governance

A crucial parameter in Acharya, Myers, and Rajan (2010) is the relative contribution measure δ, which denotes the strength of the relative importance of the CEO's contribution compared to the manager's in generating cash flow. More specifically,

[3]We have also examined institutional investors decomposed into transient and dedicated institutional investors as in Bushee (1998, 2001). Our results are generally unaffected by using either transient or dedicated institutional investors as a control for external governance, so for brevity, those results are omitted.

$$\delta = \frac{f}{f+g}$$

where f and g are functions of CEO's and the manager's contribution to cash flow generation given their effort/learning, respectively. A primary empirical challenge is in estimating the parameter δ. Because we do not directly observe the contributions of the CEO and manager to cash flow, we must infer their contributions from other observable data. A natural candidate is the relative compensation of the CEO and the manager, since in a neoclassical model, compensation will reflect marginal productivity. However, in the Acharya, Myers, and Rajan (2010) model, compensation is endogenously determined, so we must extract the portion of compensation that is determined by relative productivity.

We do so by empirically modeling compensation as follows. Potentially, both the CEO's and the manager's wages consists of a rent (λ_{CEO} and λ_{MGR}), and returns to firm-specific and general skills (f and g from above) that generate firm cash flow. The wage equations are:

$$\begin{aligned} w_{CEO} &= f + \lambda_{CEO} \\ w_{MGR} &= g + \lambda_{MGR}. \end{aligned}$$

In the Acharya, Myers, and Rajan (2010) model, the manager earns no rent ($\lambda_{MGR} = 0$)–she only earns rent if she becomes CEO. The CEO consumes any surplus cash flow and this is the CEO's rent. In what follows, we allow for the possibility that the manager also earns a rent in actual data.

From the wage equations, we need to extract f and g. To do so, we treat rents as components of compensation that cannot be explained as returns to observables. Thus, we need a model to predict executive compensation, and we use predicted compensation as our proxies for f and g. We follow Graham et al. (2009), and use the following model to predict executive compensation:

$$\begin{aligned} \ln w_{ijt} &= \beta_0 + \beta_1 \ln(assets_{jt-1}) + \beta_2 Q_{jt-1} + \beta_3 ret_{jt} + \beta_4 ret_{jt-1} \\ &\quad + \beta_5 ROA_{jt} + \beta_6 ROA_{jt-1} + \beta_7 Vol_{jt-1} + F_i + \tau + \varepsilon_{ijt}. \end{aligned}$$

We split the sample into two sub-groups: the CEO group and the non-CEO group. For each group, we construct predicted compensation for each executive from the above regression. The variables included are firm size (assets), Tobin's Q, stock returns and its lag, return on assets and its lag, stock return volatility, and manager and year fixed effects.

Table 2 presents the results of these specifications. Consistent with prior literature, both CEO and manager compensation are higher in larger firms, firms with higher Tobin's Q (growth firms), and firms that perform and have performed better. Manager fixed effects, which control for time-invariant manager characteristics, are very important in explaining managerial compensation, as seen by the high R^2 in these specifications (see also Graham, et. al.). These specifications capture returns to observable firm-specific and general skills that contribute to cash-flow generation.

The residuals represent the CEO's and the manager's rents (λ_{CEO} and λ_{MGR}) leaving predicted compensation to capture returns to CEO and manager productivity:

$$\begin{aligned} \widehat{w_{ijt-CEO}} &= f \\ \widehat{w_{ijt-MGR}} &= g. \end{aligned}$$

To get f and g, we take the exponential of predicted log compensation from the wage equations. The relative contribution of the CEO to cash flow generation is then given as:

$$\delta = \frac{f}{f+g} = \frac{\widehat{w_{ijt-CEO}}}{\widehat{w_{ijt-CEO}} + \widehat{w_{ijt-MGR}}},$$

where the median of the firm's non-CEO managers' predicted compensation is used for g. The last panel of Table 1 provides summary statistics on δ and other manager characteristics.

With the measure of relative contribution δ in hand, note that internal governance is strongest when neither the CEO nor his subordinates dominate. On the one hand, if the CEO is dominant in cash flow generation (i.e., a high δ), then the CEO does not need the cooperation of his subordinates and bottom-up internal governance does not work. If the managers are already dominant in cash flow generation, i.e., a low δ, then the managers do not have incentives to exert effort or learn. Thus, internal governance predicts that there will be a hump-shaped relation between δ and investment, and between δ and firm performance measures such as Tobin's Q, ROA, and free cash flow.

To see if there is such a hump-shaped relation, we first fit fractional polynomials to investment (capital expenditures), Q, ROA, and free cash flow using δ as the independent variable. The advantage of this approach is that we put no restrictions on the shape of the relation between δ and the various outcome variables. The results with confidence intervals are graphed on the left side of Figure 1. For all four dependent variables, we see evidence of a hump-shaped relation between the dependent variable and δ. Given this, we then fit quadratic specifications in δ for all four dependent variables. The results with confidence intervals are graphed on the right side of Figure 1, and show that quadratic specifications do reasonably well in capturing the underlying relations between δ and the four dependent variables. Throughout the rest of the paper, we rely on quadratic specifications.

It is worth contrasting δ with two similar measures used previously in the literature. Kale, et. al., (2009) argue that the pay differential between the CEO and his subordinates measures the strength of tournament incentives. The larger the differential, the stronger the incentives, and the better is firm performance. The tournament explanation yields the same prediction as the internal governance model when the differential is small - incentives are weak for the managers. However, the tournament explanation predicts that incentives are very strong for large differentials, while the internal governance model predicts that again incentives will be weak. Only differentials in the middle, where the relative contributions are balanced, provide strong internal governance.[4]

Bebchuk, et. al., (2011) argue that the amount of compensation that a CEO receives relative to the non-CEO executives is a measure of CEO dominance and is indicative of a CEO's ability to engage in rent extraction. This CEO dominance and rent extraction explanation would predict that at high levels of dominance, firm performance would be poor, consistent with the internal governance model. Here, high levels of dominance would be consistent with δ being too large. However, the rent extraction explanation predicts that firm performance will be strong for low levels of CEO dominance (low δ), while the internal governance model predicts that if δ is too low, again performance will be poor. Only levels of δ in the middle of the distribution, where the relative contributions are balanced, provide strong internal governance. In sum, neither the tournaments argument nor the CEO dominance argument can explain the hump-shaped relations found in Figure 1. We next turn to demonstrating the results shown in Figure 1 more formally with additional controls.

4 Results

4.1 Long Term Investment and Firm Performance

Our initial empirical specification, which tests Hypothesis 1, is as follows:

$$LongTermInvestment_{it} = \alpha + \beta_1 \delta_{ii} + \beta_2 \delta_{it}^2 + \gamma ExternalGov_{it} + covariates + \varepsilon_i \qquad (1)$$

where the independent variables of interest are δ, δ^2, and $ExternalGov$ (institutional ownership, board variables, and other forms of governance). We include both δ and δ^2 to test for the hypothesized nonlinear (hump-shaped) relation between investment and the CEO's

[4]One issue worth noting in the comparison between tournament incentives and internal governance is that, because of the future-oriented nature of tournament incentives, the prize size should depend on the differential of future payoffs to the executive when she becomes the CEO of the company and her current pay, not the pay differential between the compensation for the current CEO and the manager.

and manager's relative contributions. In this specification, we include year effects.

Table 3 reports regression results for long-term investment measured as capital expenditures scaled by beginning of period total assets. We include several standard firm level control variables: size and size-squared to control for any nonlinear effects of size on investment, capital structure (leverage), and the volatility of firm returns. We control for other forms of (external) governance: institutional shareholdings, the G-index, board governance (the size of the board and board independence), and the presence of a dual-class share ownership structure. The coefficient on δ is positive and significant while the coefficient on δ^2 is negative and significant. Thus, we find support for a hump-shaped or inverted U-shaped relation between relative contributions and investment.[5]

Next we test Hypothesis 2 by examining firm performance using several variations of the following empirical specification:

$$Performance_{it} = \alpha + \beta_1 \delta_{it} + \beta_2 \delta_{it}^2 + \gamma ExternalGov_{it} + covariates + \varepsilon_i. \quad (2)$$

Table 4 presents the results for short-run (one-year) performance. Columns 1 through 3 use Tobin's Q, return on assets (ROA), and free cash flow (FCF) scaled by firm assets as the measures of firm performance, respectively. All measures of firm performance are industry-adjusted. In all three specifications, we include controls for firm characteristics and other forms of (external) governance. The coefficient on δ is positive and significant, with the exception of Tobin's Q, while the coefficient on δ^2 is negative and significant in all three specifications. Table 5 presents results for long-run (three-year) firm performance, with results that are quite similar to those in Table 4. Again, we find support for a hump-shaped relation between relative contributions and firm performance.[6]

The results in Tables 3 and 4 use levels of both the dependent and independent variables. Ideally, we would use firm fixed effects in these specifications. However, a number of our external governance variables are essentially time invariant. More problematic is that δ evolves very slowly over time. Recall that δ is formed from predicted compensation of the CEOs and the managers. Predicted compensation in turn depends heavily on individual fixed effects, thus implying predicted compensation will evolve slowly and only with changes in firm characteristics. At the same time, this is what we would expect if δ is measured correctly. The relative contribution of the CEO to firm cash flow, δ, is essentially a static

[5] In unreported results, we have also used R&D spending as the measure of investment. The results are similar, but because R&D spending is missing for a number of firms in Compustat, the number of observations is greatly reduced.

[6] As a robustness check, we also examined three-year performance but started measuring performance one year later. In other words, we examined performance from time t+1 to t+4. In this specification, the results for δ and δ^2 are quite similar to those reported in Table 5.

firm characteristic in the Acharya, Myers, and Rajan (2010) model.

As an alternative method to focus on within-firm identification, we adopt a first-difference approach for those variables that are time-varying. We do not first-difference δ. We do this for both the investment and firm performance specifications. The results are in Table 6. In all four specifications, we find that the coefficient on δ is positive and significant while the coefficient on δ^2 is negative and significant.

4.2 Age Distribution of the Executive Team

The difference in appropriation horizons of the CEO versus the manager is the fundamental source driving internal governance. This suggests that internal governance is more effective in firms with young managers and older CEOs, as noted by Acharya, Myers, and Rajan (2010). Essentially, internal governance is more likely to be effective in firms with larger differences between the CEO's and the manager's age.

We test Hypothesis 3, whether the hump-shaped relation between δ and investment or firm performance is more pronounced for high relative age differences between the CEO and the managers as compared to low relative age differences. To do this, we split the sample based on whether the CEO is older than the oldest non-CEO executive at the firm. The rationale is that similarly aged CEOs and executives have similar time horizons, whereas if the CEO is older than the rest of the managers, the CEO's horizon will be shorter.

Table 7, Panel A, reports results for older CEOs, while Panel B reports results for younger CEOs. For older CEOs, the coefficient on δ is positive and the coefficient on δ^2 is negative for all four dependent variables–investment, Tobin's Q, ROA, and free cash flow. The coefficients are generally significant, with the exception of Tobin's Q. In Panel B, for younger CEOs, the coefficients are never significant and in all cases, the coefficients are smaller in magnitude than the comparable coefficients in Panel A. These results are consistent with internal governance being more effective in firms with larger age differences, signifying greater divergences in appropriation horizons.

4.3 Firms in Growing Industries

Whether a firm is growing is another key determinant of the effectiveness of internal governance. Firms that are declining have little need to invest, and as a result, there is little need to provide the CEO with incentives to invest. Conversely, firms that are growing need investment to grow, and so the CEO will need strong incentives to invest.

We test Hypothesis 4, whether the hump-shaped relation between δ and investment or firm performance is more pronounced for firms in rapidly growing industries than for firms in slowly growing industries. To do this, we sort firms into terciles based on their industries' change in the market-to-book ratio. We then separately examine the top tercile (fast growing) firms and the bottom tercile (slow growing) firms.

Table 8, Panel A, reports results for the fast growing firms, while Panel B reports results for the slow growing firms. For fast growing firms, the coefficient on δ is positive and the coefficient on δ^2 is negative for all four dependent variables–investment, Tobin's Q, ROA, and free cash flow. The coefficients are generally significant, with the exception of δ for Tobin's Q. In Panel B, for slow growing firms, the coefficients are never significant and in all cases, the coefficients are smaller in magnitude than the comparable coefficients in Panel A. The results for capital expenditures are particularly noteworthy, as investment is the mechanism through which growth operates. These results are consistent with internal governance being more effective in firms in growing industries.

4.4 Firm-Specific Effort

Another key component for the effectiveness of internal governance is how much firm-specific learning or effort the manager engages in prior to becoming CEO. If the manager does not engage in firm-specific effort, then the CEO has no incentive to invest. Managers whose skills are general or transferable can always exit the firm, eliminating the CEOs incentive to invest. Conversely, CEOs who possess few firm specific skills are more likely to be pressured to invest because they need the cooperation of their subordinate managers. Finally, if the manager has a low probability of becoming CEO (perhaps because the firm is likely to hire externally), then the manager has no incentive to acquire firm-specific skills and the CEO has no incentive to invest.

We first test Hypothesis 5, whether firms in heterogeneous industries (those industries in which skills are not transferable) have more pronounced hump-shaped relations between investment and δ and firm performance and δ. We measure industry heterogeneity using Parrino's (1997) measure of the correlation between stock returns within 2-digit SIC industries. Table 9, Panel A, presents the results for heterogeneous firms and Panel B presents the results for homogeneous firm. For firms in heterogeneous industries, the coefficient on δ is positive and the coefficient on δ^2 is negative for the investment and performance specifications. The coefficients are significant except for the Tobin's Q specification. The coefficients are insignificant and generally smaller in magnitude for firms in homogeneous industries. These results are consistent with internal governance being more effective in firms in which managers' skills are not portable and there is less of an exit option.

Next, we test Hypothesis 6, whether firms with CEOs with fewer firm-specific skills have more pronounced hump-shaped relations between investment and δ and firm performance and δ. The logic here is that CEOs with fewer firm specific skills need the cooperation of their subordinates in order to run the firm. As a result, internal governance can be more effective as a mechanism to induce investment. We measure a CEO's firm-specific skills by examining when the CEO joined the firm (not when the CEO became CEO of that firm). CEOs with longer firm-specific tenure have more firm-specific skills. We split the sample at the median of firm-specific tenure. Table 10, Panel A, presents the results for CEOs with short firm-specific tenures and Panel B presents the results for CEOs with long firm-specific tenures. For CEOs with short firm-specific tenures, the coefficient on δ is positive and significant and the coefficient on δ^2 is negative and significant for all specifications. The coefficients are generally insignificant and smaller in magnitude for CEOs with longer firm-specific tenures. These results are consistent with internal governance being more effective when CEOs have fewer firm-specific skills.

Finally, we test Hypothesis 7, whether firms in industries that rely on internal succession have more pronounced hump-shaped relations between investment and δ and firm performance and δ. We use Cremers and Grinstein's (2009) 48 industry classification of predominantly inside versus outside successions. We construct two subsamples with firms in the top 10 inside succession industries and bottom 10 inside succession (i.e., top 10 outside succession) industries. Table 11 presents the results. For firms in industries that rely more on internal succession, the coefficient on δ is positive and significant and the coefficient on δ^2 is negative and significant in all specifications. The coefficients are insignificant and generally smaller in magnitude for firms in industries that rely more on external succession. These results are consistent with internal governance being more effective when managers have a higher probability of eventually becoming CEO.

4.5 Endogeneity Concerns

A concern with our results is that δ is endogenously determined. The primary endogeneity concern here is that firms that perform well (have higher Tobin's Q due to an increase in the market value of equity) could invest more and, to the extent that compensation is equity and option-based for all executives, have higher δ since CEOs typically will receive higher stock and option grants. Another way of saying this is that CEO compensation is more performance-sensitive than is non-CEO compensation, a result that can be seen in Table 2. This could explain the upward-sloping portion of the hump-shaped relations between performance and δ and investment and δ, but not the downward-sloping portion.

In order to explain the downward-sloping portion, firms that perform poorly would have to maintain the CEO's level of (predicted) compensation, while letting other executives be paid less, consistent with the poor performance.[7] Such a story would be consistent with arguments that CEOs are rewarded for good luck but not penalized for bad luck (see Bertrand and Mullainathan (2001)). This is essentially the rent extraction story of Bebchuk, Cremers, and Peyer (2011), where CEOs extract rents from their subordinates. In short, two types of endogeneity would have to be at work in different regions of δ in order to explain the results.

It is worth noting that our results are based on using industry-adjusted performance measures at time t+1 and δ at time t in all of our specifications. Positive (or negative) firm performance should not result mechanically in higher past δ. As a second point, the endogeneity issue here is perhaps more relevant for stock market based measures such as Tobin's Q, since the primary mechanism by which compensation increases due to good firm performance is the increase in the value of stock and options. However, our results hold (and are stronger) for accounting-based measures of firm performance, ROA and free cash flow.

Nonetheless, we note that the cash (salary and bonus) or short-term components of compensation are much less performance sensitive than are long-term components of compensation such as stock and options. While bonuses are sensitive to accounting performance, they are typically not sensitive to stock returns. For robustness, we re-estimate our primary investment and performance specifications using a version of δ based only on cash compensation. Specifically, we re-estimate our wage specifications using only cash compensation, and then use predicted cash compensation to form δ_S (for short-term delta). We then use this measure of short-term delta in our investment and firm performance specifications. Here there is no direct feedback from Q into predicted compensation. The results are in Table 12. Panel A presents the results for investment, Panel B presents the results for one-year firm performance, and Panel C presents the results for three-year firm performance. In all three panels, in all specifications, the coefficient on δ is positive and significant and the coefficient on δ^2 is negative and significant. Further, the magnitude of the coefficients is larger than in the corresponding specifications in Tables 3 through 5. Thus, eliminating one channel for endogeneity–Tobin's Q–actually strengthens our results.

[7] How a firm would maintain predicted CEO compensation when faced with poor performance is not clear given our compensation specification. All coefficients on (past) firm performance variables are positive, significant, and larger in magnitude for CEOs than for non-CEOs. Poor firm performance should reduce predicted CEO compensation more than it reduces predicted non-CEO compensation, resulting in falling δ, not increasing δ. Thus, it is extremely difficult to justify the downward sloping portion of the relation between firm performance and δ using this endogeneity story.

5 Conclusion

We examine the impact of stakeholders' different horizons on investment and firm performance. Stakeholders, such as firms' critical employees, can be a strong force of governance when these employees or managers care about their own future and interact with the CEO on a daily basis. These employees and managers, due to their power to withdraw their contributions to the firm, can force a self-interested myopic CEO to act in a far-sighted way.

We empirically examine the effect of this internal governance. We find that there is a hump-shaped relation between internal governance and corporate investment. At low levels of relative contribution, when the CEO is paid relatively less well than managers, managers have little incentive to learn or exert effort and the CEO has little incentive to invest for the long-run. At very high levels of relative contribution, when the CEO is paid quite highly relative to the managers and the CEO is therefore dominant, the CEO again has little incentive to invest for the long-run. Intermediate levels of relative contribution maximize long-term investment incentives, and this is what we find empirically.

Further, we find a similar hump-shaped relation between relative contribution and industry-adjusted operating performance, measured as Tobin's Q, return on assets, and free cash flow. In addition, we find that internal governance is more effective when there is a larger difference in the relative ages of the CEO and the managers and in firms in growing industries. We also find that internal governance is more effective when firm-specific skills or effort are more important for managers, when CEOs possess fewer firm-specific skills, and when managers are more likely to become the CEO eventually.

Collectively, these results provide strong support for the power of internal governance. Especially as there is no current consensus as to the efficacy of board governance, our results on both internal and external governance suggest that alternative governance mechanisms may be as or more important than the more heavily studied traditional board governance mechanisms.

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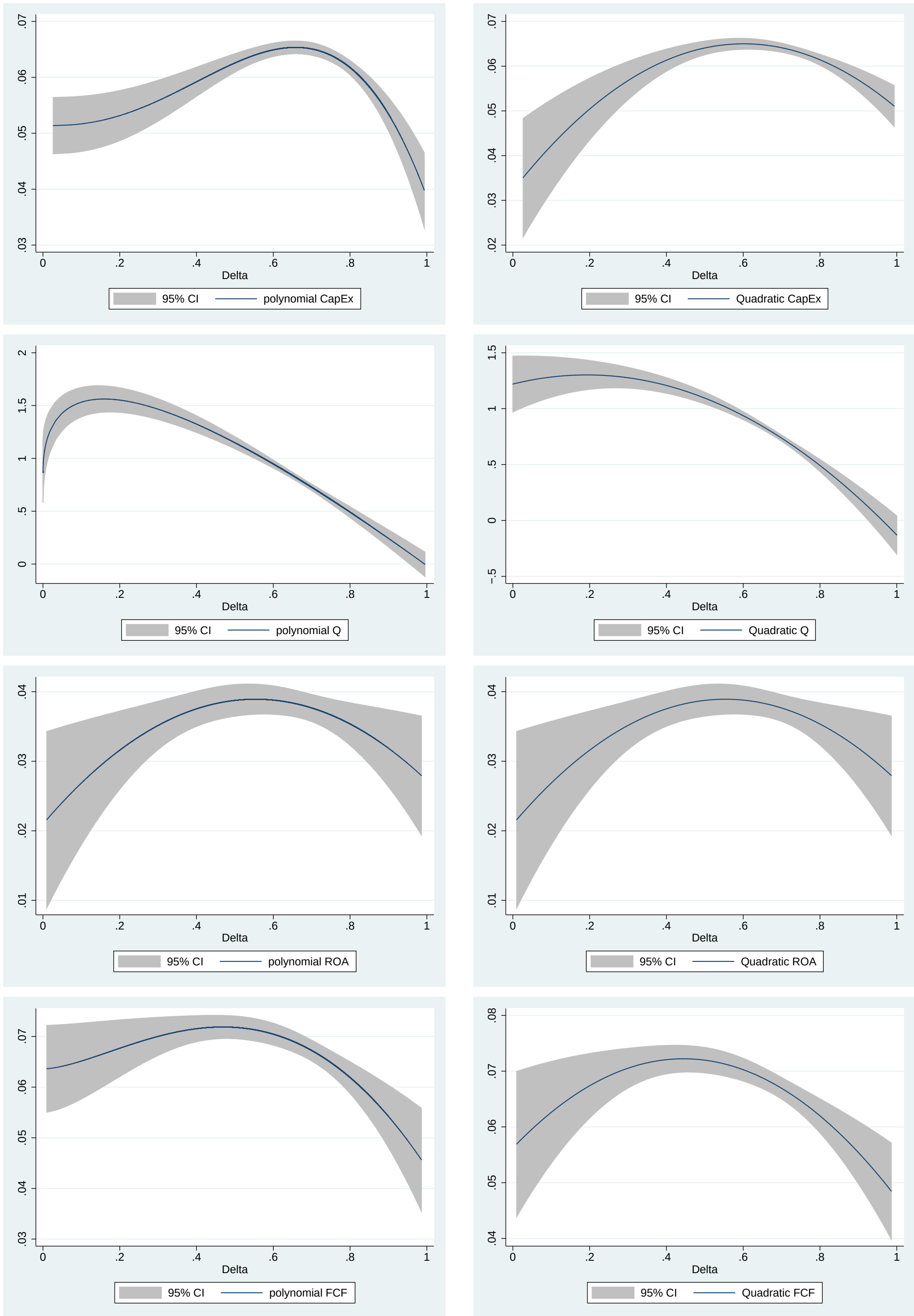

Figure 1: Fractional polynomial predictions and quadratic fitting

Table 1: Summary Statistics

$CapEx$ is capital expenditure scaled by begin-of-period assets, and $R\&D$ is $R\&D$ scaled by the begin-of-period assets. Q_{1yr} is one-year ahead Tobin's Q, measured as fiscal year-end market value+book value of assets-deferred taxes-book value of equity scaled by beginning period of total assets. ROA_{1yr} is one-year ahead return-on-assets, measured as income before extraordinary items scaled by beginning period of total assets. FCF_{1yr} is one-year ahead free Cash Flow, measured as fiscal year-end income before depreciation and amortization scaled by beginning period of total assets. Q_{3yr}, ROA_{3yr}, and FCF_{3yr} are the average of three-year ahead Tobin's Q, ROA, and free Cash Flow scaled by the beginning period of total assets. Leverage is defined as long-term liability scaled by total assets. $Assets$ (in \$millions) is the natural log of total assets. MB is the market value of equity plus the book value of debt divided by total assets. $Return$ is the annual stock return. $Sales$ (in \$millions) is the natural log of total sales. $Leverage$ is (Long term debt + debt in current liabilities)/total assets. $RetVol$ is the annualized stock return volatility, defined as the variance of 60 months of stock returns preceding the current fiscal year's reporting date. $Institutional$ is percentage of total institutional holdings obtained from 13F filings out of total shares outstanding. $Ownership$ captures the direct stock ownership, restricted stock holdings, shares acquired by option exercise, and shares acquired on vesting of the CEO. $G-Index$ is the governance index defined by Gompers et al. (2003). Dir_{sum} measures the number of directors on the board (in logarithm). $Outdir_{pcnt}$ measures the percentage of outside directors. $Dualclass$ is a dummy variable, defined as 1 if the firm issued dual class shares with different voting rights and dividend payments. $Delta$ and $Delta_s$ are constructed (see text for more details) using the level of total compensation and the level of short-term compensation (salary+bonus), respectively. $Compensation_{CEO}$ (measured in \$thousands) is total compensation for CEOs, defined in ExecuComp as data item TDC1 and is comprised of salary, bonus, other annual, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other total. Age_{CEO} is the CEO's age. Age_{max} is the maximal age of the non-CEO executives (other members of top 5). Age_{median} is the median age of the non-CEO executives. $Tenure_{CEO}$ (in log years) is the time the CEO has been with the company.

Variable	Obs	Mean	Std. Dev.	25%	50%	75%
$CapEx$	27,812	0.07	0.10	0.02	0.04	0.08
$R\&D$	15,376	0.06	0.11	0.00	0.03	0.09
Q_{1yr}	25,407	2.00	2.28	1.12	1.48	2.18
Q_{3yr}	20,053	1.91	1.96	1.11	1.44	2.10
ROA_{1yr}	29,151	0.04	0.40	0.01	0.05	0.09
ROA_{3yr}	23,060	0.04	0.30	0.01	0.04	0.09
FCF_{1yr}	28,508	0.14	0.19	0.07	0.14	0.21
FCF_{3yr}	22,635	0.14	0.15	0.07	0.13	0.20
$Assets$	31,795	7.37	1.81	6.08	7.23	8.53
MB	31,539	2.03	2.47	1.14	1.48	2.18
$Return$	31,047	0.63	35.39	-0.23	0.02	0.29
$RetVol$	29,836	0.45	0.21	0.30	0.40	0.55
$Sales$	31,727	7.03	1.66	5.95	6.97	8.09
$Leverage$	31,663	0.24	0.83	0.06	0.21	0.35
$Dirsum$	17,077	9.55	2.85	8	9	11
$Outdir_{pcnt}$	17,043	0.67	0.17	0.57	0.70	0.80
$G-Index$	19,394	9.22	2.68	7	9	11
$Dualclass$	19,394	0.09	0.29			
$Institutional$	17,768	0.11	0.10	0.48	0.65	0.80
$Delta$	26,432	0.69	0.13	0.62	0.70	0.78
$Delta_s$	26,464	0.66	0.10	0.61	0.67	0.73
$Compensation_{CEO}$	31,805	4347.41	9741.58	994.42	2078.10	4668.44
Age_{CEO}	27,575	55.47	7.54	51	55	60
Age_{max}	18,994	56.68	7.63	52	57	61
Age_{median}	18,994	52.18	6.81	48	52	56
$Tenure_{CEO}$	16,436	2.50	0.91	1.95	2.64	3.26

Table 2: Compensation Regression

This table reports results of regressing the level of (logged) total compensation on firm size, market to book, returns, return volatility, year and manager fixed effects. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Dependent Variables	CEO $ln(Compensation_t)$	non-CEO $ln(Compensation_t)$
$Assets_{t-1}$	0.303***	0.213***
	(0.02)	(0.01)
Q_{t-1}	0.098***	0.094***
	(0.02)	(0.01)
$Return_t$	0.133***	0.109***
	(0.02)	(0.01)
$Return_{t-1}$	0.097***	0.072***
	(0.01)	(0.01)
ROA_t	0.750***	0.467***
	(0.10)	(0.07)
ROA_{t-1}	0.472***	0.271***
	(0.09)	(0.07)
$RetVol_t$	-0.111	0.120*
	(0.09)	(0.06)
Year and Manager F.E.	x	x
R-sqr	0.755	0.794
Obs	28,597	122,784

Table 3: Investment Regression

This table reports results of regressing the level of capital expenditure on $Delta$, $Delta^2$, other firm financial characteristics and governance measures, as well as year fixed effects. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Dependent Variables	$CapEx$
$Delta$	0.130**
	(0.06)
$Delta^2$	-0.097**
	(0.04)
$Sales$	-0.001
	(0.01)
$Sales^2$	0.000
	(0.00)
$Leverage$	0.000
	(0.01)
$RetVol$	-0.003
	(0.01)
$ln(Dirsum)$	-0.019***
	(0.01)
$Outdir_{pcnt}$	-0.007
	(0.01)
$G-Index$	-0.001
	(0.00)
$Dualclass$	-0.009**
	(0.00)
$Institutional$	-0.001
	(0.01)
Year F.E.	x
R-sqr	0.045
Obs	8,289

Table 4: Performance Regression 1

This table reports results of regressing the level of (1 year) performance (Q, ROA, FCF) on *Delta*, *Delta*^{2}, other firm financial characteristics and governance measures, as well as year fixed effects. The performance measures are industry-adjusted. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Dependent Variables	Q_{1yr}	ROA_{1yr}	FCF_{1yr}
$Delta$	0.217	0.195*	0.238**
	(0.51)	(0.10)	(0.11)
$Delta^2$	-0.704*	-0.212***	-0.277***
	(0.41)	(0.08)	(0.09)
$Sales$	-0.064	0.040***	0.073***
	(0.05)	(0.01)	(0.01)
$Sales^2$	0.005	-0.002***	-0.005***
	(0.00)	(0.00)	(0.00)
$Leverage$	-0.567***	-0.113***	-0.095***
	(0.09)	(0.02)	(0.02)
$RetVol$	0.115	-0.065***	-0.077***
	(0.08)	(0.02)	(0.02)
$ln(Dirsum)$	-0.223***	-0.026***	-0.045***
	(0.04)	(0.01)	(0.01)
$Outdir_{pcnt}$	-0.065	-0.016	-0.004
	(0.06)	(0.01)	(0.01)
$G-Index$	-0.008*	-0.001	-0.002*
	(0.00)	(0.00)	(0.00)
$Dualclass$	-0.037	-0.010	-0.020***
	(0.04)	(0.01)	(0.01)
$Institutional$	0.013	0.001	-0.009
	(0.10)	(0.02)	(0.02)
Year F.E.	x	x	x
R-sqr	0.136	0.064	0.070
Obs	8,724	8,713	8,602

Table 5: Performance Regression 2

This table reports results of regressing the level of (3 year average) performance (Q, ROA, FCF) on $Delta$, $Delta^2$, other firm financial characteristics and governance measures, as well as year fixed effects. The performance measures are industry-adjusted. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Dependent Variables	Q_{3yr}	ROA_{3yr}	FCF_{3yr}
$Delta$	0.399	0.113	0.215**
	(0.52)	(0.09)	(0.11)
$Delta^2$	-0.759*	-0.146**	-0.240***
	(0.42)	(0.07)	(0.09)
$Sales$	-0.080	0.041**	0.052***
	(0.06)	(0.02)	(0.01)
$Sales^2$	0.006	-0.002**	-0.003***
	(0.00)	(0.00)	(0.00)
$Leverage$	-0.464***	-0.070***	-0.056***
	(0.08)	(0.02)	(0.02)
$RetVol$	0.146*	-0.060***	-0.053***
	(0.08)	(0.02)	(0.02)
$ln(Dirsum)$	-0.221***	-0.030***	-0.039***
	(0.04)	(0.01)	(0.01)
$Outdir_{pcnt}$	-0.056	0.002	-0.001
	(0.06)	(0.01)	(0.02)
$G - Index$	-0.007	0.000	-0.001
	(0.00)	(0.00)	(0.00)
$Dualclass$	-0.042	-0.016**	-0.022***
	(0.04)	(0.01)	(0.01)
$Institutional$	0.040	0.006	0.009
	(0.10)	(0.02)	(0.03)
Year F.E.	x	x	x
R-sqr	0.134	0.044	0.042
Obs	8,292	7,894	7,818

Table 6: First Difference

This table reports results of regressing the first-difference in capital expenditure or firm performance on *Delta*, $Delta^2$, first-differences in other firm financial characteristics, governance measures, as well as year fixed effects. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

Dependent Variables	$CapEx_{diff}$	Q_{diff}	ROA_{diff}	FCF_{diff}
$Delta$	0.057*	9.597**	0.222***	0.128*
	(0.03)	(4.21)	(0.08)	(0.07)
$Delta^2$	-0.043*	-7.049**	-0.144**	-0.087*
	(0.03)	(3.12)	(0.06)	(0.05)
$Sales_{diff}$	-0.017	-0.965	0.007	-0.005
	(0.02)	(0.61)	(0.03)	(0.03)
$Sales^2_{diff}$	0.000	-0.031	0.001	0.004**
	(0.00)	(0.04)	(0.00)	(0.00)
$Leverage_{diff}$	-0.087***	-2.052***	-0.009	0.087***
	(0.01)	(0.55)	(0.02)	(0.02)
$RetVol_{diff}$	-0.024**	0.095	-0.054*	-0.024
	(0.01)	(0.86)	(0.03)	(0.02)
$ln(Dirsum)$	0.000	0.007	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)
$Outdir_{pcnt}$	0.001	0.017	0.003*	0.004**
	(0.00)	(0.03)	(0.00)	(0.00)
$G-Index$	0.002*	-0.015	-0.006*	-0.006**
	(0.00)	(0.08)	(0.00)	(0.00)
$Dualclass$	0.001	0.015	0.001	-0.001
	(0.00)	(0.11)	(0.00)	(0.00)
$Institutional_{diff}$	0.024***	0.693	-0.015	-0.048***
	(0.01)	(0.69)	(0.02)	(0.01)
Year F.E.	x	x	x	x
R-sqr	0.054	0.046	0.015	0.054
Obs	8,151	8,560	8,662	8.048

Table 7: Subsample Analysis 1 - Age Difference

This table reports results for subsample analysis based on the age difference between the CEO and the oldest manager in the executive team. Panel A reports the results for the subsample with older CEOs. Panel B reports results for the subsample with younger CEOs. The performance variables are 1 year and industry-adjusted. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Panel A: CEO older than (oldest) non-CEO executive			
Dependent Variables	CapEx	Q	ROA	FCF
$Delta$	0.199***	0.737	0.316	0.423**
	(0.06)	(0.87)	(0.22)	(0.19)
$Delta^2$	-0.137***	-1.093	-0.291*	-0.399***
	(0.05)	(0.70)	(0.17)	(0.15)
$Sales$	-0.01	-0.142	0.107***	0.107***
	(0.01)	(0.09)	(0.04)	(0.03)
$Sales^2$	0.001	0.010*	-0.006***	-0.006***
	0.00	(0.01)	0.00	0.00
$Leverage$	0.003	-0.574***	-0.109**	-0.07
	(0.01)	(0.17)	(0.04)	(0.05)
$RetVol$	0.021	0.223*	-0.083***	-0.067**
	(0.01)	(0.12)	(0.03)	(0.03)
$ln(Dirsum)$	-0.026***	-0.126	-0.041***	-0.053***
	(0.01)	(0.08)	(0.01)	(0.02)
$Outdir_{pcnt}$	-0.002	0.036	0.001	0.017
	(0.01)	(0.11)	(0.02)	(0.02)
$G-Index$	0	-0.001	0	-0.001
	0.00	(0.01)	0.00	0.00
$Dualclass$	-0.002	-0.033	-0.008	-0.014
	(0.01)	(0.06)	(0.01)	(0.01)
$Institutional$	0.002	-0.186	-0.007	-0.016
	(0.02)	(0.16)	(0.03)	(0.04)
Year F.E.	x	x	x	x
R-sqr	0.070	0.141	0.114	0.089
Obs	2,346	2,103	2,499	2,465

	Panel B: CEO younger than (oldest) non-CEO executive			
Dependent Variables	CapEx	Q	ROA	FCF
Delta	0.026	-0.865	0.012	0.028
	(0.17)	(0.76)	(0.15)	(0.15)
$Delta^2$	-0.028	0.216	-0.066	-0.102
	(0.12)	(0.64)	(0.12)	(0.12)
Sales	0.002	-0.068	0.092***	0.093***
	(0.01)	(0.06)	(0.03)	(0.02)
$Sales^2$	0	0.005	-0.006***	-0.006***
	0.00	0.00	0.00	0.00
Leverage	-0.004	-0.908***	-0.155***	-0.151***
	(0.01)	(0.10)	(0.02)	(0.02)
$RetVol$	-0.005	0.118	-0.118***	-0.087**
	(0.02)	(0.14)	(0.03)	(0.03)
$ln(Dirsum)$	-0.015	-0.141	-0.038***	-0.042***
	(0.01)	(0.09)	(0.01)	(0.02)
$Outdir_{pcnt}$	-0.013	-0.061	-0.019	-0.019
	(0.01)	(0.11)	(0.02)	(0.03)
$G - Index$	0	-0.011	-0.003**	-0.003*
	0.00	(0.01)	0.00	0.00
Dualclass	-0.019***	-0.114**	-0.027***	-0.041***
	(0.01)	(0.06)	(0.01)	(0.01)
Institutional	0.002	-0.13	0.008	0.022
	(0.02)	(0.18)	(0.04)	(0.05)
Year F.E.	x	x	x	x
R-sqr	0.030	0.171	0.124	0.103
Obs	2,346	2,324	2,727	2,679

Table 8: Subsample Analysis 2 - Industry Growth

This table reports results for subsample analysis based on the growth of the industry. Panel A reports the results for the subsample with growing industries (top tercile based on the change in M/B. Panel B reports results for the subsample with declining industries (bottom tercile based on the change in M/B). The performance variables are 1 year and industry-adjusted. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Panel A: Growing Industries			
Dependent Variables	CapEx	Q	ROA	FCF
Delta	0.225***	0.583	0.260**	0.352**
	(0.05)	(0.84)	(0.12)	(0.15)
$Delta^2$	-0.165***	-1.127*	-0.264***	-0.370***
	(0.04)	(0.64)	(0.10)	(0.12)
Sales	-0.004	-0.187**	0.093**	0.108***
	(0.01)	(0.09)	(0.04)	(0.04)
$Sales^2$	0.000	0.012**	-0.006**	-0.007***
	(0.00)	(0.01)	(0.00)	(0.00)
Leverage	0.016**	-0.661***	-0.139***	-0.136***
	(0.01)	(0.09)	(0.02)	(0.02)
$RetVol$	0.023***	0.174*	-0.051**	-0.025
	(0.01)	(0.10)	(0.02)	(0.02)
$ln(Dirsum)$	-0.025***	-0.158**	-0.031***	-0.042***
	(0.00)	(0.07)	(0.01)	(0.01)
$Outdir_{pcnt}$	-0.005	-0.064	-0.022	-0.023
	(0.01)	(0.09)	(0.02)	(0.02)
$G - Index$	0.000	-0.025*	-0.001	-0.001
	(0.00)	(0.01)	(0.00)	(0.00)
Dualclass	-0.006*	-0.008	-0.016*	-0.015
	(0.00)	(0.06)	(0.01)	(0.01)
Institutional	0.004	-0.137	-0.033	-0.036
	(0.01)	(0.14)	(0.02)	(0.03)
Year F.E.	x	x	x	x
R-sqr	0.071	0.174	0.142	0.147
Obs	2,901	2,162	2,900	2,864

	Panel B: Declining Industries			
Dependent Variables	CapEx	Q	ROA	FCF
$Delta$	0.080	-0.515	0.046	0.042
	(0.06)	(0.75)	(0.14)	(0.15)
$Delta^2$	-0.062	-0.014	-0.055	-0.074
	(0.04)	(0.59)	(0.11)	(0.12)
$Sales$	-0.002	0.095	0.076*	0.120***
	(0.01)	(0.08)	(0.04)	(0.02)
$Sales^2$	0.000	-0.005	-0.005*	-0.007***
	(0.00)	(0.01)	(0.00)	(0.00)
$Leverage$	0.010	-0.795***	-0.097***	-0.093***
	(0.01)	(0.11)	(0.03)	(0.03)
$RetVol$	-0.013	0.064	-0.090***	-0.096***
	(0.01)	(0.11)	(0.02)	(0.03)
$ln(Dirsum)$	-0.019***	-0.122*	-0.029***	-0.043***
	(0.01)	(0.07)	(0.01)	(0.01)
$Outdir_{pcnt}$	-0.007	-0.023	0.011	0.013
	(0.01)	(0.08)	(0.01)	(0.02)
$G-Index$	-0.001	-0.035***	-0.002**	-0.004***
	(0.00)	(0.01)	(0.00)	(0.00)
$Dualclass$	-0.004	-0.049	-0.016**	-0.024***
	(0.00)	(0.05)	(0.01)	(0.01)
$Institutional$	-0.005	-0.164	0.018	0.014
	(0.01)	(0.16)	(0.03)	(0.03)
Year F.E.	x	x	x	x
R-sqr	0.071	0.163	0.121	0.141
Obs	2,854	2,101	2,788	2,743

Table 9: Subsample Analysis 3 - Industry Homogeneity

This table reports results for subsample analysis based on industry homogeneity. Panel A reports the results for heterogeneous industries (above sample median based on the homogeneity measure developed in Parrino (1997)). Panel B reports results for the homogeneous industries (under sample median). The performance variables are 1 year and industry-adjusted. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Panel A: Heterogeneous Industries			
Dependent Variables	CapEx	Q	ROA	FCF
$Delta$	0.226**	0.114	0.466***	0.566***
	(0.10)	(0.66)	(0.17)	(0.15)
$Delta^2$	-0.170**	-0.823	-0.452***	-0.561***
	(0.08)	(0.53)	(0.13)	(0.12)
$Sales$	-0.010	-0.111**	0.092***	0.115***
	(0.01)	(0.05)	(0.03)	(0.03)
$Sales^2$	0.000	0.007**	-0.006***	-0.007***
	(0.00)	(0.00)	(0.00)	(0.00)
$Leverage$	0.006	-0.593***	-0.088***	-0.074**
	(0.01)	(0.12)	(0.02)	(0.03)
$RetVol$	-0.019	0.240**	-0.036	-0.032
	(0.01)	(0.11)	(0.03)	(0.03)
$ln(Dirsum)$	-0.027***	-0.154**	-0.052***	-0.059***
	(0.01)	(0.07)	(0.01)	(0.01)
$Outdir_{pcnt}$	-0.013	-0.047	0.008	0.004
	(0.01)	(0.09)	(0.02)	(0.02)
$G-Index$	0.000	0.000	-0.001	-0.002
	(0.00)	(0.01)	(0.00)	(0.00)
$Dualclass$	-0.013*	-0.018	-0.019*	-0.023*
	(0.01)	(0.06)	(0.01)	(0.01)
$Institutional$	0.006	-0.073	-0.014	0.000
	(0.02)	(0.13)	(0.03)	(0.04)
Year F.E.	x	x	x	x
R-sqr	0.039	0.181	0.090	0.093
Obs	4,498	4,071	4,870	4,824

	Panel B: Homogeneous Industries			
Dependent Variables	CapEx	Q	ROA	FCF
Delta	-0.013	0.142	-0.018	-0.074
	(0.05)	(0.91)	(0.14)	(0.17)
$Delta^2$	-0.005	-0.320	0.046	0.065
	(0.04)	(0.75)	(0.11)	(0.13)
Sales	0.004	0.052	0.133**	0.150***
	(0.01)	(0.17)	(0.05)	(0.03)
$Sales^2$	0.000	-0.001	-0.008**	-0.009***
	(0.00)	(0.01)	(0.00)	(0.00)
Leverage	0.002	-0.765***	-0.202***	-0.170***
	(0.01)	(0.15)	(0.03)	(0.03)
$RetVol$	0.016	-0.030	-0.111***	-0.080***
	(0.01)	(0.12)	(0.02)	(0.02)
$ln(Dirsum)$	-0.004	-0.054	0.007	-0.001
	(0.01)	(0.09)	(0.01)	(0.02)
$Outdir_{pcnt}$	-0.007	-0.020	0.002	0.004
	(0.01)	(0.10)	(0.01)	(0.02)
$G - Index$	-0.001**	-0.028***	-0.004***	-0.004***
	(0.00)	(0.01)	(0.00)	(0.00)
Dualclass	0.002	-0.135**	-0.016**	-0.027***
	(0.00)	(0.07)	(0.01)	(0.01)
Institutional	-0.004	-0.153	-0.010	-0.029
	(0.01)	(0.17)	(0.03)	(0.03)
Year F.E.	x	x	x	x
R-sqr	0.123	0.135	0.199	0.182
Obs	3,036	2,710	3,064	3,048

Table 10: Subsample Analysis 4 - CEO tenure

This table reports results for subsample analysis based on CEO's tenure (the number of years since he joined the current company. Panel A reports the results for firms with more recently joined CEOs (below sample median). Panel B reports results for firms with CEOs that are with the company (not necessarily in the chief executive capacity) for a longer time (above sample median). The performance variables are 1 year and industry-adjusted. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Panel A: Short CEO Tenure			
Dependent Variables	CapEx	Q	ROA	FCF
Delta	0.159***	0.615***	0.554***	0.634***
	(0.06)	(0.15)	(0.19)	(0.20)
$Delta^2$	-0.134***	-0.578***	-0.489***	-0.593***
	(0.05)	(0.13)	(0.15)	(0.17)
Sales	0.001	0.199***	0.163***	0.191***
	(0.01)	(0.03)	(0.04)	(0.03)
$Sales^2$	0.000	-0.013***	-0.011***	-0.013***
	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	0.007	-0.115***	-0.135***	-0.122***
	(0.01)	(0.03)	(0.03)	(0.03)
$RetVol$	-0.029*	-0.118***	-0.104***	-0.111***
	(0.02)	(0.03)	(0.03)	(0.03)
$ln(Dirsum)$	-0.025**	-0.001	0.017	(0.008)
	(0.01)	(0.02)	(0.02)	(0.02)
$Outdir_{pcnt}$	-0.017	0.012	0.022	0.016
	(0.01)	(0.03)	(0.02)	(0.03)
$G - Index$	-0.002*	-0.005***	-0.004**	-0.005***
	(0.00)	(0.00)	(0.00)	(0.00)
Dualclass	-0.004	-0.039**	-0.030**	-0.030**
	(0.01)	(0.02)	(0.01)	(0.01)
Institutional	-0.010	0.014	0.037	0.034
	(0.02)	(0.06)	(0.05)	(0.05)
Year F.E.	x	x	x	x
R-sqr	0.054	0.206	0.161	0.206
Obs	2,180	2,008	2,287	2,242

	Panel B: Long CEO Tenure			
Dependent Variables	CapEx	Q	ROA	FCF
$Delta$	-0.044	-1.906*	-0.103	-0.022
	(0.22)	(1.10)	(0.21)	(0.22)
$Delta^2$	0.034	0.994	0.024	-0.053
	(0.16)	(0.91)	(0.16)	(0.18)
$Sales$	-0.013	-0.026	0.029	0.048
	(0.02)	(0.13)	(0.02)	(0.03)
$Sales^2$	0.001	0.004	-0.002	-0.003
	(0.00)	(0.01)	(0.00)	(0.00)
$Leverage$	0.001	-1.114***	-0.141***	-0.131***
	(0.02)	(0.15)	(0.03)	(0.04)
$RetVol$	0.004	-0.153	-0.098***	-0.115***
	(0.02)	(0.19)	(0.03)	(0.04)
$ln(Dirsum)$	-0.023*	-0.328***	-0.054***	-0.070***
	(0.01)	(0.11)	(0.02)	(0.02)
$Outdir_{pcnt}$	-0.008	-0.243	-0.027	-0.029
	(0.02)	(0.15)	(0.02)	(0.03)
$G-Index$	0.000	-0.003	0.000	0.000
	(0.00)	(0.01)	(0.00)	(0.00)
$Dualclass$	-0.015**	-0.086	-0.021**	-0.023*
	(0.01)	(0.07)	(0.01)	(0.01)
$Institutional$	0.005	-0.216	-0.028	-0.021
	(0.02)	(0.22)	(0.04)	(0.05)
Year F.E.	x	x	x	x
R-sqr	0.044	0.183	0.087	0.071
Obs	2,347	2,114	2,443	2,407

Table 11: Subsample Analysis 5 - Succession Origin

This table reports results for subsample analysis based on the succession origin predominant in the industry. Panel A reports the results for industries with predominant insider succession (top 10 industries based on the percentage of insider succession in Cremers and Grinstein (2009)). Panel B reports results for for industries with predominant outsider succession (top 10 industries based on the percentage of outsider succession). The performance variables are 1 year and industry-adjusted. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Insider Predominant			
Dependent Variables	CapEx	Q	ROA	FCF
$Delta$	0.366***	2.249*	0.277*	0.446*
	(0.12)	(1.22)	(0.16)	(0.23)
$Delta^2$	-0.251***	-1.801*	-0.249*	-0.356*
	(0.09)	(0.95)	(0.13)	(0.18)
$Sales$	-0.006	-0.208	-0.003	0.032
	(0.02)	(0.24)	(0.03)	(0.04)
$Sales^2$	0.000	0.019	0.001	-0.001
	(0.00)	(0.02)	(0.00)	(0.00)
$Leverage$	-0.027*	-0.620***	-0.104***	-0.089***
	(0.02)	(0.17)	(0.02)	(0.03)
$RetVol$	0.008	-0.377	-0.128***	-0.033
	(0.02)	(0.24)	(0.03)	(0.04)
$ln(Dirsum)$	0.013	0.183	0.006	0.020
	(0.01)	(0.11)	(0.02)	(0.03)
$Outdir_{pcnt}$	0.012	-0.174	-0.023	-0.017
	(0.01)	(0.13)	(0.02)	(0.02)
$G-Index$	0.000	-0.019	-0.003**	-0.004**
	(0.00)	(0.01)	(0.00)	(0.00)
$Dualclass$	-0.017***	-0.070	-0.018*	-0.036***
	(0.01)	(0.10)	(0.01)	(0.01)
$Institutional$	-0.017	-0.403	0.008	-0.030
	(0.02)	(0.31)	(0.04)	(0.04)
Year F.E.	x	x	x	x
R-sqr	0.195	0.295	0.184	0.122
Obs	750	703	754	692

	Outsider Predominant			
Dependent Variables	CapEx	Q	ROA	FCF
Delta	0.044	1.362	0.356	0.395
	(0.07)	(1.31)	(0.48)	(0.46)
$Delta^2$	-0.039	-1.788	-0.329	-0.391
	(0.06)	(1.09)	(0.42)	(0.40)
Sales	0.010*	-0.113	-0.019	0.118**
	(0.01)	(0.09)	(0.04)	(0.06)
$Sales^2$	0.000	0.005	0.001	-0.008**
	(0.00)	(0.01)	(0.00)	0.00
Leverage	0.044***	-0.088	-0.030	-0.072
	(0.01)	(0.17)	(0.05)	(0.05)
$RetVol$	0.031*	0.143	0.188**	0.242***
	(0.02)	(0.22)	(0.08)	(0.09)
$ln(Dirsum)$	-0.010	-0.125	-0.035	-0.039
	(0.01)	(0.13)	(0.04)	(0.05)
$Outdir_{pcnt}$	-0.020	0.243	0.015	0.042
	(0.01)	(0.16)	(0.06)	(0.07)
$G-Index$	0.000	-0.010	0.001	-0.001
	(0.00)	(0.01)	(0.00)	(0.00)
Dualclass	0.007	-0.083	-0.063***	-0.071***
	(0.01)	(0.10)	(0.02)	(0.03)
Institutional	-0.013	-0.369	-0.041	-0.035
	(0.02)	(0.23)	(0.08)	(0.09)
Year F.E.	x	x	x	x
R-sqr	0.139	0.118	0.068	0.080
Obs	1,511	1,358	1,377	1,350

Table 12: Robustness Check

This table reports results when using only the short-term component of executive compensation (salary+bonus) to construct the delta measure - $Delta_s$. All Standard errors are clustered by firms. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively.

	Panel A: Investment
Dependent Variables	CapEx
$Delta$	0.210***
	(0.05)
$Delta^2$	-0.134***
	(0.04)
$Sales$	-0.001
	(0.01)
$Sales^2$	0.000
	(0.00)
$Leverage$	0.001
	(0.01)
$RetVol$	0.003
	(0.01)
$ln(Dirsum)$	-0.016***
	(0.01)
$Outdir_{pcnt}$	-0.007
	(0.01)
$G-Index$	-0.001*
	(0.00)
$Dualclass$	-0.008**
	(0.00)
$Institutional$	0.001
	(0.01)
Year F.E.	x
R-sqr	0.053
Obs	8,293

	Panel B: 1 year performance		
Dependent Variables	Q_{1yr}	ROA_{1yr}	FCF_{1yr}
$Delta$	1.639**	0.267***	0.429***
	(0.66)	(0.10)	(0.14)
$Delta^2$	-1.943***	-0.289***	-0.440***
	(0.55)	(0.08)	(0.11)
$Sales$	-0.080	0.040***	0.069***
	(0.05)	(0.01)	(0.01)
$Sales^2$	0.005	-0.003***	-0.004***
	(0.00)	(0.00)	(0.00)
$Leverage$	-0.698***	-0.115***	-0.095***
	(0.08)	(0.02)	(0.02)
$RetVol$	0.171**	-0.063***	-0.069***
	(0.08)	(0.02)	(0.02)
$ln(Dirsum)$	-0.163***	-0.028***	-0.047***
	(0.05)	(0.01)	(0.01)
$Outdir_{pcnt}$	-0.012	-0.009	0.007
	(0.07)	(0.01)	(0.01)
$G-Index$	-0.009*	-0.001	-0.002
	(0.00)	(0.00)	(0.00)
$Dualclass$	-0.044	-0.011*	-0.020***
	(0.04)	(0.01)	(0.01)
$Institutional$	-0.069	0.003	-0.008
	(0.11)	(0.02)	(0.02)
Year F.E.	x	x	x
R-sqr	0.142	0.064	0.067
Obs	7,471	8,720	8,607

	Panel C: 3 year performance		
Dependent Variables	Q_{3yr}	ROA_{3yr}	FCF_{3yr}
$Delta$	1.815***	0.264**	0.443***
	(0.68)	(0.12)	(0.15)
$Delta^2$	-1.988***	-0.273***	-0.440***
	(0.56)	(0.09)	(0.12)
$Sales$	-0.078	0.033*	0.050***
	(0.05)	(0.02)	(0.01)
$Sales^2$	0.005	-0.002*	-0.003***
	(0.00)	(0.00)	(0.00)
$Leverage$	-0.608***	-0.070***	-0.059***
	(0.08)	(0.02)	(0.02)
$RetVol$	0.188**	-0.054***	-0.051**
	(0.08)	(0.02)	(0.02)
$ln(Dirsum)$	-0.172***	-0.030***	-0.041***
	(0.05)	(0.01)	(0.01)
$Outdir_{pcnt}$	-0.004	0.007	0.008
	(0.07)	(0.01)	(0.02)
$G-Index$	-0.006	0.000	-0.001
	(0.00)	(0.00)	(0.00)
$Dualclass$	-0.059	-0.017***	-0.023***
	(0.04)	(0.01)	(0.01)
$Institutional$	-0.043	0.012	0.009
	(0.12)	(0.02)	(0.03)
Year F.E.	x	x	x
R-sqr	0.148	0.041	0.043
Obs	6,828	7,903	7,826