ISSN 1936-5349 (print)
ISSN 1936-5357 (online)

HARVARD

JOHN M. OLIN CENTER FOR LAW, ECONOMICS, AND BUSINESS

CEO CENTRALITY

Lucian A. Bebchuk, Martijn Cremers, and Urs Peyer

Discussion Paper No. 601

11/2007, Revised 4/2008

Harvard Law School
Cambridge, MA 02138

This paper is also a discussion paper of the
John M. Olin Center's Program on Corporate Governance.

CEO Centrality

Lucian A. Bebchuk,* Martijn Cremers,** and Urs Peyer***

We investigate the relationship between CEO centrality – the relative importance of the CEO within the top executive team in terms of ability, contribution, or power – and the value, performance and behavior of public firms. Our proxy for CEO centrality is the fraction of the top-five compensation captured by the CEO. We find that CEO centrality is negatively associated with firm value (as measured by industry-adjusted Tobin's Q). This result is robust to controlling for all standard controls in Q regressions as well as additional controls such as CEO tenure, whether the CEO is a founder or a large owner, and whether the company's top-five aggregate compensation is high or low relative to peer companies, and it stronger companies with high entrenchment levels. CEO centrality also has a rich set of relations with firms' behavior and performance. In particular, CEO centrality is correlated with (i) lower (industry-adjusted) accounting profitability, (ii) lower stock returns accompanying acquisitions announced by the firm and higher likelihood of a negative stock return accompanying such announcements, (iii) higher odds of the CEO's receiving a "lucky" option grant at the lowest price of the month, (iv) greater tendency to reward the CEO for luck in the form of positive industry-wide shocks, (v) lower likelihood of CEO turnover controlling for performance, and (vi) lower firm-specific variability of stock returns over time.

Keywords: Executive compensation, corporate governance, CEO, executives, options, equity-based compensation, non-equity compensation, Tobin's Q, entrenchment, CEO turnover, independent directors, CEO chair, acquisitions, empire-building, opportunistic timing, backdating, CEO turnover, pay for luck, industry-wide shocks, variability of returns, pay distribution, internal pay equity.
JEL Classification: D23, G32, G38, J33, J44, K22, M14.

---

* Harvard Law School and NBER
** Yale School of Management
*** INSEAD.

For helpful comments, we are grateful to Alma Cohen, Wayne Ferson, Will Goetzmann, Yaniv Grinstein, Dirk Jenter, Steve Kaplan, Felix Meschke, Kevin Murphy, Paul Oyer, Charu Raheja, Eric Rasmusen, Anil Shivdasani, and seminar and conference participants at Amsterdam, Arizona, Columbia, ESCP-EAP Paris, Frankfurt, Harvard, INSEAD, Lausanne, Oslo, St. Gallen, USC, the NYU-Penn Law & Finance conference, the annual Conference on Finance and Accounting, the Conference on Empirical Legal Studies, the conference on Corporate Governance at Washington University in St. Louis, the AFA annual meeting, the ALEA annual meeting, and the Conference on Corporate Governance Research at Drexel University. We are also grateful to Ronald Masulis for sharing with us his data on acquirer returns. For financial support, we would like to thank the Guggenheim Foundation, the John M. Olin Center for Law, Economics, and Business, and the Harvard Law School Program on Corporate Governance.

I. INTRODUCTION

Public firms are likely to vary in terms of how central the CEO is within the top executive team. We refer by "CEO centrality" to the relative importance – in terms of ability, contribution, or power – that the CEO has within the team of top executives. This paper is an empirical study of CEO centrality and how it relates to firm value and behavior. We find that the level of CEO centrality has a rich set of relations with firm behavior and outcomes. In particular, higher CEO centrality is associated with lower firm value as measured by Tobin's Q, lower accounting profitability, lower quality of acquisition decisions, higher odds of opportunistically timed option grants to the CEO, lower CEO turnover, more luck-based pay, and lower firm-specific variability of stock returns.

Our proxy for CEO centrality is the CEO's pay slice (CPS), which we define as the percentage of aggregate top-five total compensation captured by the CEO. Because higher CPS will tend to reflect a greater relative importance of the CEO within the top executive team, CPS can serve as a proxy for the CEO's centrality within this team. Moreover, as CPS is calculated using compensation information from executives that are all at the same firm, this controls for any firm-specific characteristics that affect the average level of compensation in the firm's top executive team.

Our investigation of the relation between CPS levels and firm outcomes and behavior has two parts. The first part examines the relation between CPS and firm value as measured by industry-adjusted Tobin's Q. As will be explained, theory allows for alternative, competing predictions as to whether CPS and Q will be systematically correlated and, if so, in what direction. We find a strong empirical relation between CPS and Q. Controlling for the various factors that prior work has used in Q regressions, there is a significant – and economically meaningful – negative correlation between CPS and industry-adjusted Q.

We also explore whether the association between CPS and Q is driven by factors that affect both Q and CPS and that are not included in standard Q regressions. To this end, we add controls for the CEO's tenure, the CEO's status as founder or large owner, and the size of the company's aggregate top-five compensation relative to peer companies. We also add controls for the extent to which the CEO's compensation is more incentive-based than the compensation of the other top executives. Finally, we add controls for the compensation inequality among the top-five team as measured by the Gini coefficient, as well as for the compensation inequality among the executives in the top team other than the CEO.[1] We find that the identified negative correlation between CPS and Tobin's Q is robust to the addition of all of these controls.

In interpreting our results concerning the association between CPS and Q, one should keep in mind that firms might differ in their CPS levels for two reasons. First, the firms might differ in their optimal (or "appropriate") CPS level, as the optimal level for any given firm might depend on the firm's circumstances (e.g., on the pool of candidates for top executive positions that it faces). Second, firms might differ in how their CPS levels depart (if at all) from the optimal level for the firm. To the extent that the CEO has power and influence over the board and the company's decision-making, the CEO might use this power and influence to raise CPS above its optimal level. In this case, the "excess CPS" – that is, the excess of the actual CPS over the optimal CPS – will reflect rents captured by the CEO and can be viewed as a product of agency/governance problems.

This separation of CPS into two components, optimal (or appropriate) CPS and excess CPS, is relevant for interpreting any identified association of CPS with firm characteristics or behavior. A correlation of a given variable with firm differences in observed CPS levels may be due to a correlation of the variable with the optimal level of CPS for a given firm, or with excess CPS (or, of course, a correlation with both).

The negative correlation we find between CPS and Q rules out the joint hypothesis that CPS is chosen optimally and that firm value as measured by Q is either uncorrelated or positively correlated with the optimal CPS level. Rather, our finding has two, not mutually exclusive, explanations. First, an "optimal selection" explanation: the optimal level of CPS might be higher for lower-value firms, and the identified pattern might be due to the tendency of such firms to choose high CPS levels. Second, a "governance" explanation: the identified pattern might be due to the correlation between low value and excess CPS; having a high excess CPS might reflect agency and governance problems that in turn bring about a reduction in firm value.

Exploring whether the negative correlation between CPS and Q is fully driven by optimal selection, we find that the negative relation is robust to controlling for lagged Q, adding firm fixed effects and considering changes in Q and CPS rather than levels. Further, increases in CPS are related to decreases in Q, but lower Tobin's Q does not lead to increases in CPS. These

[1] Our results on the correlation between Tobin's Q and the Gini coefficient for the top-five team are consistent with those in a current working paper by Kale, Reis and Venkateswaran (2007).

results do not allow us to reject the governance/causality explanation in favor of an optimal selection explanation.

Next, we investigate how Q depends on the interaction between CPS and measures of shareholder rights (Gompers, Ishii and Metrick (2003); Bebchuk, Cohen and Ferrell (2004)). Consistent with a governance explanation, we find that the negative association between Q and CPS is concentrated among firms whose boards are entrenched. As entrenchment itself is negatively correlated with Q, it follows that Q is especially low for firms that have both a high entrenchment level and a high CPS.

The negative association between CPS and Q exists both among firms whose aggregate top-five compensation is higher than their peers and among firms whose aggregate top-five compensation is lower than their peers. This negative association is similarly present among both firms that pay the top executives other than the CEO more than peer companies and firms that pay these executives less than peer companies. These results suggest that the negative association between CPS and Q are not driven by the quality of the pool of executive candidates faced by firms with lower industry-adjusted value.

To further investigate why CPS and firm value might be related, the second part of our analysis examines how CEO centrality, as measured by CPS, is associated with six other dimensions of company behavior and performance, including ones that are commonly viewed as reflecting governance problems.

First, CPS is negatively correlated with accounting profitability. Firms with high CPS tend to have low industry-adjusted net income to assets (return on assets) and low industry-adjusted operating income to assets.

Second, high-CPS firms tend to make worse acquisition decisions as judged by the market's reaction to their acquisition announcements. If the acquiring firm has higher CPS, the stock return accompanying the acquisition announcement is lower and more likely to be negative.

Third, firms with higher CPS are more likely to provide their CEO with opportunistically timed option grant. High CPS is associated with increased likelihood of the CEO's receiving a "lucky" option grant with an exercise price equal to the lowest price of the grant month.

Fourth, high-CPS firms are more likely to reward their CEOs for luck in the sense of Bertrand and Mullainathan (2001) – that is, to increase CEO compensation following positive “industry shocks” that are not attributable to the CEO’s own performance. Such luck-based performance is viewed in the literature as a possible sign of governance problems.

Fifth, CPS is associated with CEO turnover. The probability of CEO turnover is lower if CEO centrality is higher controlling for the CEO’s length of service and performance.

Sixth, CPS is negatively correlated with the firm-specific variability of stock returns over time. This association could be due to a greater tendency of dominant CEOs to play it safe and avoid firm-specific volatility (which would impose risk-bearing costs on them but could be less costly to diversified investors).

Overall, our analysis unearths a rich set of systematic relations between the level of CPS and firm value and outcomes. This body of evidence is consistent with the possibility that these associations are at least partly driven by correlation with the “excessive CPS” component of CPS, which in turn reflects governance problems. At minimum, our results indicate that CPS, and the relationship between it and the value and behavior of firms, are an important issue for study by financial economists. Our analysis calls for further study of the identified associations, including the development of a formal theoretical framework for studying CEO centrality.

We should stress that an association between observed CPS levels and excess CPS does not imply that all firms with high (observed) CPS have excessive CPS. In some high-CPS firms, the observed high level of CPS might be optimal given the firm’s circumstances. Thus, even if the negative correlation between value and CPS is partly due to the association between high CPS levels and excess CPS, this does not imply that the value of any given high-CPS firm would be increased by reducing its CPS level.

Our work is related to several bodies of literature. To begin, several recent papers have shown that the fraction of the top-five compensation received by the CEO has been trending up over time (Frydman (2005), Frydman and Saks (2007), Bebchuk and Grinstein (2005), Murphy and Zabojnik (2004)). In contrast to the focus of this work on changes in average CPS over time, we focus on cross-sectional differences in CPS among firms. It is worth stressing that, because our analysis is cross-sectional, it does not imply that increases in average CPS levels over time are negative. The average optimal CPS level could have increased over time even though, as our results indicate, there has been a correlation at each point in time between (excess) CPS and the governance problems.

Our work also relates to the literature examining how firm value as measured by Tobin's Q is associated with governance arrangements. For example, studies show that Tobin's Q is negatively correlated with the presence of staggered boards (e.g. Bebchuk and Cohen (2005)), the weakness of shareholder rights more generally (see e.g. Gompers, Ishii, and Metrick (2003), Bebchuk, Cohen, and Ferrell (2004), and Cremers and Nair (2005)), and the presence of a large board (Yermack (1996)). We contribute to this literature by identifying yet another aspect of the firm's governance arrangements – the CPS level – that is associated with Tobin's Q.

In addition, this paper relates to the work on stock market reaction to acquisition announcements. Financial economists have paid close attention to buyers' willingness to make acquisitions which, as measured by the stock market returns accompanying the acquisition announcement, the market views as value-decreasing (see e.g. Lang, Stulz, and Walkling (1991); Morck, Shleifer, and Vishny (1990); Qui (2004); and Moeller, Schlingemann, and Stulz (2005)). Masulis, Wang, and Xie (2007) show that these returns are related to governance characteristics and, in particular, entrenchment provisions. We extend their work by showing that these returns are also negatively correlated with CPS even after controlling for entrenching provisions.

Similarly, our work is related to the literature on opportunistic timing of option grants and its relation to firm governance and structure (see e.g. Yermack (1997), Lie (2005), and Bebchuk et al. (2006)). We extend this work by showing that, controlling for other governance provisions, opportunistic timing of option grants is associated with high CPS.

Our work is also related to the work on rewarding CEOs for luck by Bertrand and Mullainathan (2000, 2001). These authors focus on increases in CEO compensation following positive industry-wide shocks that cannot be attributable to the CEO's performance and thus constitute "luck," and they showed that such rewards for luck are more likely to occur in the absence of a large outside blockholder. We complement this work by identifying CPS as another factor that is associated with such rewards for industry-wide positive shocks.

Our work is further related to the substantial literature on CEO turnover (see e.g. Jenter and Kanaan (2006), Kaplan and Minton (2006)). We extend this literature by showing that high CPS is associated with a lower CEO turnover controlling for performance. [2]

In addition, our work is related to existing studies on firm-specific variability of returns (Adams, Almeida, and Ferreira (2005), Cheng (2007)). We extend this work by showing that, controlling for the factors identified in this literature as related to such variability, high CPS is correlated with lower firm-specific variability of returns.

[2] While our analysis focuses on the relation between CPS and the turnover, a current working paper Chang, Dasgupta and Hilary (2007) examines a complementary question of whether abnormal stock returns around managerial departure announcements are related to CPS.

Two earlier studies have used different measures of CEO dominance within the top executive team. Morck, Shleifer, and Vishny (1989), in a study of alternative mechanisms for transfer of corporate control, define CEOs as powerful when no other person holds the title of President or Chairman and no other person co-signs the letter to shareholders in the annual report. More recently, in investigating whether CEO dominance is correlated with firm-specific variability of stock returns, Adams, Almeida, and Ferreira (2005) assume CEOs to be more powerful when they serve as chair of the board, when they are the only insider on the board, and when they have the status of a founder. In this paper, we put forward CPS as a measure of CEO dominance that captures more than the formal status variables. As we shall see, CPS is positively correlated with such variables, but they explain only a small part of the variability in CPS.

Finally, there is a growing literature studying how the type and style of a CEO affects firm outcomes (see e.g. Malmendier and Tate (2005) and Bertrand and Schoar (2003)). Our work seeks to highlight the importance that CEO centrality has for firm outcomes.

Our analysis is organized as follows. Section II describes our data and presents summary statistics. Section III analyzes the relationship between CEO centrality and Tobin's Q. Section IV examines the relation between centrality and accounting profitability, abnormal acquirer returns, opportunistic timing of CEO grants, CEO pay for luck, and abnormal returns around announcements of CPS changes. Finally, Section VI concludes.

II. DATA AND SUMMARY STATISTICS

A. The CEO Centrality Index

The proxy for CEO centrality used in this paper is the CEO's pay slice (CPS). CPS is defined as the percentage of the total compensation to the top five executives that goes to the CEO. The importance of the CEO relative to the other members of the top executive team – in terms of contribution, ability, or power – is expected to be reflected in CPS.

We compute the CEO's pay slice (CPS) using data from Compustat's ExecuComp database from 1993–2004. Our main measure is based on the total compensation to each executive, including salary, bonus, other annual pay, the total value of restricted stock granted that year, the Black-Scholes value of stock options granted that year, long-term incentive payouts, and all other total compensation (as reported in ExecuComp item # TDC1). While CPS can be computed for every firm-year, we restrict our sample to firm-years where the CEO was in office for the entire year. This avoids observations with artificially low CPS due to the fact that a CEO has received compensation only for part of the year. Also, for some firm-years more than five executives are listed in ExecuComp. In such cases, we only use the five executives with the highest compensation.[3]

Because CPS is likely the product of many observable and non-observable dimensions of the firm's top executives and management model, CPS may enable us to capture dimensions of the CEO's role in the top team beyond the ones captured by other, previously examined variables such as whether the CEO also chairs the board. Indeed, CPS is positively correlated with dummy variables for whether the CEO also chairs the board and the only executive of the firm who is a member of the board. However, a regression of CPS on these two variables results in an adjusted r-squared of only 0.9%, which indicates that CPS captures other information not contained in those two variables.[4] In addition, because CPS is calculated using the compensation figures for the top executives at the same firm, it directly controls for any firm-specific characteristics that affect the average level of executive compensation at the firm level.

B. Summary Statistics

Univariate statistics for the average CPS and its dispersion across the 12 Fama-French industries are shown in Table 1. The statistics are computed based on a panel dataset of 12,011 firm-year observations that represent 2,015 different firms and 3,256 different CEOs between 1993 and 2004. In this time period, the average CPS was 34.4%.

For each of the 12 industries, we compute the industry mean and median CPS. We find that there is some variation across industries in average CPS. The lowest CPS industry is Telecom with 31.1%, and the highest CPS industry is Chemical with 37.4%.

---

[3] In our time sample, firms were required to report the compensation for anyone holding the office of CEO during the year, plus the 4 highest paid executive officers not including the CEO. Some firms voluntarily report the compensation for more executives than required. When restricting the sample to firms that only report compensation for 5 executives, our results continue to hold (not reported). However, if the firm reports compensation for fewer than 5 executives (uncommon), we do not include the firm in our sample to ensure that CPS remains comparable across firms.

[4] The correlation of CPS with the first variable is 0.055 (significant at the 1% level) and the correlation of CPS with the second variable is 0.073 (significant at the 1% level). The second variable is related not only to the relative importance of the CEO within the top executive team but also to the relative importance of the executive team on the board (Raheja (2005)).

To assess the significance of the differences in industry average CPS, we run Tobit regressions with CPS as the dependent variable and industry dummies as the independent variables. The results are reported in the last two columns of Table 1. Using Energy as the holdout industry, we find that five of the twelve industries display significantly different levels of CPS. In addition to the observed variation in industry average CPS, within-industry variations in CPS are even more substantial. For example, the Energy industry has a within-industry standard deviation of CPS of 10.4% on an average of 35.1%. This suggests that while CPS is partly determined by industry characteristics, CPS is mostly CEO-and firm-specific.

Table 2 provides descriptive statistics of several pertinent firm characteristics that will be used in our analysis. We use various Compustat, CRSP, IRRC, and ExecuComp variables: Tobin's Q is defined as the market value of equity plus the book value of assets minus the book value of equity, all divided by the book value of assets. Industry adjustments are made at the four-digit SIC level, by subtracting the industry median Tobin's Q. Industry-adjusted ROA is the return on assets computed as net income divided by book value of assets adjusted by the median ROA of the firms in Compustat in a given four-digit SIC industry and year. It is expressed in percentage terms. We report results where both variables are winzorized at the 1 and 99 percentile.

The entrenchment index (Eindex) consists of 6 shareholder rights provisions in a firm's charter (Bebchuk, Cohen, and Ferrell (2004)). Eindex ranges between 0 and 6, where higher values indicate weaker shareholder rights or more entrenched management.[5] Book value (in logs) is the book value of assets. Insider ownership is the fraction of shares held by insiders as reported by ExecuComp. Capex/Assets is the ratio of capital expenditures to assets. Leverage is the ratio of long-term debt to assets. R&D is the ratio of research and development to sales. If R&D is missing, it is set to zero and the dummy variable R&D missing is set to one. Company age is computed as the current year minus the year in which the company was first listed on CRSP.

Table 2 reports averages and standard deviations for all these variables. In addition, we show the averages separately for firms with high versus low CPS, where observations are classified as high CPS if their industry-adjusted CPS is positive. Firms with a positive industry-

[5] The Eindex is based on data from the Investor Responsibility Research Center (IRRC), which are updated in the years 1990, 1993, 1995, 1998, 2000, 2002, and 2004. For the years where IRRC data is not updated, we use the last value available. For further details, see Bebchuk et al. (2004). As a robustness test, we have also used the Gompers et al. (2003) governance index (Gindex), consisting of 24 charter provisions, and the results are qualitatively similar. The results using Gindex are available upon request.

adjusted CPS display a lower industry-adjusted Tobin's Q and lower industry-adjusted ROA.[6] These firms also have lower insider ownership, a higher Eindex, a larger book value, higher leverage, and higher age.

III. CEO CENTRALITY AND FIRM VALUE

A. How Could CPS and Firm Value Be Expected to Correlate?

Before proceeding, we first discuss alternative hypotheses as to how CPS can be expected to correlate with firm value. In thinking about this question, it is useful to distinguish two assumptions under which this question could be analyzed.

1. Optimal Selection Hypotheses

Consider a case in which there are no agency problems and firms therefore generally set CEO centrality at the optimal level. In this optimal selection scenario, by definition, no firm would be able to increase its value by changing its CPS level. Still, CPS levels could relate to firm value to the extent that the optimal CPS level differs across firms.

Optimal CPS levels can be expected to vary among firms. A firm's optimal CPS level depends on several considerations. First, the optimal CPS level for any given firm depends on the pool of candidates from which the members of the top executive team are drawn, and the quality and outside opportunities of these candidates clearly differ from firm to firm. Second, the optimal CPS level depends on the extent to which it is desirable to provide "tournament incentives" to top executives other than the CEO.[7] Third, the optimal CPS level depends on the extent to which it is desirable for the firm to have a dominant player model based on one especially important player rather than a management model based on a team of top executives.[8]

---

[6] Some of the industry-adjusted means in Table 2 are different from zero because industry-adjustments are made using *medians* for all firms in Compustat in a given industry and year.

[7] A tournament environment can provide both positive and negative incentives to top executives other than the CEO (Milgrom and Roberts (1992)). On one hand, a tournament may provide executives other than the CEO with incentives to excel to increase their chances of succeeding the CEO. On the other hand, a tournament may also produce deadweight costs by, for example, causing executives vying for the CEO position to cooperate less with, or even seek to undermine, their rivals. These benefits and costs are likely to vary across firms.

[8] A dominant player model has both benefits and costs. On the one hand, a dominant player model could provide clarity, steadiness, and reduction in the cost of decision-making. On the other hand, there is a

Fourth and related, the optimal CPS level reflects whether it is desirable to concentrate dollars spent on incentive generation on the CEO rather than on other top executives.

Existing theory does not provide us with an unambiguous prediction as to how the above considerations relate to firm value, allowing three different "optimal selection" hypotheses:

Hypothesis O1: Optimal CPS is positively correlated with firm value. It might be argued that a dominant player model and powerful tournament incentives are especially valuable for high-value firms with high growth opportunities that need to be decisively and vigorously pursued. It might also be that high-value firms are especially likely to attract "star" CEOs.

Hypothesis O2: Optimal CPS is negatively correlated with firm value. A dominant player model and powerful tournament incentives might be especially needed for low-value firms in distress that need to be turned around. It might also be that low-value firms are unlikely to be able to attract a good executive "bench."

Hypothesis O3: Optimal CPS is uncorrelated with firm value. It might be that the factors making high or low CPS optimal vary in ways that are distributed independently of firm value.

Thus, to the extent that the association between CPS and firm value is determined by optimal selection, an empirical investigation is necessary to choose among these competing hypotheses O1-O3.

2. Governance/Agency Hypotheses

The discussion above assumed that all CPS levels are optimally set. However, because choices are partly made by agents whose decisions are influenced by private interests and thus involve agency costs, some CPS choices are likely to depart from their optimal level. For example, a CEO might use her power and influence to push for a greater use of a dominant player model and an increase in compensation, leading to a higher CPS than optimal for the firm. In such a case, the excess CPS would reflect rents captured by the CEO.

Assuming that some CPS levels depart from the optimum, let "excess CPS" denote the excess (if any) of a given observed CPS level over the optimal level. As long as excess CPS levels are not perfectly negatively correlated with optimal CPS levels, observed CPS levels can

---

large body of literature, starting with Shaw (1932), extolling the benefits of group rather than individual decision-making, and there is some experimental data showing that groups often outperform individuals in decision-making (see Bainbridge (2002) for a survey). Furthermore, a dominant player model and the high CPS coming with it can lead to resentment on the part of the other members of the top team (Brill (1993) and Cook (1990)). All of these benefits and costs are unlikely to be invariant across firms.

be expected to be positively correlated with excess CPS levels. In this case, a correlation between excess CPS levels and a given variable (e.g. Q) can produce a correlation between observed CPS levels and this variable.

A high level of excess CPS – that is, a substantial departure from the optimal CPS level – can be viewed as a manifestation of significant governance problems. It might reflect a state of affairs in which the CEO is making a considerable use of the CEO's power, and plays an excessively central role in the top executive team or is in pursuit of private rents. Accordingly, high levels of excess pay, and the governance problems they reflect, would be correlated with low firm value. Thus, to the extent that observed CPS levels do indeed contain a potentially significant component of excess CPS, such presence can be expected to produce a negative correlation between CPS and firm value, which provides us with the following governance/agency hypothesis:

Hypothesis G: Excess CPS levels, and in turn also observed CPS levels, are negatively correlated with firm value.

B. The Association between CPS and Tobin's Q: Results

In this section, we turn to studying empirically the association between CPS and firm value. Our principal measure of firm value is Tobin's Q. This follows a substantial literature on the association between firm value and various corporate arrangements, which extensively used Tobin's Q as a measure of firm value (e.g., Demsetz and Lehn (1985); Morck, Shleifer, and Vishny (1988); Lang and Stulz (1994); Yermack (1996); and Gompers, Ishii, and Metrick (2003)).

Our definition of Tobin's Q is that used by Kaplan and Zingales (1997) and subsequently also by Gompers, Ishii, and Metrick (2003).[9] Our dependent variable is the industry-adjusted Tobin's Q, using industry-adjustments at the four-digit SIC code level.[10]

---

9 According to this specification, Q is equal to the market value of assets divided by the book value of assets (Compustat item 6), where the market value of assets is computed as the book value of assets (item 6) plus the market value of common stock (item 24 * item 25) less the sum of book value of common stock (item 60) and balance sheet deferred taxes (item 74).

10 An alternative specification of our regressions, with log Q as the dependent variable and SIC codes as industry fixed effects, yields similar results throughout. Also, using the Fama-French classification of 48 industry groups, rather than four-digit SIC codes, yields similar results throughout.

Our regressions include the standard controls used in the above literature. In particular, we control for firm size (logs of book value of assets), insider ownership and insider ownership squared (see McConnell and Servaes (1990)), profitability (ROA), the ratio of capital expenditures to assets (Capex/Assets), leverage, the ratio of R&D expenditures to sales (R&D), a dummy for missing R&D data, log of the age of the firm (see Shin and Stulz (2000)), and year dummies. We also include the entrenchment index, Eindex, of Bebchuk, Cohen, and Ferrell (2004).

The results, displayed in Table 3, indicate that higher CPS has a strong association with lower firm value. The first four regressions employ pooled panel regressions with year dummies. The standard errors are clustered at the firm level to account for correlations within firm observations. Column 1 uses a contemporaneous association between industry-adjusted Q and CPS, and column 2 uses lagged CPS and lagged ownership variables.[11] The economic significance is strongest in column 2: a one standard deviation change in the value of CPS (equal to 11.73%) is associated with a reduction in next year's Tobin's Q of 5.5% (= 11.73% x -0.475). Column 3 and 4 indicate that these results continue to hold using industry-adjusted CPS.

As a robustness check, columns 5 (and 6) present coefficients of Fama-MacBeth type regressions where we report the average coefficients of 12 (11) annual cross-sectional regressions. The standard errors are based on the variation across these 12 (11) coefficient estimates. The average coefficients of CPS and lagged CPS are negative and significant, and their average levels are quite similar to those of the corresponding coefficients in regressions 1 and 2, respectively.

In column 7 of Table 3, we test whether the documented relation in regression 1 between CPS and Tobin's Q is due to the fact that CPS contains information that is already available in proxies such as whether the CEO is also the Chair and whether the CEO is the only member of the board of directors among the top five executives. Such variables have been used by Adams et al. (2006) as proxies for CEO-versus-group decision making and are related to the concept of CEO centrality. Including these two variables reduces the sample size since they are only available from 1996 onwards. CPS remains strongly negatively associated with Tobin's Q even after controlling for these two additional variables, and that none of these two additional variables is significantly related to Tobin's Q. This result indicates that CPS is capturing more

[11] When using CPS (t-1), we require that the CEO remains in place the following year (t). The results are qualitatively similar without this constraint (not shown).

than these two already-available proxies for the relative importance of the CEO in the top executive team.

C. Additional Controls

The preceding subsection has shown that CPS is negatively correlated with Tobin's Q controlling for the standard variables included in standard Q regressions. Before we proceed to interpret and try to explain this association in the following subsections, we first examine the robustness of our result by exploring whether it continues to hold when we add additional controls not used in standard Q regressions.

In particular, it is possible that the negative association between Q and CPS is driven by factors not included in standard Q regressions that are correlated both with CPS and with a lower Q. If that were the case, then the results of the preceding section would still indicate that Q is associated with an additional factor other than those included in standard Q regressions but not that this factor is CPS.

1. Adding Controls to the Q Regressions

To examine this possibility, we present in Table 4 the results for regressions analogous to those in Table 3 with the following six additional controls:

(i) Founder CEO: Amit and Villalonga (2006) find that Fortune-500 firms that are founder-managed have a higher value. If CPS was lower when the CEO is a founder the relation between CPS and Tobin's Q could be due to the omitted founder effect. To explore this issue, we define a CEO as a founder if the CEO's tenure reported in ExecuComp started prior to the firm's first listing in CRSP, which is assumed to be the IPO year. There are 1,661 firm-year observations with a founder CEO, consisting of 284 different founder-CEOs in our sample. In Table 4, we include as a control a dummy variable equal to one if the CEO is also the founder of the firm. In addition, we re-ran the tests in Table 3 excluding firm-year observations with a founder CEO and found that the results continue to hold.

(ii) CEO with large ownership stake: It might be suggested that CPS is related to whether the CEO has a large ownership and that CEO ownership and firm value are correlated. There are 525 firm-year observations of 61 different CEOs owning at least a 20% stake in the company. We re-ran the results in Table 3 excluding firms in which the CEO owns a stake exceeding 20%

and found that they continue to hold. In Table 4, we include a dummy variable equal to one if the CEO owns a stake of at least 20%.

(iii) CEO Tenure: CPS may increase with the CEO's tenure, and the CEO's tenure could be related to the firm's value. Therefore, in Table 4, we include dummy variables for different levels of the CEO tenure, with tenure of seven years and more being the holdout group.

(iv) AbnormalAggregate Top-Five Compensation: It might be that CPS is related to the level of the firm's aggregate top-five compensation relative to peer companies, and that this aggregate top-five compensation is related to firm value. For example, a firm with a CEO whose compensation is on par with peer companies might have a high CPS to the extent that its other top executives have abnormally low compensation due to low quality and poor outside opportunities. In such a firm, firm value will likely be low, and so will the aggregate compensation to the top executives other than the CEO as well as to the top-five team. Our proxy for abnormal aggregate top-five compensation is the residual of the following industry and year fixed-effects regression: log(total compensation to the top 5 executives combined) on a constant and log(book value of assets). Table 4 includes this variable as an additional control. The inclusion of this variable can thus be viewed as controlling for the aggregate "quality" or "outside opportunities" of the firm's top executive team.

(v) *Difference in Pay-Performance Sensitivity between the CEO and other Top Executives:* Aggarwal and Samwick (2003) show that CEOs capture a substantial fraction of the aggregate incentive pay awarded to the top 5 executive team. When an executive is paid an especially large fraction of compensation in equity, the executive's compensation level might increase to compensate the executive for the risk-bearing-costs involved. Thus, CPS might be high because the CEO receives a compensation package that is more performance-based relative to that of the other top executives. Therefore, Table 4 includes as an additional control the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other 4 top executives. The fraction of equity compensation is defined as EBC/TDC1, where EBC is the equity-based compensation calculated as the sum of the value of the restricted shares granted plus the Black-Scholes value of options granted, and where TDC1 is the total compensation from ExecuComp.

(vi) *Diversification:* When a firm is diversified, some of the top executives might be heads of divisions. CPS may thus be related to whether the firm has a diversified structure, which has been found to affect firm value (e.g., Lang and Stulz (1994)), and thus our results could be driven by this relation. To explore this possibility, Table 4 adds a dummy variable 'diversified,' which is equal to one if the firm reports more than one segment on Compustat's segment database.

(vii) *Overall Compensation Inequality in the Top-Five Team:* The ratio of CEO compensation to that of the other top-five executives is one dimension of the distribution of pay within the top team. One might wonder whether our results concerning the association between CPS and lower Q represent an association between compensation inequality within the top team and lower Q. To explore this issue, we use the Gini coefficient used in the literature for measuring income inequality. In particular, we consider two different versions of the Gini coefficient: "Gini Top 5," which is defined as the Gini coefficient for the top five executives including the CEO, which is positively correlated with CPS, and "Gini Top 4," which is defined as the Gini coefficient for the four executives in the top team other than the CEO.[12]

The results in Table 4 indicate that the additional controls increase the R-squared relative to the results in Table 3 and are generally statistically significant. However, the negative association between industry-adjusted Tobin's Q and CPS is robust to adding these controls, and the coefficients of CPS in Table 4 are generally similar to the analogous results in Table 3 (especially if Gini Top 4, which is less correlated with CPS than Gini Top 5, is used). We can thus conclude that the correlation between CPS and Q identified in the preceding subsection is not driven by one of the seven additional factors introduced in this subsection.

It is worth noting that while CPS is negatively correlated with Tobin's Q, compensation inequality within the other executives in the top team, as measured by Gini Top 4, does not have such an association with Q. Thus, the inequality between the CEO and the other members of the top team, which is our proxy for CEO centrality, should be thought about differently than the inequality of compensation among the other members of the top team, which does not reflect the degree of CEO centrality. Indeed, the coefficients of the Gini coefficients in the contemporaneous regression are even positive. If lagged rather than contemporaneous CPS and Gini are used, however, the association of lagged Gini with Tobin's Q is negative and

[12] The correlation between CPS and Gini Top 5 (Gini Top 4) is 0.62 (-0.10). The correlation between Gini Top 5 and Gini Top 4 equals 54%, and their averages (standard deviations) are 0.32 (0.15) and 0.27 (0.20), respectively, such that the lower Gini Top 4 average indicates that the compensation of the top 4 non-CEO executives is more equal relative to the top 5 executives including the CEO.

insignificant, while the negative association of CPS with Tobin's Q remains statistically and economically significant.[13]

2. Predicted versus Residual CPS

An alternative approach to exploring whether the negative association between industry-adjusted Tobin's Q and CPS is driven by some other, widely used control variable is the following two step procedure. In the first step, we aim to explain CPS as the dependent variable by a large set of controls, resulting in two components of CPS: predicted and residual CPS. In the second step, we go back to Tobin's Q as the dependent variable, and replace CPS by its two components.

The results for the first step are reported in Table 5. The first specification is an industry fixed-effects regression with year dummies, and the second specification uses a Tobit regression with industry and year dummies. In both specifications, the large set of controls can explain only a small part of the variation in CPS. For example, the R-squared of the first regression is 17%, suggesting that there is significant information contained in CPS that is not captured by those other variables. We find that higher CPS is associated with the CEO also chairing the board, the CEO being the only executive director on the board, a more entrenched board (i.e., higher Eindex), smaller firms, non-linearly in insider ownership, higher profitability, large CEO ownership, lower total compensation to the top team and higher relative equity compensation, but find no relationship with CEO tenure or firm leverage.

Table 6 reports the results of regressing industry-adjusted Tobin's Q on the two components of CPS, plus the other controls also used in Table 3. Only the residual CPS has a negative and significant coefficient, while the predicted CPS is not significant. Therefore, it is the component of CPS that is not explained by the various controls in Table 5 that is responsible for the negative association of CPS with Tobin's Q.

---

[13] A current study by Kale, Reis and Venkateswaran (2007) finds, consistent with out results, a negative association between contemporaneous Gini Top 5 and Tobin's Q. As explained above, our results indicate that, controlling for this association, CPS (which this study did not consider) is negatively correlated with Q, and that the contemporaneous positive association between Tobin's Q and Gini Top 5 (which is not robust to using lagged variables) is driven by the pay distribution among the members of the top team other than the CEO.

D. Interpretation and Exploration of the Remaining Optimal Selection Hypothesis

The negative correlation between CPS and Tobin's Q identified in the preceding two sections is inconsistent with two of the optimal selection hypotheses discussed in subsection III.A. In particular, our findings are inconsistent with the hypothesis that firms' optimal CPS levels are positively correlated with firm value (hypothesis O1). Our findings are similarly inconsistent with the hypothesis that firms' optimal CPS levels are uncorrelated with firm value (hypothesis O3).

Thus, to the extent that CPS levels are largely optimally set, our findings are consistent only with the second optimal selection hypothesis O2. Under this hypothesis, optimal CPS levels, and in turn actual CPS levels, are negatively correlated with firm value. To the extent that this hypothesis indeed explains (at least partly) the pattern we have identified, developing a theory for why high CPS levels are optimal for firms with low value relative to industry peers would be an issue worth studying for future research.

In addition to the optimal selection hypothesis O2, our findings are also consistent with the governance/agency hypothesis (hypothesis G) that CPS levels are correlated with excess CPS levels which are in turn negatively correlated with firm value. Thus, our findings are consistent with the possibility that some CPS levels depart from optimal levels due to agency problems.

It is worth stressing that the two remaining hypotheses are not mutually exclusive. The governance/agency hypothesis does not assume that all firms depart from optimal CPS levels, only that some do. The negative correlation between CPS and Q might thus be due to a negative correlation between optimal CPS levels and Q as well as a correlation between actual CPS levels and excess CPS. Therefore, we frame our investigation below as an examination of whether the identified pattern is fully driven by optimal selection or is at least partly due to governance/agency problems.

To that end, we conduct several tests as to whether the identified negative correlation between CPS and industry-adjusted Q is all due to a tendency of low-Q firms to choose high CPS. Table 7 displays the results of regressions similar to those shown in Table 3 with the addition of one-or two-year lagged industry-adjusted Tobin's Q. The lagged Q controls for the level of industry-adjusted Tobin's Q that the firm had prior to determining CPS serving as an independent variable. We run both pooled panel regressions and Fama-MacBeth cross-sectional regressions.

The results indicate that CPS or lagged CPS (industry-adjusted or not) remains negatively associated with industry-adjusted Q even when controlling for lagged Q. The coefficient on contemporaneous CPS is very similar to the analogous results in Table 3 (see regressions 1, 5 and 7 in Table 7). The coefficient on one-year lagged CPS is now less negative than previously after lagged Q is added, with a magnitude that is very similar to contemporaneous CPS. The robustness of the negative association between Q and CPS suggests that this association is not fully driven by a tendency of low-Q firms to adopt high CPS levels.

Adding the lagged levels of industry-adjusted Tobin's Q greatly increases the R-squares of the regressions. For example, regression 1 in Table 7 has an R-square of 60%, while the analogous regression in Table 3 without lagged Q has an R-square of only 18%.

Next, Table 8 investigates all 1,326 CEO changes indentified from ExecuComp in the universe of firms in our sample, and compares the CPS of CEOs joining low Q versus high Q firms. If low value firms are more optimally run by CEOs with a high CPS, then we would expect to find that the new CEOs of low value firms have, on average, a significantly higher CPS than new CEOs of high value firms. We find no significant differences in CPS, measured in the first full fiscal year after taking office, nor industry-adjusted CPS between newly hired CEOs in lower-valued (with an industry-adjusted Tobin's Q that is negative or with a Tobin's Q below one) versus higher valued firms.[14]

Furthermore, there is no significant difference between low and high value firms in terms of the increase in CPS that the new CEO receives relative to the predecessor. The p-value of the difference in the change of CPS from the old CEO to the new CEO across firms with Tobin's Q above versus below 1 has a p-value of 11%, and using negative versus positive industry-adjusted Tobin's Q the p-value is 82%. Thus, this analysis does not provide significant evidence that the identified negative correlation between CPS and Q can be fully explained by a tendency of low-value firms to choose new CEOs with relatively high levels of CPS.[15]

The final results investigating the optimal selection explanation are presented in Table 9. Here we ask whether changes in CPS are correlated with changes in firm value. The first two

[14] In unreported results, we separately consider CEOs hired from the outside versus inside CEOs. We find that CPS increases significantly if the new CEO is hired from outside the firm, but this is not related to the firm's level of (industry-adjusted or not) Q.

[15] The findings in Table 8 that the average CPS increases from the old to the new CEO can be attributed to two factors. First, the cross-sectional average CPS increases during our sample period. Second, CEOs 65 years and older display a significantly lower CPS, hence, when replaced with a younger CEO, CPS tends to increase.

columns in Table 9 show regressions of percentage changes in industry-adjusted Tobin's Q on percentage changes in CPS. We find that changes in CPS are negatively correlated with contemporaneous changes in firm value. The CPS coefficients have weaker statistical significance but remain at the 5% level in both cases. In terms of economic significance, the coefficient in column 1 implies that one standard deviation shock in the change in CPS is associated with a change in industry-adjusted Tobin's Q that is lower by 2.2%.[16]

Columns 3–5 in Table 9 present results for firm-fixed effects regressions of industry-adjusted Tobin's Q on lagged CPS with no controls (column 3), with the standard controls from Table 3 (column 4) and with the additional controls from Table 4 (column 5). Removing the cross-sectional variation by the firm dummies reduces the statistical significance of the negative association between Q and CPS, but the CPS coefficient remains negative and significant at 10%. The economic significance is also reduced, with a one standard deviation shock in lagged CPS being associated with an industry-adjusted Tobin's Q that is about 2% lower. We use the lagged CPS as the independent variable since we are interested in whether a change in CPS affects future performance rather than the contemporaneous movement of CPS and firm value.[17]

E. Interaction of CPS with Shareholder Rights and Compensation Levels

This subsection considers whether the negative association between Q and CPS is more prevalent in certain subsets of firms.

1. Shareholder Rights

We first investigate whether firms with high versus low entrenchment levels, as measured by the Eindex (Bebchuk, Cohen, and Ferrell, 2004), display different sensitivities between CPS

---

[16] The standard deviation of the change in CPS equals 0.293, times the coefficient of -0.073 gives -0.022.

[17] For completeness, we also ran regressions of contemporaneous CPS on Tobin's Q and found a statistically significant positive coefficient (not reported). Other results in this paper suggest that this positive correlation of within-firm variation in CPS with contemporaneous changes in Tobin's Q can be interpreted as at least partly due to agency problems. For example, section IV.D indicates that this contemporaneous correlation can be partially interpreted as pay for luck (Bertrand and Mullanaithan, 2001). In other unreported results, we find that the positive coefficient in the firm fixed-effects regression of Tobin's Q on contemporaneous CPS is driven by years where Q goes up. In years where Q goes down from the previous year, the correlation of Q with contemporaneous CPS is negative. Therefore, CEOs profit relatively more from good years and are losing relatively less from down years than the other top executives.

and firm value. In firms with many entrenchment devices, the CEO and the board are relatively insulated from market discipline and the threat of removal, and the potential for agency problems in general, and departures from optimal levels of CEO centrality in particular, may be higher.[18]

The first two columns of Table 10 display the results of adding the interaction of CPS with the Eindex as an additional independent variable to the specifications of Table 3, using contemporaneous and lagged CPS, respectively. The lower value for firms with higher CPS is driven by firms with high entrenchment as measured by the Eindex. Including both CPS and CPS interacted with the Eindex, only the interaction has a significant (and negative) coefficient. This suggests a complementary relationship, as it is only firms with both entrenchment and high CPS that have lower firm values.

The results using lagged CPS are especially strong, indicating that there is a strong relation between today's CPS and future firm value. For firms with maximum entrenchment (Eindex value of 6), a one standard deviation positive shock to CPS is associated with a reduction in next year's industry-adjusted Tobin's Q of 24% (= 11.73% x 6 x -0.345, see column 2). Interestingly, using lagged CPS and the interaction of lagged CPS with the Eindex drives out the importance of the Eindex in isolation.

Thus, the data suggest that the negative correlation between CPS and firm value is more pronounced in firms with high entrenchment levels. In such firms, the potential for departures from optimal CPS levels might be more significant, and as a result the distribution of actual CPS levels could be more influenced by the distribution of excess CPS levels and the governance problems it reflects.

2. Aggregate Top-Five Compensation Levels

We create two more subsets of firms: one where the compensation paid to the top 5 executives (including the CEO) is above versus below the industry and size adjusted average, and another where the compensation to the top 4 executives (excluding the CEO) is above or below the industry and size adjusted average. The abnormal compensation is calculated from regressing the compensation to the group on a constant and the log of firm book value, including year and industry fixed effects. Firms with relative high compensation to the top 5 executives as a group may be in a particular challenging business environment and need to attract or retain

[18] Of course, the level of entrenchment itself is endogenous as well, and will (at least partly) be driven by optimal selection as well.

valuable talent. Firms that pay the top executives other than the CEO more than peer companies may face a different quality of the pool of executive candidates. For example, it is possible that the negative association between Q and CPS is driven by firms with lower value having trouble attracting enough talent to their top executive team, thus by necessity focusing on attracting the best possible CEO. In other words, the CPS may be high because the firm's bench has relatively lower quality. The interaction of CPS with whether or not the other 4 top executives (excluding the CEO) are paid better or worse relative to their peers can directly investigate this possibility.

Columns 3-4 show the interactions of CPS with a dummy variable indicating whether the abnormal compensation of the top-five executives is positive or negative. Columns 5-6 similarly show the interactions of CPS with a dummy variable indicating whether the abnormal compensation of the executives in the top-five team other than the CEO is positive or negative. The results show that the negative association between Q and CPS is robust to all subsamples.

The negative association between CPS and Q is present among both subsets of firms that pay their top-five executives more than peer companies and firms that pay these executives less than peer companies. The negative association between CPS and Q is also similarly present among firms that pay their top executives other than the CEO more than peer companies and firms that pay these executives less than peer companies. These results do not provide support for the hypothesis that the negative association between CPS and Q is driven by the quality of the pool of executive candidates faced by firms with lower industry-adjusted value.

IV. CEO CENTRALITY AND COMPANY DECISIONS AND OUTCOMES

Thus far we have focused on the relation between CPS and one measure of firm outcome and performance – Tobin's Q. We now turn to examining whether CPS is associated with several other significant aspects of firm behavior and outcomes. This investigation provides a robustness check on the conclusion reached in the preceding section regarding the association between CPS and firm value. This investigation can also shed light on the reasons why high-CPS firms have lower value. Finally, this inquiry can help in assessing whether cross-sectional differences in CPS could be at least partly due to governance/agency problems rather than differences in optimal CPS levels. While a low Tobin's Q might be due to such problems, an optimally governed firm might also have low Q due to its circumstances. In contrast, some of the aspects of firm outcomes and behavior considered in this section – such as the poor quality of acquisition decisions – are likely to be correlated with suboptimal decision-making and thus can help us to further test the governance/agency explanation.

We consider in turn seven aspects of firm decisions and outcomes: accounting profitability (subsection A); quality of acquisition decisions as judged by the stock market's reaction to their announcement (subsection B); opportunistic timing of CEO option grants (subsection C): rewards to the CEO in terms of compensation for luck after industry-wide positive shocks to value (subsection D); CEO turnover (subsection E); variability of firm-specific stock returns (subsection F); and the stock market returns accompanying the filing of proxy statements for periods with changes in CPS (subsection G).

A. Accounting Profitability and CPS

The first dimension of firm outcomes and performance we consider is that of accounting profitability. We use two different proxies of accounting profitability. First, we use ROA defined as net income divided by the book value of assets. Second, we use OPINC defined as operating income divided by the book value of assets. Both variables are industry-adjusted using the median profitability of the four-digit SIC industry in a given year and winzorized at the 1 and 99 percentile. Table 11 reports pooled panel regressions and Fama-MacBeth-type cross-sectional regressions for both measures. Due to the panel nature of the data, we computed robust standard errors that are clustered at the firm level.

Panels A and B report results of pooled-panel regressions with year dummies, using ROA and OPINC, respectively. Panels C and D report results of Fama-MacBeth type regressions where we only display the coefficients of interest (for brevity), using ROA and OPINC, respectively. All four panels display six columns with different specifications. In the first column, the only independent variable is contemporaneous CPS. In the second column, we add to contemporaneous CPS the various standard controls we used in the Q regressions (see Table 3). The third column differs from the second column in that lagged CPS replaces contemporaneous CPS as the independent variable. In the fourth and fifth columns, the coefficient of interest is industry-adjusted CPS, with its contemporaneous level used in the regression of column 4 and its lagged level in the regression of column 5. Finally, the sixth column adds as additional controls the two formal variables that capture some dimensions of

CEO centrality: a dummy for the CEO being a chair, and a dummy for the CEO being the only top executive who is also member of the board.

In all four panels and in each of the six specifications, the coefficient on CPS – whether CPS is contemporaneous or lagged, whether it is industry-adjusted or not – is negative and significant throughout. The effect of CPS is also economically meaningful. For example, using the estimate in column 6 of Panel A, a one standard deviation increase in CPS (0.1172) decreases industry-adjusted ROA by 1.317% (=0.1172 * -11.239), and industry-adjusted OPINC by 0.314% (=0.1172 * -2.676). Given the average ROA of 4.34%, the impact of a one standard deviation change in CPS corresponds to a change of about $1/3^{rd}$ of the mean value.

The conclusion that we draw from this analysis is that CPS is negatively associated with (industry-adjusted) accounting profitability. These findings are consistent with and reinforce our earlier finding that high CPS is associated with lower firm value as measured by Tobin's Q.

B. CEO Centrality and Acquirer Returns

In order to gain insight into our finding that high-CPS firms display a lower firm value, we ask whether such firms are more likely to make sub-optimal acquisition decisions. We follow the study of Masulis, Wang and Xie (2007) that investigates the negative correlation between firm value and shareholder rights, measured by the governance index or the entrenchment index, by asking whether weaker shareholder rights are associated with lower levels for the stock returns accompanying bidders' announcements. Their main result is that announcement returns for acquirers with high entrenchment levels are significantly lower, and they conclude that the low value of high-entrenchment firms might be at least partly due to the bad acquisition decisions they make. Using the same data, we add CPS in the year prior to the acquisition announcement as an additional explanatory variable. Our test asks whether, controlling for the level of entrenchment, high CPS is associated with lower stock returns upon the announcement of an acquisition as well as with a higher likelihood of a negative stock return upon such an announcement.

We start with the 3,333 events from Masulis et al. (2007).[19] The sample is based on acquisitions recorded by the Securities Data Corporation (SDC) between January 1, 1990 and

[19] For a detailed description of the sample and the selection process, see Masulis et al. (2007), pages 5-6. We thank Ronald Masulis for sharing this data.

December 31, 2003. Since we require that CPS is available at the fiscal year-end prior to the takeover bid our sample is reduced to 1,241 events.[20] For this subsample, we find an average (standard deviation) abnormal announcement return in the eleven days around the announcement date of 0.26% (6.60). These are very similar to the values of 0.22% (6.59) reported by Masulis et al. (2007) for the full sample, and it is thus unlikely that the restrictions imposed by the availability of CPS introduce any particular bias.

Table 12 shows the results for two sets of regressions. Regressions 1, 2 and 5 are OLS regressions with the abnormal announcement return of the bidder in the eleven days around the initial announcement as the dependent variable (cumulative abnormal return, CAR[-5,+5]). Regressions 3 and 4 are logit regressions where the dependent variable is equal to one if the CAR was negative and zero otherwise. Both types of regressions use robust standard errors that are clustered at the firm level to account for correlations if firms make multiple acquisitions. The main variable of interest is the CPS of the bidder, computed at the fiscal year end prior to the takeover bid.

In regressions 1, 2, and 5, we find that the coefficient is negative and significant at the 10% level even after controlling for other determinants found to be significant in Masulis et al. (2007). In particular, CPS has additional explanatory power over and above the entrenchment Eindex (regression 1) or the governance Gindex (regression 2) and over and above additional proxies for power such as the CEO also being the Chair and the CEO being the only director among the top five executives.

Economically, the coefficient on the CPS variable of -0.024 indicates that a one standard deviation increase in CPS — in this sample that is 0.12 — is associated with a reduction of the announcement return of 0.286% (0.12 x -2.386). Given the average market value of the bidder in our sample of $6,358 million, a one standard deviation increase in CPS results in a loss of about $18 million per acquisition announcement. The effect of a one standard deviation change in CPS is thus in the same order of magnitude as the effect from adding one more provision in the Eindex (the coefficient on the Eindex in regression 1 is -0.497) and is more than twice the effect from adding one more provision in the Gindex (the coefficient on the Gindex in regression 2 is -0.180).

---

[20] We have CPS data from 1993 onwards and only use CPS when the CEO is not changing during the year.

The coefficients on CPS in regressions 3 and 4 are positive and significant at the 5% level, indicating that high-CPS firms are more likely to make acquisitions judged by the market to be value-destroying, i.e., acquisitions where the bidder announcement return is negative. Economically, the coefficient of 1.145 implies that a one standard deviation increase in CPS increases the chances of an acquisition being judged to be value-destroying by the market by 15% (exp(0.12*1.145)=1.15). This is again of similar magnitude to increasing Eindex by one and of substantially higher magnitude than increasing Gindex by one.

From this analysis, we conclude that one potential reason for the lower valuation of firms with high CPS is that high-CPS firms make acquisitions viewed less favorably by the market and, in particular, are more likely to make acquisitions viewed as value-destroying by the market. These findings are consistent with the notion that cross-sectional differences in CPS levels are at least partly due to and reflective of differences in governance/agency problems.

C. CPS and Opportunistic Option Grant Timing

This section considers the relation between CPS and the occurrence of opportunistically timed option grants to the CEO. Yermack (1997) showed that option grants are opportunistically timed, being systematically followed by abnormal positive stock returns, and Lie (2005) showed that the abnormal stock returns around CEO option grants are at least partly due to backdating. The literature on opportunistic timing has also shown an association between such timing and the quality of firm governance (see, e.g., (Bizjak, Lemmon, and Whitby (2007)), Heron and Lie (2006)), Yermack (1997)). We examine in this section whether opportunistic timing is related in any systematic fashion to CPS.

We use the standard data in current work on opportunistic timing – the Thomson Financial's insider trading database, which is available from 1996 onwards. We focus on "lucky grants" – at-the-money grants awarded on a date with a stock price equal to the lowest price of the month. Bebchuk, Grinstein and Peyer (2006) show that lucky grants occur with a substantially higher frequency than could be explained by pure luck and that they provide a useful proxy for opportunistically timed grants.

We run three logit regressions using 11,712 firm-year observations. The dependent variable in all three regressions is a dummy variable called "Luckydummy" that is equal to one if the firm granted its CEO a lucky grant during the year and zero otherwise. The first regression is a pooled regression with the standard errors clustered at the firm level. The second and third regressions include firm and CEO fixed effects respectively. The controls included are a dummy that is equal to one for the years after passage of the Sarbanes-Oxley legislation (SOX, after 2002) to take into account that backdating became more difficult following the passage of SOX; insider ownership; size; industry ('neweconomy' dummy); and a proxy for stock return volatility (computed as the standard deviation of daily stock returns over a year) to account for the fact that opportunistic timing is more profitable when stock return volatility is high.

The results are displayed in Table 13. In all three specifications, the coefficient of the CPS variable is positive and significant (at 95% confidence) indicating that a higher CPS is positively correlated with opportunistic timing of option grants. In unreported regressions, we replace CPS with industry-adjusted CPS and find that the coefficient of the latter is also positive and significant.[21] Overall, our findings indicate that high CPS is correlated with opportunistic timing of option grants, which is consistent with the notion that high CPS is correlated with governance/agency problems.

D. Pay for Industry-Wide Shocks

This section considers the relation between CPS and changes in CEO compensation accompanying industry-wide value and profitability shocks. Bertrand and Mullainathan (2001) argue that increases in CEO compensation following such industry-wide shocks can be viewed as a reward for luck. They further argue that the existence and magnitude of such rewards is likely to correlate with agency problems, and they show that it is correlated with the absence of monitoring by outside blockholders.[22] Given this view, we explore in this section whether CPS is related to such rewards for luck.

---

[21] In further unreported results, if we add the interaction of CPS with the SOX-dummy to Table 13, it is insignificant. When we restrict the sample to only CEOs that receive an option grant in a given year (reducing the sample to 8,815 observations), the CPS coefficient remains almost identical, including its statistical significance.

[22] Of course, industry-wide performance shocks might sometimes not be exogenous to the firm, as is the case when the firm is large and has significant market power. In such a case, as Bertrand and Mullainathan mention, Gibbons and Murphy (1990) note that relative performance evaluation (i.e., filtering out industry-wide shocks) can distort CEO incentives if they can 'take actions that affect the average output of the reference group.' However, Bertrand and Mullainathan do not find evidence that this is a severe problem when using industry-wide performance shocks, as their results for that measure

Table 14 presents the results for industry fixed-effects pooled panel regressions with the log of the CEO's total compensation as the dependent variable. We introduce a dummy variable indicating whether there was a positive industry-wide shock in performance, using either industry median Tobin's Q (regressions 1-4) or ROA (regressions 5-8) as measures for performance. Since results are robust to the choice of the performance metric, we discuss the results for industry shocks of Tobin's Q only. We control for the level of (or change in) CPS and firm-level Tobin's Q in all specifications in Table 14.

Column 1 confirms the main result in Bertrand and Mullainathan (2001) that exogenous, positive performance shocks produce, on average, an increase in CEO compensation. Column 2 and 3 show that this is only the case for firms where CPS is relatively high or went up during the year of the industry shock. Thus, rewarding CEOs for luck during an industry-wide positive shock is concentrated among firms with high CPS or CPS increases.

An important criticism of the Bertrand-Mullainathan view of pay for lucky performance is given by Himmelberg and Hubbard (2000) and Hubbard (2005). They argue that if the supply of CEOs is inelastic, then positive industry-wide shocks increase the relative importance of managerial ability and could in equilibrium lead to higher compensation. We investigate this point using their view that the supply of CEOs is most inelastic for the largest firms. Regression 4 shows that our results are not driven by the larger firms for which Himmelberg and Hubbard argue that the supply of CEOs is most likely to be inelastic. We find no difference between large and small firms in terms of how the reaction of CEO compensation to industry-wide shocks is associated with CPS. As a final robustness check, columns 5–7 repeat the tests of columns 2–4 using industry shocks of ROA and obtain similar results.

Overall, our findings indicate that high CPS firms reward their CEOs more for industry-wide value and profitability shocks. To the extent that one accepts the Bertrand-Mullainathan view that a greater tendency to make such rewards reflects governance and agency problems, these finds are consistent with the notion that cross-sectional differences in CPS are correlated with such problems.

E. CEO Centrality and CEO Turnover

---

are very similar to using shocks that are more clearly beyond the CEO's control, such as oil price and exchange rate shocks.

We have seen that firms with high CPS have lower Q and lower accounting profitability and make acquisition decisions that are viewed less favorably by the market. It could thus be expected that the CEOs of such firms are replaced more often unless the high CPS is at least partly due to agency problems in the first place, which could make CEO replacement more difficult and unlikely. We explore this possibility by testing whether, controlling for performance, CEO turnover is related to CPS.

Table 15 displays the results of logit regressions where the dependent variable is equal to one if there is a CEO turnover in year t. We use the ExecuComp dataset to identify CEO turnover, which we define as taking place if the CEO title in this dataset has changed from one person to another. We find 1,326 turnovers in our sample of 11,221 firm-years with available data on the prior-year CPS.

The independent variable of interest in the base regression of column 1 is the industry-adjusted CPS at the end of the preceding year. The control variables include the stock return of the company during the year and dummies for the year of the CEO's service (we do not use tenure as a continuous variable since its effect on turnover might not be monotonic). The coefficient on industry-adjusted CPS is negative and significant, indicating that CEOs with high CPS are less likely to be replaced.

In column 2, we add an interaction between the industry-adjusted CPS and the stock return. The question is whether high-CPS CEOs are less likely to turn over even if their stock performance is bad. The coefficient on the interaction variable is positive, and marginally significant, indicating that turnover is less performance-sensitive for high-CPS CEOs.

To assess the economic significance, we consider the effect of a 10% increase in industry-adjusted CPS on the performance sensitivity of CEO turnover. The coefficient on stock return is -0.404 implying that with a -50% stock return, CEO turnover probability increases by 22% (exp(-0.5*-0.404) - 1). The coefficient on the interaction term between the stock return and industry-adjusted CPS is 1.684, implying a reduction in the performance sensitivity of 8% (exp(-0.5*1.684*0.1) - 1), or about a one-third reduction in the performance sensitivity of turnover.

Following Jenter and Kanaan (2006), regression 3 splits the stock return into firm-specific and market returns, where firm specific returns are defined as the difference between the overall stock return and the market return. Consistent with Jenter and Kanaan (2006) we also find that CEO turnover is sensitive to market returns, albeit not significantly so. The main conclusion is that CEO turnover is less sensitive to firm specific returns for CEOs with a high industry-adjusted CPS. If a lower performance sensitivity is an indication of more agency problems (e.g., Kaplan and Minton (2006)), then our findings here are consistent with the notion that cross-sectional differences in CPS are associated with differences in the magnitude of agency problems. These findings could also help to explain the overall negative association between CPS and firm value.

F. CEO Centrality and the Variability of Firm-Specific Returns

The next firm outcome and its relation with CPS that we examine is the variability of firm-specific stock returns. This variability reflects the frequency with which and the extent to which investors make revisions in their estimate of the firm's prospects.

A priori, theory does not provide us with an unambiguous prediction about the relation between CEO centrality and the variability of firm-specific stock returns. On the one hand, it can be argued that CEO centrality should be associated with lower variability for two reasons. To begin, a CEO playing a dominant role in the firm's decision-making might lead to decisions that are more conservative (risk-averse); the CEO may want to play it safe to reduce the chance of a negative stock return which might lead to dismissal. Because the CEO's compensation and tenure are more sensitive to the firm's performance than those of other top executives, the CEO might have an especially strong incentive to avoid risks and, in the words of Bertrand and Mullainathan (2003), "enjoy the quiet life." Second, if one person plays a dominant role in the firm's decision-making, this could lower the market's uncertainty about the firm's strategy and thus decrease the variability of the firm-specific returns.

On the other hand, Sah and Stiglitz (1986, 1991) and Adams, Almeida, and Ferreira (2005) argue that firms with powerful CEOs tend to make less balanced decisions relative to those reached by consensus and coalition-building within a team. Thus, firms with a dominant CEO model are expected to display to more extreme outcomes and thus be associated with higher variability of firm-specific stock returns. Considering the relation between board size and firm-specific variability of returns, Chen (2008) argues in a similar vein that the need for more compromise associated with a larger board leads to less variable corporate performance.

Table 16 presents the results of Glejser's (1969) heteroskedasticity test. Our specification closely follows the heteroskedasticity test in Adams et al. (2005) with CPS as an additional variable (see also Chen (2008)). The dependent variable is the absolute value of monthly residual returns, where we use the four-factor Fama-French model to compute residuals. The pooled panel regressions either include industry fixed effects (clustering standard errors by industry) or firm fixed effects (clustering standard errors by firm). As independent variables, we include CPS alongside several other governance variables (founder dummy, CEO as chair dummy, CEO tenure, CEO stock ownership) and other firm characteristics (leverage, firm size, firm age and capital expenditures).

We find a negative relation between CPS and firm-specific variability. This finding is robust to firm or industry fixed-effects and to the inclusion of a number of other control variables. To the extent that the lower idiosyncratic volatility of high-CPS firms is due to the tendency of their CEOs to avoid firm-specific volatility which imposes risk-bearing costs on them but not on diversified investors, this evidence is consistent with the view that the association between high CPS and lower firm value is related to governance and agency problems.

In addition to CPS, the dummy of whether the CEO chairs the board also has a negative coefficient, consistent with the view that CEO centrality is associated with lower variability. The CEO's ownership stake and CEO tenure have a non-linear relationship with variability: the first moment has a positive coefficient and the second moment a negative (though significance disappears for CEO tenure when firm fixed-effects are included).[23]

G. Stock Market Reactions to Proxy Statement Releases

Companies' proxy statements disclose the compensation of the firm's top executives during the preceding year, as well as other types of new information. In this section we study the relation between these abnormal returns and the changes in CPS levels disclosed in the proxy statements.

Our event study uses the data on proxy filing dates collected by Dlugosz, Fahlenbrach, Gompers, and Metrick (2006). They collect those dates for 1,916 companies for the years 1996 –

[23] With respect to variables other than the CPS, our results correspond partly to, and differ partly from, those in Adams et al. (2005). For example, in our estimates the dummies for CEO-founder and CEO as the only executive on the board are not significant, while CEO ownership is consistently significant. These differences might be partly due to the difference in samples. Our sample uses a longer time period (1992-2005 rather than 1992-1999 as in Adams et al.) and uses all firms in ExecuComp rather than those in the 1998 Fortune 500 only.

2001. We examine whether the release of information about changes in CPS is associated with abnormal stock returns. New information about the elements necessary for calculating CPS is provided in firms' proxy statements, which are the source of public information about executive compensation.

Using the date of the proxy filing as the event date, we calculate the cumulative abnormal return (CAR) around each event date using the market model. The event window is -10 to +10 days around the event. We use a 21-day window because the filing date often time precedes the distribution of the proxy.[24] We assign events to groups according to the change in CPS in the event year relative to the previous year.[25]

Table 17 Panel A presents the comparison of the average CAR for firms with decreasing versus increasing CPS, as well as the average CAR for the 25% of firms with the biggest reduction in CPS versus the 25% of firms with the biggest increase in CPS. Comparing across groups, the 25% of firms with the biggest decreases in CPS had a significantly higher CAR than the 25% of firms with the biggest increases in CPS. The difference in the 21-day event window of 1.2% is statistically and economically significant. Comparing firms with decreasing versus increasing CPS, we again find a positive difference in CAR equal to 0.3%, but it is not statistically significant.

We also find a small but strongly statistically significant correlation of -3.5% between the change in CPS and the CAR (see panel B). As reported in panel C of Table 17, this correlation survives after controlling for differences in firm size and book-to-market characteristics. In particular, the second regression of CAR also includes the interaction of the change in CPS with a dummy indicating whether or not the firm has an Eindex above the sample median. The negative relation between news about increases in CPS and abnormal returns is driven by firms with high entrenchment. This is consistent with the previous result that the negative correlation of CPS with Q is concentrated in firms with high entrenchment.

One interpretation of our results is that the market reacts negatively to news about increases in CPS. An alternative interpretation, consistent with the view that CPS levels are

[24] For example, Dell filed its proxy on 10-31-2007 while the letter says that the proxy statement is distributed on or about November 5, 2007. Similarly, SUN Bankcorp filed on 04-30-2007 but the letter in the proxy statement is dated May 11. Focusing on a shorter event window of +/- one day, the results go in the same direction, but become statistically insignificant (not shown).

[25] We also weigh the observations by the inverse of the variance of the estimate of the cumulative abnormal return to incorporate estimation risk.

correlated with worse governance, is that increases in CPS are also correlated with other information released in firms' proxy statements that investors view unfavorably.

V. CONCLUSION

In this paper, we investigate CEO centrality as proxied by CPS, the fraction of top-five compensation captured by the CEO. We show that CEO centrality has a rich set of relations with the behavior and outcomes of firms. In particular, cross-sectional differences in CEO centrality are associated with lower Tobin's Q, lower accounting profitability, less favorable market reaction to acquisition announcements made by the firm, more opportunistic timing of CEO option grants, more luck-based pay, less CEO turnover controlling for performance and tenure, and lower variability of firm-specific stock returns.

To the extent that our results are fully or partly driven by firms' optimal CPS choices, they indicate that high CPS is optimal for low-value firms and thus call for developing a theoretical explanation for such an association. Furthermore, our evidence is consistent with the possibility that the CPS levels of some firms are excessive and that cross-sectional differences in CPS levels provide a tool for studying cross-sectional differences in agency problems.

Beyond our particular findings and their interpretation, our general conclusion is that CEO centrality is an aspect of firm governance and management that deserve the attention of researchers. Future research on the effects of governance arrangements and management processes -- as well as research on a wide range of aspects of firm behavior and decision-making -- should consider using CEO centrality as a useful control as well as a subject of investigation.

References

Adams, R. H. Almeida, and D. Ferreira (2005), "Powerful CEOs and Their Impact on Corporate Performance," *Review of Financial Studies* 18, 1403-1432.

Aggarwal, R. K. and A. Samwick (2003), "Performance Incentives within Firms: The Effect of Managerial Responsibility," *Journal of Finance* 58-4, 1613-1649

Amit, R., and B. Villalonga (2006), "How do family ownership, control and management affect firm value?" Journal of Financial Economics 80, 385-417.

Bainbridge, S. M. (2002), "Why a Board? Group Decision Making in Corporate Governance," *Vanderbilt Law Review* 55, 1-55.

Bebchuk, L. A. and A. Cohen (2005), "The Cost of Entrenched Boards," *Journal of Financial Economics* 78, 409-433.

Bebchuk, L. A., A. Cohen, and A. Ferrell (2004), "What Matters in Corporate Governance," Harvard University Olin Discussion Paper No. 491, *Review of Financial Studies*, forthcoming.

Bebchuk, L. A., Y. Grinstein, and U. Peyer (2006), "Lucky CEOs," NBER Discussion Paper 12771.

Bertrand, M. and S. Mullainathan (2000), "Agents With and Without Principals," *American Economics Review* 90, 203-208.

Bertrand, M. and S. Mullainathan (2001), "Are CEOs Rewarded for Luck? The Ones without Principals Are," *Quarterly Journal of Economics* 116, 901-932.

Bertrand, M. and S. Mullainathan (2003), "Enjoying the Quiet Life? Corporate Governance and Managerial Preferences," *Journal of Political Economy* 115, 1043-75.

Bertrand, M. and A. Schoar (2003), "Managing with Style: The Effect of Managers on Firm Policies," *Quarterly Journal of Economics* 118, 1169-208.

Bizjak, J., M. Lemmon, and R. Whitby (2007), "Option backdating and board interlocks," Working Paper, Portland State University and University of Utah.

Brill, Jesse M. (1993), "Stock Ownership Guidelines for Executives," *The Corporate Executive*, March-April, 381-385.

Chang, Yuk Ying, Sudipto Dasgupta and Gilles Hilary (2007), "Managerial reputation in financial and labor markets," working paper

Cheng, Shijun (2008), "Board size and the variability of corporate performance. *Journal of Financial Economics*, 87, 157-176.

Cook, F. W. (1990), "How Much Stock Should Management Own?" *Compensation and Benefits Review*, September/October, 20-28.

Cremers, K. J. M. and V. B. Nair (2005), "Governance Mechanisms and Equity Prices," *Journal of Finance* 60-6, 2859-2894.

Demsetz, D. and K. Lehn (1985), "The Structure of Corporate Ownership: Causes and Consequences," *Journal of Political Economy* 93-6, 1155-1177.

Dlugosz, J., R. Fahlenbrach, P. Gompers, and A. Metrick (2006), "Large Blocks of Stock: Prevalence, Size, and Measurement," *Journal of Corporate Finance* 12, 594-618.

Frydman, Carola (2005), "Rising through the Ranks: The Evolution of the Market for Corporate Executives, 1936-2003," MIT Sloan School Working Paper.

Frydman, Carola and Raven Saks (2007), "Executive Compensation: A New View from a Long-Run Perspective," Working Paper.

Gompers, P. A., J. L. Ishii, and A. Metrick (2003), "Corporate Governance and Equity Prices," *Quarterly Journal of Economics* 118, 107-155.

Gibbons, R. and K. J. Murphy (1990), "Relative Performance Evaluation for Chief Executive Officers," *Industrial and Labor Relations Review,* 43, 30-51.

Glejser, H. (1969), "A New Test for Heteroskedasticity," *Journal of the American Statistical Association* 64, 316-323.

Heron, R. A., and E. Lie (2006), "What fraction of stock option grants to top executives have been backdated or manipulated?" Working Paper, University of Iowa.

Himmelberg, C.P. and R. G. Hubbard (2000), "Incentive Pay and the Market for CEOs: An Analysis of Pay-for-Performance Sensitivity," Working paper, Columbia Business School.

Hubbard, R. G. (2005), "Pay Without Performance: A Market Equilibrium Critique," *Journal of Corporation Law* 30, 717-720.

Jenter, D. and F. Kanaan (2006), "CEO Turnover and Relative Performance Evaluation," MIT Sloan Working Paper 4594-06, forthcoming in the *Journal of Finance*.

Kale, J., E. Reis and A. Venkateswaran (2007), "Rank Order Tournament and Incentive Alignment: The Effect on Firm Performance," Working paper

Kaplan, S. N. and B. Minton (2006), "How has CEO Turnover Changed? Increasingly Performance Sensitive Boards and Increasingly Uneasy CEOs," NBER Working Paper 12465.

Kaplan, S. N. and L. Zingales (1997), "Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?" *Quarterly Journal of Economics* 112, 169–216.

Lang, L. H. P. and R. M. Stultz (1994), "Tobin's q, Corporate Diversification, and Firm Performance," *Journal of Political Economy* 102, 1248-1280.

Lang, L., R. Stulz, and R. Walkling (1991), "A Test of the Free Cash Flow Hypothesis: The Case of Bidder Returns," *Journal of Financial Economics* 29, 315-336.

Lazear, E. P. and S. Rosen (1981), "Rank-order Tournaments as Optimum Labor Contracts," *Journal of Political Economy* 89, 841-864.

Lie, E., 2005, On the timing of CEO stock option awards, *Management Science* 51, 802-812.

Malmendier, U. and J. A. Tate (2005), "Superstar CEOs," Working paper.

Masulis, R., C. Wang, and F. Xie (2007), "Corporate Governance and Acquirer Returns," *Journal of Finance* 62, 1851-1889.

McConnell, J. and H. Servaes (1990), "Additional Evidence on Equity Ownership and Corporate Value," *Journal of Financial Economics* 27, 595-612.

Milgrom, P. and J. Roberts (1992), *Organization and Management*, Prentice Hall, NJ.

Morck, R., A. Shleifer, and R. Vishny (1988), "Management Ownership and Market Valuation: An Empirical Analysis," *Journal of Financial Economics* 20, 293–315.

Morck, R., A. Shleifer, and R. Vishny (1989), "Alternative Mechanisms for Corporate Control," *American Economic Review* 7, 842-853.

Morck, R., A. Shleifer, R.W. Vishny (1990), "Do Managerial Objectives Drive Bad Acquisitions?" *Journal of Finance* 45, 31-48.

Murphy, K.J. and J. Zabojnik (2004), "Managerial Capital and the Market for CEOs," Working Paper.

Raheja, Charu (2005), "Determinants of Board Size and Composition: A Theory of Corporate Boards," *Journal of Financial and Quantitative Analysis*, 40.

Qui, L. (2004). "Which Institutional Investors Monitor? Evidence from Acquisition Activity," Working Paper, Brown University.

Sah, R.K. and J. Stiglitz (1986), “The Architecture of Economic Systems: Hierarchies and Polyarchies,” *American Economic Review* 76, 716-727.

Sah, R.K. and J. Stiglitz (1991), “The Quality of Managers in Centralized versus Decentralized Organizations,” *Quarterly Journal of Economics* 106, 289-296.

Shaw, M.E. (1932), “A Comparison of Individual and Small Groups in the Rational Solution of Complex Problems,” *American Journal of Psychology* 44, 491-498.

Shin, H. and R.M. Stulz (2000), “Firm Value, Risk, and Growth Opportunities,” NBER Working Paper No. 7808.

Yermack, D. (1996), “Higher Market Valuation for Firms with a Small Board of Directors,” *Journal of Financial Economics* 40, 185–211.

Yermack, David, (1997), Good timing: CEO stock option awards and company news announcements, *Journal of Finance* 52, 449-476.

TABLE 1: CPS BY INDUSTRY

The table displays industry average and median CPS where industry is defined as the 12 Fama-French industries. The averages are computed using the panel data set of 12,011 observations (Obs). Within industry variation is computed as the standard deviation of the CPS within an industry. The regression coefficients are from a Tobit regression with CPS as the dependent variable and industry dummies. The holdout industry is Energy. P-values of the coefficients are also reported.

Industry	Obs	Industry average	Within Industry variation	Industry Median	Regression coefficient	p-value
Non Durable Consumer Goods	1,018	0.335	0.109	0.330	-0.016	0.009
Durable Consumer Goods	422	0.363	0.121	0.359	0.011	0.141
Manufacturing	1,902	0.354	0.106	0.353	0.003	0.602
Energy	520	0.351	0.104	0.344		
Chemical	477	0.374	0.107	0.370	0.022	0.003
Business Equipment	1,782	0.321	0.132	0.304	-0.031	0.000
Telecom	267	0.311	0.118	0.300	-0.040	0.000
Utilities	1,080	0.351	0.087	0.347	0.000	0.974
Shops	1,491	0.331	0.116	0.321	-0.021	0.000
Health	819	0.354	0.128	0.340	0.002	0.704
Money	922	0.342	0.128	0.330	-0.009	0.138
Other	1,311	0.343	0.125	0.330	-0.009	0.138
Average		0.344				
Standard deviation		0.018				

TABLE 2: UNIVARIATE STATISTICS

Tobin's Q is defined as the market value of equity plus the book value of assets minus the book value of equity, all divided by the book value of assets. The industry adjustment is made at the four-digit SIC level. Industry-adjusted ROA is the return on assets computed as net income divided by book value of assets adjusted by the median ROA of the firms in Compustat in a given four-digit SIC industry and year. It is expressed in percentage terms. Eindex is the entrenchment index of Bebchuk and Cohen (2004). Log book value is the log of the book value of assets. Insider ownership is the fraction of shares held by insiders as reported by ExecuComp. Capex/Assets is the ratio of capital expenditures to assets. Leverage is the long-term debt to assets. R&D is the ratio of R&D to sales. If R&D is missing, it is set to zero and the dummy variable R&D missing is set to one. Company age is computed as the current year minus the year in which the company was first listed on CRSP. We present the number of observations, the overall sample mean and standard deviation, as well the mean of the variables for two subsets. The first one is the subset of firms with industry-adjusted CPS bigger than zero, the second is where the industry-adjusted CPS is below or equal to zero. The last column reports the p-value of a mean comparison between the two subsamples.

Variable	Obs	Mean	Std. Dev.	Ind-adj CPS>0	Ind-adj CPS<=0	p-value difference
Ind-adj Tobin's Q	12,011	0.359	1.119	0.343	0.374	0.091
Ind-adj ROA	12,011	1.462	10.122	1.220	1.699	0.009
Eindex	12,011	2.152	1.308	2.225	2.081	0.005
Log book value	12,011	7.513	1.606	7.555	7.473	0.000
Insider ownership	12,011	0.063	0.073	0.057	0.068	0.000
insider ownership2	12,011	0.009	0.033	0.008	0.011	0.000
Capex/Assets	12,011	0.185	2.178	0.168	0.202	0.383
Leverage	12,011	0.205	0.169	0.209	0.201	0.006
R&D	12,011	0.124	3.925	0.114	0.133	0.790
R&D missing	12,011	0.481	0.500	0.474	0.489	0.098
Company Age	12,011	25.766	19.235	26.381	25.168	0.000

TABLE 3: RELATION BETWEEN TOBIN'S Q AND CPS

This table presents OLS regressions in columns 1-4 and 7, and Fama-MacBeth type regressions in columns 5 and 6. In the OLS regressions, we include year dummies (not shown) and the standard errors are clustered at the firm level. The dependent variable is the four-digit SIC industry-adjusted Tobin's Q. Tobin's Q is defined as the market value of equity plus the book value of assets minus the book value of equity, all divided by the book value of assets. CPS is the ratio of CEO total compensation to the sum of all top executives' total compensation, and is expressed as decimals here. Total compensation is data item TDC1 from ExecuComp. The industry adjustment in CPS is made at the four-digit SIC level. Eindex is the entrenchment index of Bebchuk and Cohen (2004). Log book value is the log of the book value of assets. Insider ownership is the fraction of shares held by insiders as reported by ExecuComp. ROA is the return on assets computed as net income divided by book value of assets. Capex/Assets is the ratio of capital expenditures to assets. Leverage is the long-term debt to assets. R&D is the ratio of R&D to sales. If R&D is missing, it is set to zero and the dummy variable R&D missing is set to one. Company age is computed as the current year minus the year in which the company was first listed on CRSP. Column 7 includes two additional variables. CEOChair is a dummy equal to one if the CEO is also the Chairman and zero otherwise. CEO is only director is a dummy equal to one if none of the other top four executives is on the Board, and zero otherwise. The sample size is smaller for data availability reasons related to the Board memberships of the other top executives. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

Dependent Variable:				Industry-adjusted Tobin's Q			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CPS	-0.256				-0.246		-0.282
	(2.15)*				(2.28)*		(1.75)$
CPS, t-1		-0.475				-0.431	
		(3.23)**				(4.07)**	
Ind-adj CPS			-0.108				
			(1.72)$				
Ind-adj CPS, t-1				-0.344			
				(2.29)*			
Eindex	-0.099	-0.097	-0.099	-0.098	-0.093	-0.086	-0.099
	(6.19)**	(5.87)**	(6.23)**	(5.94)**	(9.26)**	(7.67)**	(4.75)**
Log book value	-0.045	-0.038	-0.045	-0.038	-0.040	-0.031	-0.019
	(3.06)**	(2.41)*	(3.06)**	(2.42)*	(4.39)**	(2.78)**	(0.91)
Insider Ownership	0.592		0.632		1.270		0.807
	(0.97)		(1.04)		(3.17)**		(1.11)
Insider Ownership2	-2.267		-2.319		-3.899		-3.395
	(1.84)$		(1.87)$		(4.56)**		(2.13)*
Insider Ownership, t-1		0.413		0.454		0.839	
		(0.63)		(0.69)		(2.75)**	
Insider Ownership2, t-1		-2.113		-2.157		-2.528	
		(1.65)$		(1.68)$		(3.68)**	
ROA, t	3.759	4.089	3.743	4.074	4.565	5.159	4.568
	(11.83)**	(10.95)**	(11.80)**	(10.92)**	(14.81)**	(13.63)**	(10.75)**
Capex/assets	0.003	0.006	0.003	0.006	0.041	0.056	0.004
	(1.22)	(1.37)	(1.26)	(1.38)	(1.54)	(1.18)	(1.46)
Leverage	-0.715	-0.739	-0.722	-0.750	-0.615	-0.610	-0.941
	(3.95)**	(3.76)**	(3.99)**	(3.81)**	(6.38)**	(4.04)**	(3.89)**
R&D	0.027	0.017	0.027	0.017	0.301	0.403	0.297
	(8.85)**	(2.74)**	(8.54)**	(2.72)**	(3.29)**	(4.26)**	(3.82)**
R&D missing dum	-0.190	-0.192	-0.190	-0.193	-0.149	-0.134	-0.212
	(4.50)**	(4.39)**	(4.50)**	(4.39)**	(3.33)**	(2.87)**	(3.26)**
Company age	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(2.29)*	(2.36)*	(2.34)*	(2.43)*	(5.40)**	(3.07)**	(1.72)$
CEOChair dum							-0.007
							(0.17)
CEO only Dir dum							-0.013
							(0.23)
Constant	0.977	0.991	0.889	0.830			0.798
	(7.86)**	(7.43)**	(7.66)**	(6.65)**			(5.16)**
Year Dummies	Yes	Yes	Yes	Yes	No	No	Yes
Observations	12,011	8,661	12,011	8,661	12	11	8771
R-squared	0.18	0.19	0.18	0.19			0.21

TABLE 4: TOBIN'S Q AND CPS WITH ADDITIONAL CONTROL VARIABLES

This table presents OLS regressions with standard errors clustered at the firm level. The dependent variable is the four-digit SIC industry-adjusted Tobin's Q. Gini Top 5 is the gini coefficient of the top 5 executives, including the CEO, while Gini Top 4 is the gini coefficient of the top team excluding the CEO. Founder CEO is a dummy equal to 1 if the current CEO has been the CEO of the firm 5 years prior to its going public (where the date of going public is assumed to be the first date with CRSP returns). CEO ownership >= 20% is a dummy equal to one if the CEO stock ownership is larger than 20% of the shares outstanding and zero otherwise. CEO tenure dummies relating to the number of years the CEO is in office are equal to one (from ExecuComp). Abnormal total compensation is the residual of regressing log (total compensation to the top five executives) on a constant and log (book value of assets), with year and industry fixed effects. Relative equity compensation is defined as EBC/TDC1 of CEO divided by average EBC/TDC1 of other 4, where EBC is equity based compensation defined as restricted shares granted and the Black-Scholes value of options granted (winzorized at the 1 and 99 percentiles). Diversified is a dummy equal to one if the firm reports more than one industry segment on Compustat's segment database. See Table 3 for a description of the other variables. Included in the regression, but not displayed, for brevity, are the following variables: Constant, Eindex, Log book value, Insider ownership, ROA, Capex/Assets, R&D, R&D missing dummy, Company age, and Year dummies. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

Dependent Variable:	Industry-adjusted Tobin's Q			
	(1)	(2)	(3)	(4)
CPS	-0.657		-0.246	
	(3.52)**		(1.82)$	
CPS, t-1		-0.444		-0.423
		(2.68)**		(3.09)**
Gini Top 5	0.431			
	(2.53)*			
Gini Top 5, t-1		0.01		
		(0.06)		
Gini Top 4			0.18	
			(2.07)*	
Gini Top 4, t-1				-0.095
				(1.01)
Founder CEO	0.008	0.001	-0.006	-0.015
	(0.11)	(0.02)	(0.08)	(0.22)
CEO ownership>=20%	-0.077	-0.064	-0.041	-0.033
	(0.67)	(0.54)	(0.37)	(0.30)
CEO Tenure =1	-0.116	-0.123	-0.089	-0.108
	(2.46)*	(2.49)*	(1.91)$	(2.31)*
CEO Tenure =2	0.012	-0.001	0.018	0.012
	(0.28)	(0.03)	(0.43)	(0.3)
CEO Tenure =3 or 4	0.002	-0.002	0.009	0.005
	(0.04)	(0.05)	(0.23)	(0.11)
CEO Tenure =5 or 6	-0.017	-0.014	-0.012	-0.013
	(0.39)	(0.33)	(0.28)	(0.31)
CEO Tenure missing	-0.195	-0.228	-0.222	-0.244
	(1.96)$	(2.29)*	(2.31)*	(2.53)*
Abnormal total compensation	0.332	0.363	0.325	0.355
	(10.22)**	(9.78)**	(10.39)**	(10.18)**
Relative equity compensation	-0.03	-0.045	-0.035	-0.046
	(1.48)	(2.40)*	(1.70)$	(2.46)*
Diversified	-0.242	-0.245	-0.209	-0.217
	(5.73)**	(5.84)**	(5.22)**	(5.40)**
Additional Control Variables	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	12,011	8,661	12,011	8,661

R-squared	0.26	0.26	0.27	0.26

TABLE 5: DETERMINANTS OF CPS

The table shows regressions with CPS being the dependent variable. The first regression is an industry fixed effect regression with year dummies, the second is a Tobit regression with industry and year dummies, where the industry is defined at the 2-digit SIC level. Standard errors are clustered at the industry level for (1) and at the firm level for (2). See the previous Tables for a description of the variables. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

Dependent Variable:	CPS	
	(1)	(2)
CEOChair dum	0.017	0.018
	(5.33)**	(5.46)**
CEO only dir	0.023	0.022
	(8.08)**	(7.94)**
Eindex	0.003	0.003
	(2.60)**	(2.68)**
Log book value	0.003	0.003
	(2.66)**	(2.71)**
Insider Ownership, t-1	-0.223	-0.223
	(5.16)**	(5.19)**
Insider Ownership2, t-1	0.244	0.239
	(2.60)**	(2.56)*
ROA, t	0.128	0.124
	(7.99)**	(7.76)**
Capex/assets	-0.001	-0.001
	(1.31)	(1.26)
Leverage	0.020	0.020
	(2.11)*	(2.11)*
R&D	-0.002	-0.001
	(0.70)	(0.56)
R&D missing dum	0.006	0.006
	(1.56)	(1.62)
Company age	0.000	0.000
	(1.82)$	(1.73)$
Founder CEO	-0.005	-0.005
	(1.26)	(1.29)
CEO ownership>=20%	0.020	0.020
	(2.81)**	(2.85)**
CEO Tenure =1	-0.010	-0.010
	(1.81)$	(1.87)$
CEO Tenure =2	-0.005	-0.005
	(1.09)	(1.17)
CEO Tenure =3 or 4	-0.000	-0.001
	(0.11)	(0.19)
CEO Tenure =5 or 6	-0.001	-0.001
	(0.34)	(0.35)
CEO Tenure missing	0.011	0.010
	(1.69)$	(1.68)$
Abnormal total compensation	-0.006	-0.006
	(3.09)**	(3.02)**
Relative equity compensation	0.057	0.058
	(31.68)**	(31.96)**
Diversified	-0.006	-0.006
	(1.98)*	(2.13)*
Observations	6782	6782
R-squared	0.17	

TABLE 6: TOBIN'S Q AND THE PREDICTED AND RESIDUAL PART OF CPS

The table shows OLS regressions with year dummies and standard errors clustered at the firm level. Residual (predicted) is the residual (predicted) value from regression (1) in Table 5. Regression 3 and 4 include lagged values of the residual and predicted variables and the sample is constrained to firms where the CEO is the same in both years. Other variables are defined as in Table 3. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

Dependent Variable:		Industry-adjusted Tobin's Q		
	(1)	(2)	(3)	(4)
Residual CPS	-0.285	-0.286		
	(2.28)*	(2.29)*		
Predicted CPS		0.356		
		(0.51)		
Residual CPS, t-1			-0.514	-0.517
			(3.57)**	(3.59)**
Predicted CPS, t-1				0.197
				(0.72)
Eindex	-0.112	-0.114	-0.125	-0.133
	(10.09)**	(9.87)**	(9.69)**	(10.06)**
Log book value	-0.010	-0.011	-0.007	-0.014
	(1.02)	(1.10)	(0.66)	(1.20)
Insider Ownership	0.827	0.942		
	(1.78)$	(1.83)$		
Insider Ownership2	-3.119	-3.313		
	(2.83)**	(2.84)**		
Insider Ownership, t-1			0.279	0.908
			(0.53)	(1.59)
Insider Ownership2, t-1			-2.104	-3.143
			(1.74)$	(2.48)*
ROA, t	5.124	5.084	4.506	4.376
	(31.40)**	(28.16)**	(25.29)**	(23.73)**
Capex/assets	0.002	0.002	0.023	0.020
	(0.30)	(0.30)	(0.64)	(0.58)
Leverage	-0.910	-0.917	-1.008	-1.028
	(10.05)**	(10.02)**	(9.77)**	(9.95)**
R&D	0.316	0.316	0.009	0.010
	(12.41)**	(12.41)**	(2.61)**	(2.67)**
R&D missing dum	-0.230	-0.230	-0.276	-0.276
	(7.97)**	(7.97)**	(8.45)**	(8.46)**
Company age	-0.004	-0.004	-0.004	-0.005
	(5.69)**	(5.70)**	(5.10)**	(5.15)**
Constant	0.909	0.790	1.048	0.387
	(11.99)**	(3.23)**	(12.00)**	(1.50)
Year dummies	Yes	Yes	Yes	Yes
Observations	5776	5776	4594	4594
R-squared	0.23	0.23	0.21	0.21

TABLE 7: TOBIN'S Q AND CPS CONTROLLING FOR LAGGED TOBIN'S Q

This table presents OLS regressions in columns 1-4 and 7, and Fama-MacBeth type regressions in columns 5 and 6. In the OLS regressions, standard errors are clustered at the firm level. The dependent variable is the four-digit SIC industry-adjusted Tobin's Q. Tobin's Q is defined as the market value of equity plus the book value of assets minus the book value of equity, all divided by the book value of assets. CPS is the ratio of CEO total compensation to the sum of all top executives' total compensation, and is expressed as decimals here. Total compensation is data item TDC1 from ExecuComp. The industry adjustment in CPS and Tobin's Q are made at the four-digit SIC level. For additional variable definitions see table 3. Included in the regression, but not displayed, for brevity, are the following variables: Eindex, Log book value, Insider ownership, ROA, Capex/Assets, R&D, R&D missing dummy, Company age, and Year dummies (except in regressions 5 and 6). $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

Dependent Variable: Industry-adjusted Tobin's Q							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CPS	-0.236				-0.191		-0.243
	(3.43)**				(2.66)**		(3.01)**
CPS, t-1		-0.255					
		(2.43)*				-0.190	
Ind-adj CPS			-0.194			(2.08)*	
			(2.72)**				
Ind-adj CPS, t-1				-0.219			
				(2.02)*			
Ind-adj Tobin's Q, t-1	0.554		0.554		0.668		0.529
	(13.65)**		(13.65)**		(13.22)**		(11.97)**
Ind-adj Tobin's Q, t-2		0.393		0.393		0.521	
		(9.53)**		(9.54)**		(10.93)**	
CeoChair dum							0.001
							(0.03)
CEO only Dir dum							-0.021
							(0.98)
Constant	0.352	0.338	0.272	0.252			0.324
	(4.56)**	(3.02)**	(3.92)**	(2.50)*			(3.89)**
Additional Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	No	No	Yes
Observations	10793	7437	10793	7437	12	11	8317
R-squared	0.60	0.45	0.60	0.45			0.61

TABLE 8: DOES LOW TOBIN'S Q LEAD TO INCREASES IN CPS?

The table shows average values and p-values of differences for a sample of 1,326 firms where the CEO changed during our sample period. The year of the CEO change is denoted by time t. The three variables of interest are the CPS of the new CEO in his/her first full year in charge (t+1), conditional on the CEO being in office for the full year. The second variable subtracts the industry median CPS of surviving CEOs in year t+1 from the new CEO's CPS at t+1. The industry adjustment is at the four-digit SIC level. The third variable is the change in the CPS from the former CEO to the new CEO. The former CEO's CPS is measured in year t-1, the last full year in office, conditional on the CEO being in charge for the full year. The averages of these variables are displayed for subsamples. The first sample split is at Tobin's Q in year t, the second is at the industry-adjusted Tobin's Q in year t.

	CPS t+1	Ind-adj CPS t+1	Change in CPS t-1 to t+1	Obs
TQ>=1	33.48	-0.21	4.01	1,124
TQ<1	34.44	0.76	5.94	202
p-value difference	0.26	0.26	0.11	
Ind-adj TQ>=0	33.56	-0.16	4.21	725
Ind-adj TQ<0	33.67	0.05	4.41	601
p-value difference	0.83	0.73	0.82	

TABLE 9: DIFFERENCE-IN-DIFFERENCE AND FIRM FIXED-EFFECTS REGRESSIONS

Regression 1 and 2 are OLS regressions with standard errors clustered at the firm level and the dependent variable is the percentage change in industry-adjusted Tobin's Q from t-1 to t. The independent variable of interest is the percentage change in CPS from t-1 to t. The second regression adds the standard control variables defined in Table 3. Regressions 3-5 are firm fixed effects regressions with errors clustered at the firm level. Control variables are defined in Tables 3, 4, and 7. The sample for all regressions is limited to firms where the CEO is the same person in t-1 and t, and the Eindex is available. All regressions include year dummies but they are not tabulated for brevity. $, *, ** indicate significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	Change in Ind-adj Tobin's Q		Industry-adjusted Tobin's Q		
	(1)	(2)	(3)	(4)	(5)
Percentage Change in CPS	-0.073	-0.082			
	(2.02)*	(2.02)*			
CPS, t-1			-0.107	-0.157	-0.158
			(1.67)$	(1.80)$	(1.72)$
Eindex, t-1		0.001		0.001	0.010
		(0.05)		(0.07)	(0.50)
Log book value, t-1		0.014		-0.422	-0.414
		(1.29)		(14.60)**	(13.46)**
Insider Ownership, t-1		0.206		0.919	0.825
		(0.34)		(2.21)*	(1.90)$
Insider Ownership2, t-1		-0.291		-1.774	-1.525
		(0.18)		(2.17)*	(1.79)$
ROA, t-1		0.187		2.288	2.230
		(0.88)		(17.56)**	(16.55)**
Capex/assets, t-1		-0.010		0.006	0.006
		(2.34)*		(1.57)	(1.58)
Leverage, t-1		-0.152		-0.504	-0.551
		(1.35)		(4.77)**	(4.92)**
R&D, t-1		-0.024		0.003	0.003
		(1.32)		(1.79)$	(1.89)$
R&D missing dum, t-1		-0.058		-0.007	-0.021
		(1.69)$		(0.08)	(0.26)
Company age, t-1		0.001		0.003	0.005
		(0.59)		(0.31)	(0.51)
Ind-adj Tobin's Q, t-2				0.025	0.017
				(3.18)**	(2.04)*
Founder CEO					-0.024
					(0.35)
CEO ownership>=20%					-0.100
					(1.60)
CEO Tenure =1					-0.120
					(3.19)**
CEO Tenure =2					-0.044
					(1.33)
CEO Tenure =3 or 4					-0.049
					(1.73)$
CEO Tenure =5 or 6					-0.031
					(1.06)
CEO Tenure missing					-0.090
					(1.08)
Abnormal total compensation, t-1					0.060
					(3.59)**
Relative equity compensation, t-1					0.006
					(0.52)
Diversified, t-1					-0.034
					(1.07)
Constant	-0.010	-0.199			
	(0.20)	(1.77)$			
Year dummies	Yes	Yes	Yes	Yes	Yes
Fixed Effects	No	No	Firm	Firm	Firm
Observations	8,984	7,049	8,984	7,049	6,984
R-squared	0.01	0.01	0.05	0.14	0.15

TABLE 10: RELATION BETWEEN CPS AND TOBIN'S Q IN DIFFERENT SUBSAMPLES

The table shows OLS regressions with year dummies and standard errors clustered at the firm level. The dependent variable is the four-digit SIC industry-adjusted Tobin's Q. Tobin's Q is defined as the market value of equity plus the book value of assets minus the book value of equity, all divided by the book value of assets. CPS is the ratio of CEO total compensation to the sum of all top executives' total compensation, and is expressed as decimals here. Total compensation is data item TDC1 from ExecuComp. The industry adjustment in CPS and Tobin's Q are made at the four-digit SIC level. Low eindex is defined as firm with Eindex = 0 or 1. High eindex are firms with Eindex from 2 to 6. Abnormal total compensation is the residual of the following industry and year fixed effects regression: log (total compensation to the top five executives) = constant and log (book value of assets), with year and industry fixed effects. Abnormal comp other 4 is the residual of the following industry and year fixed effects regression: log (total compensation to the 4 non-CEO executives) = constant and log (book value of assets), with year and industry fixed effects. Abnormal comp pos (neg) and Abnormal comp other 4 pos (neg) are dummy variables equal to one if abnormal comp or abnormal comp other 4 is positive (negative). For additional variable definitions see table 3. Included in the regression, but not displayed, for brevity, are the following variables: Eindex, Log book value, Insider ownership, ROA, Capex/Assets, R&D, R&D missing dummy, Company age, and Year dummies. Regressions 3 and 4 (5 and 6) also include the variable Abnormal total compensation (Abnormal other 4 compensation). $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

Dependent Variable: Industry-adjusted Tobin's Q						
	(1)	(2)	(3)	(4)	(5)	(6)
Ind-adj CPS *	-0.365					
High eindex	(2.87)**					
Ind-adj CPS *	-0.031					
Low eindex	(0.14)					
Ind-adj CPS, t-1 *		-0.345				
High eindex		(2.53)*				
Ind-adj CPS, t-1 *		-0.120				
Low eindex		(0.47)				
Ind-adj CPS *			-0.393			
Abnormal comp pos			(2.46)*			
Ind-adj CPS *			-0.211			
Abnormal comp neg			(1.68)$			
Ind-adj CPS, t-1 *				-0.247		
Abnormal comp pos				(2.08)*		
Ind-adj CPS, t-1 *				-0.223		
Abnormal comp neg				(2.00)*		
Ind-adj CPS *					-0.393	
Abnormal comp other 4 pos					(2.48)*	
Ind-adj CPS *					-0.233	
Abnormal comp other 4 neg					(2.88)**	
Ind-adj CPS, t-1 *						-0.408
Abnormal comp other 4 pos						(2.65)**
Ind-adj CPS, t-1 *						-0.286
Abnormal comp other 4 neg						(2.40)*
Constant	0.888	0.871	0.927	0.925	1.031	0.831
	(7.66)**	(7.29)**	(8.33)**	(8.01)**	(7.82)**	(7.03)**
Additional Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12011	10922	12011	10907	12011	10897
R-squared	0.18	0.18	0.24	0.24	0.19	0.18

TABLE 11: CPS AND ACCOUNTING PROFITABILITY

Panel A shows OLS regression results using the industry adjusted return-on-assets (net income divided by book value of assets) as the dependent variable. The industry adjustment is made at the four-digit SIC level by subtracting the industry median ROA from the firm's ROA. The industry median ROA is based on the universe of Compustat firms in a given year. The dependent variable is winzorized at the 1% and 99% level and is expressed in percentage terms. In Panel B, the dependent variable is the industry-adjusted operating income divided by book value of asset ratio. Industry adjustment and winzorizing are done as with ROA. All regressions in panel A and B include year dummies (not shown) and standard errors are clustered at the firm level. Panel C and D show the same regression specifications as in panel A and B except that we use Fama-MacBeth type regressions instead of OLS regressions. We only report the coefficients and t-statistics of the CPS variables for brevity. $, *, ** indicate significance at the 10%, 5%, 1% level, respectively.

Panel A: OLS regressions with Industry-adjusted ROA.

Dependent Variable:			Industry-adjusted ROA (in percentage)			
	(1)	(2)	(3)	(4)	(5)	(6)
CPS	-10.469	-9.105				-11.239
	(9.42)**	(8.08)**				(9.57)**
CPS, t-1			-2.388			
			(2.00)*			
Ind-adj CPS				-9.141		
				(8.05)**		
Ind-adj CPS, t-1					-2.055	
					(1.71)$	
Eindex		0.042	0.032	0.023	0.026	0.099
		(0.30)	(0.22)	(0.17)	(0.19)	(0.67)
Log book value		0.600	0.616	0.599	0.616	0.272
		(3.98)**	(3.96)**	(3.99)**	(3.95)**	(1.80)$
Insider Ownership		13.988	17.510	13.939	17.607	15.197
		(3.18)**	(3.43)**	(3.16)**	(3.44)**	(3.23)**
Insider Ownership2		-15.596	-22.258	-15.136	-22.308	-23.730
		(1.61)	(1.78)$	(1.55)	(1.78)$	(2.23)*
Capex/assets		0.026	0.028	0.027	0.028	0.022
		(0.44)	(0.50)	(0.46)	(0.50)	(0.35)
Leverage		-11.584	-11.713	-11.774	-11.758	-11.003
		(8.03)**	(7.66)**	(8.12)**	(7.68)**	(6.74)**
R&D		-0.245	-0.196	-0.246	-0.197	-2.911
		(4.26)**	(6.76)**	(4.29)**	(6.78)**	(6.87)**
R&D missing dum		-0.943	-1.072	-0.968	-1.077	-1.573
		(2.88)**	(3.17)**	(2.96)**	(3.18)**	(4.44)**
Company age		0.010	0.009	0.008	0.009	0.013
		(1.12)	(0.98)	(0.88)	(0.92)	(1.31)
CEOChair dum						0.198
						(0.59)
CEO only dir						-0.894
						(2.94)**
Constant	5.063	1.655	-0.988	-1.424	-1.795	5.815
	(10.66)**	(1.24)	(0.71)	(1.16)	(1.41)	(4.41)**
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,011	12,011	10,936	12,011	10,936	8,775
R-squared	0.02	0.08	0.07	0.08	0.06	0.10

Panel B: OLS regressions with Industry-adjusted operating income/assets.

Dependent Variable:	Industry-adjusted Operating Income/Assets (in percentage)					
	(1)	(2)	(3)	(4)	(5)	(6)
CPS	-1.490	-2.397				-2.676
	(1.65)$	(2.58)**				(2.68)**
CPS, t-1			-1.653			
			(1.65)$			
Ind-adj CPS				-2.423		
				(2.67)**		
Ind-adj CPS, t-1					-1.608	
					(1.65)$	
Eindex		-0.176	-0.169	-0.171	-0.166	-0.138
		(1.56)	(1.47)	(1.52)	(1.44)	(1.15)
Log book value		-0.166	-0.153	-0.166	-0.152	-0.222
		(1.43)	(1.29)	(1.43)	(1.29)	(1.81)$
Insider Ownership		9.285	11.480	9.305	11.471	14.059
		(2.17)*	(2.43)*	(2.17)*	(2.43)*	(3.11)**
Insider Ownership2		-19.299	-27.027	-19.430	-27.088	-33.774
		(2.17)*	(2.48)*	(2.18)*	(2.49)*	(3.70)**
Capex/assets		0.044	0.037	0.043	0.036	0.032
		(0.93)	(0.85)	(0.92)	(0.84)	(0.82)
Leverage		-4.099	-4.049	-4.048	-4.016	-4.536
		(3.48)**	(3.30)**	(3.45)**	(3.28)**	(3.40)**
R&D		0.086	0.069	0.087	0.069	0.926
		(4.85)**	(9.90)**	(4.87)**	(9.98)**	(4.80)**
R&D missing dum		0.021	0.023	0.027	0.027	0.056
		(0.07)	(0.08)	(0.09)	(0.09)	(0.18)
Company age		-0.009	-0.008	-0.008	-0.008	-0.005
		(1.05)	(0.96)	(0.97)	(0.91)	(0.58)
CEOChair dum						0.410
						(1.36)
CEO only dir						-0.535
						(2.03)*
Constant	0.306	2.230	2.288	3.041	2.846	2.641
	(0.77)	(2.26)*	(2.30)*	(3.25)**	(2.98)**	(2.51)*
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,011	11,875	10,814	11,875	10,814	8,694
R-squared	0.00	0.02	0.02	0.02	0.02	0.03

Panel C: Fama-MacBeth Type Regressions (only CPS coefficients reported)

Dependent Variable:	Industry-adjusted ROA (in percentage)					
	(1)	(2)	(3)	(4)	(5)	(6)
CPS, t	-11.328	-10.192				-11.588
	(8.936)**	(6.854)**				(12.369)**
CPS, t-1			-4.959			
			(3.291)**			
Ind-adj CPS, t				-9.948		
				(7.155)**		
Ind-adj CPS, t-1					-4.556	
					(3.365)**	
Additional Controls	yes	yes	yes	yes	yes	yes
Observations	12	12	11	12	11	9

Panel D: Fama-MacBeth Type Regressions (only CPS coefficients reported)

Dependent Variable:	Industry-adjusted Operating Income / Assets (in percentage)					
	(1)	(2)	(3)	(4)	(5)	(6)
CPS, t	-1.253	-2.164				-2.505
	(1.58)	(2.58)**				(3.11)**
CPS, t-1			-1.70			
			(2.20)*			
Ind-adj CPS, t				-2.301		
				(2.71)**		
Ind-adj CPS, t-1					-1.880	
					(2.36)*	
Additional Controls	yes	yes	yes	yes	yes	yes
Observations	12	12	11	12	11	9

TABLE 12: CPS AND ACQUIRER RETURNS

The sample consists of 1,241 takeover announcement events from the sample of Masulis, Wang, and Xie (2007). The dependent variable is the cumulative abnormal announcement return of the bidder in the eleven days around the announcement (CAR[-5,+5]) in regressions 1, 2 and 5, and a dummy equal to one if the CAR is negative in regressions 3 and 4. Regressions 1 and 2 (3 and 4) are OLS (logit) regressions with robust standard errors and errors clustered at the firm level. Absolute values of t-statistics are in parentheses. CPS is the ratio of CEO to the sum of all top executives' compensation. CPS is based on total compensation as measured by data item TDC1 from ExecuComp containing salary, bonus, other annual compensation, total value of restricted stock granted, Black-Scholes value of stock options granted, long-term incentive payouts, and all other total incentive compensation. G-index is the governance index of Gompers, et al. (2003). E-index is the entrenchment index of Bebchuk et al (2004). 'Fraction Blockowners' is the fraction of the shares outstanding owned by institutional blockholders. Log book value bidder is the book value of the bidder at the end of the fiscal year prior to the takeover. Relative deal size is the ratio of the deal value (from SDC) to the market value of equity of the bidder at the fiscal year end prior to the takeover. Tobin's Q is the market-to-book ratio of the bidder at the fiscal year end prior to the takeover. Leverage is the ratio of book value of long-term debt to assets. Herfindahl is based on sales of firms in the same four-digit SIC industry. Run-up is the cumulative stock return in the year prior to the takeover. 'High tech industry dummy' is equal to 1 if the firm operates in an industry with four-digit SIC code of 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, 7372, or 7373. Cash used (stock only) dummy is equal to one if the bidder pays at least a part in cash (all in equity). The status of the target is private, public or subsidiary indicated by the respected dummy variables. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively. Year dummies and a constant are included but omitted to save space. Column 5 includes two additional variables. CEOChair is a dummy equal to one if the CEO is also the Chairman and zero otherwise. CEO is only director is a dummy equal to one if none of the other top four executives is on the board, and zero otherwise. The sample size is smaller for data availability reasons related to the board memberships of the other top executives. The r-squared reported for the logit regression is a pseudo r-square.

Dependent Variable:	CAR [-5,+5]		Dummy=1 if CAR Negative		CAR [-5,+5]
	(1)	(2)	(3)	(4)	(5)
CPS (Bidder)	-2.386	-2.359	1.145	1.143	-3.503
	(1.74)$	(1.70)$	(2.21)*	(2.18)*	(1.92)$
Eindex (Bidder)	-0.497		0.098		-0.397
	(4.14)**		(2.19)*		(2.71)**
Gindex (Bidder)		-0.180		0.029	
		(2.77)**		(1.30)	
Fraction Blockholders (Bidder)	0.025	0.028	-0.013	-0.014	0.017
	(0.97)	(1.08)	(1.20)	(1.28)	(0.44)
Log book value (Bidder)	-0.270	-0.238	0.073	0.067	-0.293
	(2.36)*	(2.10)*	(1.70)$	(1.57)	(1.98)**
Relative Deal Size	-0.770	-0.786	0.244	0.246	-0.471
	(0.62)	(0.62)	(0.80)	(0.80)	(0.28)
Tobin's Q (Bidder)	-0.019	0.017	-0.008	-0.016	-0.040
	(0.12)	(0.11)	(0.18)	(0.37)	(0.22)
Leverage (Bidder)	2.189	2.141	-0.162	-0.143	2.897
	(1.67)$	(1.63)	(0.35)	(0.31)	(1.69)$
Herfindahl (Bidder)	5.311	5.950	-2.163	-2.295	5.675
	(1.96)$	(2.13)*	(1.65)$	(1.74)$	(1.59)
Run-up (Bidder)	-1.375	-1.387	0.200	0.199	-1.430
	(2.29)*	(2.33)*	(1.30)	(1.32)	(2.14)*
High tech dummy (Bidder)	-1.058	-0.989	0.226	0.206	-1.239
	(1.67)$	(1.56)	(1.34)	(1.21)	(1.68)$
Cash Used dummy	0.005	0.006	-0.000	-0.000	0.009
	(1.11)	(1.19)	(0.16)	(0.20)	(1.49)
Stock Only dummy	-0.906	-0.896	0.510	0.504	-0.719
	(1.80)$	(1.76)$	(2.85)**	(2.81)**	(1.07)
Private (Target)	1.723	1.262	-0.389	-0.290	1.839
	(0.46)	(0.31)	(0.25)	(0.18)	(0.47)
Subsidiary (Target)	2.311	1.894	-0.572	-0.481	2.535
	(0.62)	(0.46)	(0.37)	(0.30)	(0.66)
Public (Target)	0.262	-0.212	-0.027	0.076	0.078
	(0.07)	(0.05)	(0.02)	(0.05)	(0.02)
CEOChair dum					0.615
					(1.07)
CEO only Dir dum					0.299
					(0.70)
Constant	3.101	3.750	-0.969	-1.041	-0.493
	(0.78)	(0.85)	(0.61)	(0.61)	(0.12)
Observations	1241	1241	1241	1241	857
R-squared	0.10	0.09	0.05	0.05	0.11

TABLE 13: CPS AND OPPORTUNISTIC TIMING OF OPTION GRANTS

The sample consists of 11,712 firm-year observations between 1996 and 2004. The dependent variable is a dummy equal to one if the firm has provided at least one option grant to the CEO during the year where the grant day was the day with the lowest stock price of the month. Option grant information is from Thompson Financial's insider trading database. For details on the definition of the variable and the sample, see Bebchuk et al. (2007). The independent variables are: CPS, the ratio of CEO to the sum of all top executives' compensation. CPS is based on total compensation as measured by data item TDC1 from ExecuComp containing salary, bonus, other annual compensation, total value of restricted stock granted, Black-Scholes value of stock options granted, long-term incentive payouts, and all other total incentive compensation; SOX, a dummy equal to one if the year of the option grant is after 2002; Neweconomy, is a dummy equal to 1 if the firm operates in an industry with four-digit SIC code of 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, 7372, or 7373; Insider ownership is the fraction of shares held by insiders as reported by ExecuComp; Log book value is the log of the book value of assets; Eindex is the entrenchment index of Bebchuk and Cohen (2004); Stdev Stock Return is the standard deviation of daily stock return over a calendar year. The first regression is a logit regression with error clustered at the firm level. The second regression is a firm fixed-effects logit regression, the third is a CEO fixed-effects logit regression. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively. Year dummies are included but omitted to save space.

Dependent Variable:		Luckydum	
	(1)	(2)	(3)
CPS	3.607	7.244	9.259
	(15.97)**	(18.07)**	(17.69)**
SOX	-0.577	-0.160	0.025
	(10.40)**	(1.81)$	(0.23)
Neweconomy	0.333		
	(3.31)**		
Insider Ownership	1.816	1.685	-1.803
	(1.79)$	(1.00)	(0.82)
Insider Ownership2	-2.227	-1.518	6.565
	(0.94)	(0.46)	(1.37)
Log book value	0.005	0.422	0.361
	(0.27)	(4.07)**	(2.69)**
Eindex	0.020	0.059	0.072
	(0.90)	(0.80)	(0.77)
Stdev Stock Return	-0.186	-0.345	-0.393
	(5.99)**	(7.57)**	(6.87)**
Constant	-2.618		
	(11.55)**		
Observations	11712	11712	11712

TABLE 14: CPS AND COMPENSATION FOR INDUSTRY-WIDE SHOCKS

This table presents industry fixed effects regressions where standard errors are clustered at the industry level. All industry groups are defined at the four-digit SIC level. The dependent variable is the log of the CEO total compensation (data item TDC1 from ExecuComp). 'Industry Average TQ UP dum t-1 to t' is a dummy equal to one if the industry average Tobin's Q went up over the last year. 'CPS up from t-1 to t dum' is a dummy equal to one if the firm's CPS increased the previous year. 'Industry Average ROA UP dum t-1 to t' is a dummy equal to one if the industry average ROA went up over the last year. 'Small dum' is a dummy equal to one if the firm's market cap is below the median for that year. See Table 3 for the description of the remaining variables. *, ** indicate significance at 5% and 1% level, respectively.

Dependent Variable:				ln(Total Compensation)$_t$				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Industry Average TQ UP dum t-1 to t	0.043	-0.074	-0.024	-0.083				
	(2.12)*	(1.22)	(0.59)	(1.27)				
Industry Average TQ UP dum t-1 to t x CPS, t		0.338		0.402				
		(2.04)*		(2.22)*				
Industry Average TQ UP dum t-1 to t x CPS up from t-1 to t dum			0.080					
			(2.73)**					
Industry Average TQ UP dum t-1 to t x CPS, t x small dum				-0.056				
				(0.51)				
CPS, t	1.932	1.764		1.696	1.931	1.854		1.806
	(22.39)**	(14.78)**		(13.26)**	(22.38)**	(15.65)**		(14.22)**
CPS up from t-1 to t dum			0.107				0.093	
			(3.75)**				(3.32)**	
Industry Average ROA UP dum t-1 to t					0.059	0.005	0.000	0.011
					(2.95)**	(0.09)	(0.00)	(0.17)
Industry Average ROA UP dum t-1 to t x CPS, t						0.156		0.214
						(1.95)*		(2.18)*
Industry Average ROA UP dum t-1 to t x CPS up from t-1 to t dum							0.068	
							(2.33)*	
Industry Average ROA UP dum t-1 to t x CPS, t x small dum								-0.123
								(1.11)
Log book value	0.443	0.443	0.445		0.443	0.443	0.445	
	(52.18)**	(52.17)**	(51.46)**		(52.19)**	(52.19)**	(51.44)**	
Small dum				-0.940				-0.929
				(28.87)**				(28.55)**
Tobin's Q	0.186	0.187	0.191	0.191	0.188	0.187	0.193	0.192
	(23.34)**	(23.36)**	(23.30)**	(22.27)**	(23.57)**	(23.52)**	(23.58)**	(22.43)**
CeoChair dum	0.130	0.130	0.152	0.206	0.132	0.132	0.153	0.208
	(5.64)**	(5.64)**	(6.42)**	(8.37)**	(5.70)**	(5.71)**	(6.48)**	(8.43)**
Constant	3.111	3.169	3.678	6.907	3.100	3.127	3.682	6.854
	(42.94)**	(40.69)**	(52.81)**	(126.35)**	(42.73)**	(40.22)**	(53.00)**	(124.96)**
Observations	8755	8755	8400	8755	8755	8755	8400	8755
R-squared	0.33	0.33	0.31	0.23	0.33	0.33	0.31	0.23

TABLE 15: CEO TURNOVER AND CPS

The sample consists of 11,221 firm year observations with available data on CEO turnover in year t and independent variables the year prior to the turnover. The regressions shown are logit regressions with standard errors clustered at the firm level. We display the coefficients and t-statistics in brackets underneath. The dependent variable is a dummy equal to one if the CEO for firm i in year t-1 is not the same as in year t (there are 1326 turnovers). CPS is based on total compensation as measured by data item TDC1 from ExecuComp containing salary, bonus, other annual compensation, total value of restricted stock granted, Black-Scholes value of stock options granted, long-term incentive payouts, and all other total incentive compensation. The industry-adjustment is done at the four-digit SIC level per year. The tenure dummies are equal to one if a CEO has exactly that number of years of tenure. Zero is the hold out group, i.e., CEOs who in year t-1 just joined the company. Stock return, t-1 is the return over the calendar year prior to the CEO turnover. Market return is the value-weighted CRSP return. Firm specific return is the difference between the firm and the market return. Column 5 includes two additional variables. CEOChair is a dummy equal to one if the CEO is also the Chairman and zero otherwise. CEO is only director is a dummy equal to one if none of the other top four executives is on the board, and zero otherwise. The sample size is smaller for data availability reasons related to the board memberships of the other top executives. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively. Absolute values of t-statistics are in parentheses.

Dependent Variable:	CEO turnover dummy			
	(1)	(2)	(3)	(4)
Ind-adj CPS, t-1	-2.957	-2.802	-2.587	-2.916
	(6.76)**	(6.48)**	(5.41)**	(5.69)**
Stock return t-1	-0.372	-0.404		-0.209
	(3.49)**	(3.77)**		(1.66)$
Stock return, t-1 * Ind-adj CPS, t-1		1.684		
		(1.82)$		
Firm Spec. Ret., t-1			-0.397	
			(3.62)**	
Firm Spec. Ret., t-1 * Ind-adj CPS, t-1			3.833	
			(1.69)$	
Market Return, t-1			-0.424	
			(1.62)	
Market Return, t-1 * Ind-adj CPS, t-1			1.385	
			(1.43)	
Tenure = 1, t-1	7.279	7.281	7.285	7.202
	(10.04)**	(10.05)**	(10.04)**	(9.88)**
Tenure = 2, t-1	5.146	5.142	5.142	4.851
	(7.26)**	(7.25)**	(7.25)**	(6.81)**
Tenure = 3, t-1	0.069	0.069	0.070	-0.305
	(0.08)	(0.08)	(0.08)	(0.33)
Tenure = 4, t-1	-1.187	-1.193	-1.191	-1.265
	(0.97)	(0.97)	(0.97)	(1.03)
Tenure = 5, t-1	0.057	0.057	0.056	0.035
	(0.06)	(0.06)	(0.06)	(0.04)
Tenure = 6, t-1	-0.142	-0.142	-0.146	-0.151
	(0.14)	(0.14)	(0.15)	(0.15)
Tenure > 6, t-1	0.483	0.480	0.482	0.106
	(0.63)	(0.62)	(0.62)	(0.14)
CEOChair dum				-0.363
				(2.91)**
CEO only Dir dum				0.144
				(1.09)
Constant	-5.739	-5.734	-5.734	-5.318
	(8.09)**	(8.08)**	(8.10)**	(7.37)**
Observations	11221	11221	11221	8658
Pseudo R-squared	0.63	0.55	0.55	0.65

TABLE 16: CPS AND VARIABILITY OF FIRM-SPECIFIC STOCK RETURNS

Pooled panel regressions (1) using industry fixed effects and standard errors clustered by industry, (2) using firm fixed-effects and standard errors clustered by firm. The dependent variable is the absolute value of the monthly excess stock return, using the four-factor Fama-French model to compute excess returns. The sample is January 1992 to December 2005. The description of the variables is contained in tables 2 and 3. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively. Absolute values of t-statistics are in parentheses.

Dependent Variable:	Absolute Value of Monthly Excess Stock Returns	
	(1)	(2)
CPS	-0.031	-0.014
	(5.43)**	(2.44) **
Eindex	-0.002	-0.002
	(2.96)**	(1.72)$
Founder CEO	-0.002	-0.005
	(0.96)	(0.85)
CEO only exec dir dum	0.002	-0.001
	(0.10)	(0.77)
CEOchair dum	-0.005	-0.011
	(3.17)**	(6.13)**
Tenure	0.037	-0.032
	(1.62)	(0.97)
Tenure2	-0.108	-0.005
	(1.66)	(0.04)
Board Size	0.002	-0.001
	(5.98)**	(2.15)**
Log book value	-0.006	-0.007
	(5.54)**	(3.92)**
CEO ownership	0.105	0.246
	(1.80)$	(3.43)**
CEO ownership2	-0.381	-0.650
	(2.10)**	(2.32)**
Capex/Assets	0.023	0.133
	(0.49)	(2.42)**
Leverage	0.031	0.030
	(4.92)**	(3.49)**
Company age	-0.052	0.004
	(4.42)**	(0.20)
Constant	0.189	0.153
	(12.5)	(10.13)
Observations	87536	87536
R-squared	0.0363	0.0279
Regression technique:	Industry fixed-effects	Firm fixed-effects

TABLE 17: ABNORMAL RETURNS AROUND ANNOUNCEMENTS OF CPS CHANGES

We use the date of the proxy filing as the event date, where the proxy dates are from Dlugosz et al. (2006), who collect proxy dates in the years 1996-2001 for 1,916 companies. We find 4,062 firm-years with available data to compute the change in CPS from year t-1 to year t and with sufficient data available on CRSP to compute abnormal returns. We calculate the cumulative abnormal return (CAR) around the event using the market model. The event window is -10 to +10 days around the event, using a 21-day window since the proxy date and the filing date are not always the same. We weigh the observations by the inverse of the variance of the estimate of the cumulative abnormal return. CPS is based on total compensation and is expressed as a percentage. Panel A presents mean comparisons between samples that increase (top quartile) or decrease (lowest quartile) their CPS from one year to the next. Panel B reports the correlation coefficient between CPS and CAR, with the p-value in brackets. Panel C reports a weighted least squares regression where the dependent variable is CAR. The independent variables are the change in CPS from year t-1 to year t, firm size measured as the log of the book value of assets and the book-to-market ratio, both measured at t. Observations are weighed by the inverse of the variance of the estimate of the cumulative abnormal return. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively. The regression in panel C also reports the absolute value of t-statistics in parentheses.

Panel A: Mean comparisons

	Average CAR	Number of observations
For Firms increasing CPS	0.699%**	2062
For Firms decreasing CPS	1.028%**	2000
Difference (decrease-increase):	0.329%	
Top quartile change in CPS	0.531%	1015
Lowest quartile change in CPS	1.691%**	1015
Difference (lowest-top):	1.160%**	

Panel B: Correlation coefficient

Correlation between the change in CPS and CAR (p-value): -0.035 (0.02)

Panel C: Regression Analysis

Dependent Variable	CAR[-10,+10] in %	
Independent Variables:		
Change in CPS (t-1, t)	-0.0328	-0.0044
	(2.03)*	(0.21)
Change in CPS		-0.0525
* Dum(Eindex>median)		(1.86)$
Dum(Eindex>median)		-0.3907
		(1.24)
Firm Size	-0.1299	-0.1014
	(1.07)	(0.89)
Book-to-Market	0.1448	0.1514
	(1.61)	(2.02)**
Constant	1.610	1.357
	(1.79)$	(1.56)
R-squared	0.002	0.003
Observations	4062	3763