Last revised: October 2009

The CEO Pay Slice

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An earlier version of this paper was circulated as "CEO Centrality." This paper benefitted greatly from the helpful comments of Rajesh Aggarwal, Alma Cohen, Wayne Ferson, Will Goetzmann, Yaniv Grinstein, Dirk Jenter, Steve Kaplan, Felix Meschke, Kevin Murphy, Mitchell Petersen, Paul Oyer, Charu Raheja, Eric Rasmusen, Catherine Schrand, Anil Shivdasani, Anand Venkateswaran, 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, the Conference on Corporate Governance Research at Drexel University, and the NBER Corporate Finance meeting. 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.

The CEO Pay Slice

Abstract

We investigate the relationship between the CEO Pay Slice (CPS) – the fraction of the aggregate compensation of the top-five executive team captured by the CEO – and the value, performance, and behavior of public firms. The CPS may reflect the relative importance of the CEO as well as the extent to which the CEO is able to extracts rents. We find that, controlling for all standard controls, CPS is negatively associated with firm value as measured by industry-adjusted Tobin's Q. CPS also has a rich set of relations with firms' behavior and performance: in particular, CPS 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 due to positive industry-wide shocks, (v) lower performance sensitivity of CEO turnover, (vi) lower firm-specific variability of stock returns over time, and (vii) lower stock market returns accompanying the filing of proxy statements for periods where CPS increases. Taken together, our results are consistent with the hypothesis that higher CPS is associated with agency problems, and indicate that CPS can provide a useful tool for studying the performance and behavior of firms.

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.

1. INTRODUCTION

The inner workings of the top executive team, and their importance for firm performance, are hard to observe or quantify. In this paper, we aim to contribute to the subject by introducing a new measure pertaining to the relationship between the CEO and the other members of the top executive team and studying the relation between this measure and the performance and behavior of firms. Our new measure is CEO Pay Slice (CPS), which is defined as the fraction of the aggregate compensation of the firm's top-five executive team captured by the CEO. By basing CPS on compensation information from executives that are all at the same firm, we control for any firm-specific characteristics that affect the average level of compensation in the firm's top executive team.

We find that CPS has a rich set of relations with a wide range of aspects of firms' performance and behavior. In particular, higher CPS 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 findings unearth a rich set of systematic relations between CPS and the value and outcomes of firms. Taken as a whole, our results indicate that CPS can provide a useful tool for research on firm performance and behavior, and that its relationship with the value and behavior of firms is an important issue for study by financial economists.

Our investigation of the relation between CPS levels and firm outcomes and behavior has two parts. The first part examines the relation between lagged CPS and firm value as measured by industry-adjusted Tobin's Q. 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 find that the association between CPS and Q is robust to the inclusion of several factors that might affect both Q and CPS such as the CEO's tenure and status as founder or large owner, the size of the company's aggregate top-five compensation relative to peer companies, the extent to which the CEO's compensation is more incentive-based than the compensation of the other top executives, and the compensation inequality among the executives in the top team other than the CEO. We find that the identified negative correlation between CPS and Tobin's Q is robust to the addition of all of these controls as well as to controlling for lagged Q, adding firm fixed effects, and trying to incorporate the endogenous choice of CPS. The negative association between CPS and Q exists both

among firms whose aggregate top-five compensation is higher and for those where it is lower than their peers. The negative association between Q and CPS is further concentrated among firms whose boards are entrenched (using measures of shareholder rights as in Gompers, Ishii and Metrick (2003) and Bebchuk, Cohen and Ferrell (2009)).

In the second part of our analysis, we examine how CPS is associated with seven other dimensions of company behavior and performance, including ones that are commonly viewed as reflecting governance problems. These tests help to understand why CPS and firm value might be negatively related.

First, CPS is negatively correlated with accounting profitability. Firms with high CPS tend to have a lower industry-adjusted operating income to assets ratio.

Second, high-CPS firms tend to make worse acquisition decisions as judged by the market's reaction to their acquisition announcements, using the dataset of Masulis, Wang, and Xie (2007). 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 grants. High CPS is associated with an 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 a CEO turnover after bad performance is lower if CPS is higher controlling for the CEO's length of service.

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).

Seventh, stock market returns accompanying the filing of proxy statements tend to be lower for periods where CPS increases.

In interpreting our rich set of results, one should keep in mind that firms might differ in their CPS levels for two reasons. First, firms might differ in their optimal (or "appropriate") CPS level, as the optimal CPS level for any given firm might depend on the CEO's relative ability and

contribution, as well as on the extent to which it is optimal for the firm to provide tournament incentives to executives. 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 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). Whether the second component exists at all depends on whether CPS is optimally selected. Under an "optimal selection" hypothesis, CPS is generally optimally selected and the second component is thus non-existent. Under an "agency/governance" hypothesis, CPS may not always be optimally chosen and CPS has a component that reflects rent-seeking and agency problems.

The negative correlation we find between CPS and Q rules out the joint hypothesis that CPS is chosen optimally to reflect the relative importance of the CEO in the top team and that firm value as measured by Q is either uncorrelated or positively correlated with the optimal CPS level. Rather, this finding has two, not mutually exclusive, explanations. One explanation is an "optimal selection" explanation: the optimal level of CPS or the relative importance of the CEO 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. This possibility calls for further study, including the development of a formal theoretical framework for studying optimal levels of CPS.

A second explanation for the negative correlation between CPS and firm performance is a "governance/agency" explanation: high excess CPS might reflect agency and governance problems, which in turn bring about the identified pattern between lower firm value and higher CPS. While the identified correlation between CPS and Tobin's Q can theoretically be fully explained by optimal selection alone, some of our other results are supportive or at least consistent with the possibility that the association between CPS and lower Q is at least partly driven by CPS reflecting governance problems. In particular, this is the case with respect to our findings that CPS is associated with opportunistic timing of CEO grants, worse acquisition decisions, more CEO luck-based pay, and

lower probability of turnover in the event of bad performance, as well as our result that the negative association between Q and CPS is concentrated among firms whose boards are entrenched.

We should stress that, even if some firms have excessive CPS levels and actual CPS levels are correlated with excess CPS levels and agency problems, this is a mere correlation and it does not imply that firms with high (observed) CPS levels have governance problems and will be made better off by reducing these levels. In some high-CPS firms, an observed high level of CPS might be optimal given the firm's circumstances and a reduction in the CPS level would make the firm worse off.

Our work is related to several bodies of literature. To begin, some recent work has shown that the fraction of the top-five compensation received by CEOs has been trending up over time (Frydman (2005), Frydman and Saks (2007), Bebchuk and Grinstein (2005), Murphy and Zabojnik (2007)). In contrast, we focus on the relations of this fraction with the performance and behavior of firms.

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 (2009), 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 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 magnitude of the announcement 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 entrenchment 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, Grinstein, and Peyer (2009)). We extend this work by showing that, controlling for other governance

provisions, firms with higher CPS are more likely to grant opportunistically timed options to the CEO.

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 show 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. [1]

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.

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. They find that more powerful CEOs are less likely to be replaced by the board but more likely to be replaced through a hostile takeover. 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 (2009) and Bertrand and Schoar (2003)). Our work seeks to highlight the importance for firm outcomes of another dimension concerning the CEO – the CPS.

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

Our analysis is organized as follows. Section 2 describes our data and presents summary statistics. Section 3 analyzes the relationship between CPS and Tobin's Q. Section 4 examines the relation between CPS and accounting profitability, abnormal acquirer returns, opportunistic timing of CEO grants, CEO luck-based pay, probability of turnover in the event of bad performance, firm-specific variability of stock returns, and abnormal returns around announcements of CPS changes. Finally, Section 5 concludes.

2. Data and Summary Statistics

2.1. The CEO Pay Slice (CPS)

The CEO Pay Slice (CPS) is defined as the percentage of the total compensation to the top five executives that goes to the CEO. In this section, we discuss our computation of CPS and give summary statistics.

We compute the 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.[2] We also compute Equity-CPS, which is based on the value of restricted stocks granted plus the Black-Scholes value of the options granted only, and Non-Equity-CPS, which is based on all compensation except the equity-based components. Both Equity-CPS and Non-Equity-CPS are the ratios of the CEO's pay over the sum of the top 5 executives' pay using the respective components of their compensation packages.

[2] In our sample period, 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). If the firm reports compensation for fewer than 5 executives (uncommon), we do not exclude the firm to ensure that CPS remains comparable across firms.

Because CPS is likely the product of many observable and unobservable 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 whether the CEO is 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.[3] 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.

2.2. Summary Statistics

Univariate statistics for the average CPS and the main variables used in this paper are shown in Panel A of 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 35% and its standard deviation equals 11.4%. For the pertinent firm characteristics, 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 sum of book value of common equity and deferred taxes, 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. Our definition of Tobin's Q is the one used by Kaplan and Zingales (1997) and subsequently also by Gompers, Ishii, and Metrick (2003).[4] Industry-adjusted ROA is the return on assets computed as operating income divided by book value of assets minus 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

[3] The rank correlation of CPS with a dummy variable for whether the CEO also chairs the board is 0.062 (significant at the 1% level) and the correlation of CPS with a dummy whether the CEO is the only executive of the firm who is a member of the board is 0.099 (significant at the 1% level). See further Table 1, Panel C. 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)).

[4] Tobin's 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 199 * item 25, or if item 199 is missing, then we use item 24 * item 25) less the sum of book value of common stock (item 60, set to zero if missing) and balance sheet deferred taxes (item 74, set to zero if missing).

where both variables are winsorized at the 1 and 99 percentile, though results are robust to not winsorizing.

The entrenchment index (Eindex) consists of 6 shareholder rights provisions in a firm's charter (Bebchuk, Cohen, and Ferrell (2009)). 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.[6] 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.

Next, we include several variables capturing CEO and top team compensation characteristics. Founder CEO is a dummy equal to one 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. CEO is Outsider is a dummy equal to one if the CEO was at the firm less than 1 year before becoming CEO.[7] Abnormal Total Compensation is the residual of the following industry[8] and year fixed-effects regression: log(total compensation to the top 5 executives combined) on a constant and log(book value of assets). 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.

Relative Equity Compensation captures the difference in pay-performance sensitivity between the CEO and other top executives, measured as the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other 4 top executives. Here, 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

[5] The Eindex is based on data from the Investor Responsibility Research Center (IRRC), 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 (not shown).

[6] Just using CEO ownership, we find very similar results in the CPS regressions in Table 2. For the Q regressions (see Tables 3 and 4), CEO ownership and its square are less significant than Insider Ownership (not shown).

[7] We use Execucomp information on "joined company" and "became CEO". A CEO is classified as an insider, if the CEO has joined the company more than a year before becoming CEO and if either one data item is missing.

[8] We report results using industry-adjustments at the 4-digit SIC level. Results are robust to using 2- or 3-digit levels (not reported).

the Black-Scholes value of options granted, and where TDC1 is the total compensation from ExecuComp. CEO Ownership >=20% is a dummy equal to one if the CEO owns a stake of at least 20%. CEO Tenure is the number of years since becoming CEO. Diversification is a dummy variable equal to one if the firm reports more than one segment on Compustat's segment database. CEO Only Director is a dummy variable equal to one if the CEO is the only executive officer on the board. Finally, Number of VPs is the number of vice Presidents among the top 5 executives using ExecuComp data.

In panel B of Table 1, we report the annual average CPS, as well the average relative compensation of the CEO compared to the top 5 executive team using only equity-based pay (Equity-CPS, i.e., based on the value of restricted stocks granted plus the Black-Scholes value of the options granted) and using only non-equity-based pay (Non-Equity-CPS, i.e. based on all compensation except the equity-based components). We find that all have been slightly trending upwards over our time period, e.g. from an average CPS equal to 34% in 1993 to an average CPS equal to 37.6% in 2004. CPS Equity-based and CPS Non-equity-based are very similar, with averages of 34.8% and 35.1%, respectively.

Panel C of Table 1 reports the rank order correlations between contemporaneous CPS, one-year lagged CPS, Equity-CPS, Non-equity-CPS, the Industry median CPS (computed as the median CPS of the same four-digit SIC industry in a given year[9]), plus a number of other variables. The correlation between contemporaneous and lagged CPS equals 44.2%, and the correlation between Equity-CPS and Non-Equity-CPS equals 25.7%. The other three variables with the higher correlations with CPS are Industry Median CPS (25%), Relative Equity Compensation (35.3%) and Number of VPs (19.2%).

In Table 2, we report CPS regressions using a pooled panel with firm and year fixed effects and standard errors clustered at the firm level. In columns 1 – 3, the dependent variable is CPS. We find CPS is positively associated with Industry Median CPS, the Number of VPs on the board, ROA, R&D expenses, Company Age, Relative Equity Compensation, and finally has a non-linear relation to insider ownership. As shown in column 2, the CEO-Chair and CEO Only Director variables are not significant. The specifications in columns 1 and 2 will later be used as first-stage regressions in a system of equations, in which we try to incorporate the endogenous choice of CPS. The four variables assumed as instruments for CPS, i.e., variables that only affect firm value through CPS but

[9] Since we are restricted to the sample of ExecuComp data to compute industry medians for CPS, we have verified that our inferences are robust to using the 48 Fama-French industries (not shown).

not directly, are Industry Median CPS, Number of VPs, CEO-Chair and CEO Only Director. The first two are clearly the most important in Table 2, while the latter two have been used by previous literature as proxies for the relative importance of the CEO (e.g., Adams, Almeida, and Ferreira (2005)).

Abnormal Total Compensation of the top 5 executive group has a negative coefficient that is marginally significant. In order to understand this further, in column 3 we decompose this variable into cases where the group is relatively highly paid (positive values) versus poorly paid (negative values). We find that the negative association between CPS and Abnormal Total Compensation is driven by firms with top teams that are relatively poorly paid. Specifically, CPS and Abnormal Total Compensation are negatively related only for firms in which the top executive team as a whole receives relatively low compensation. For firms with relatively high compensation for the top team, we find a significantly positive association. Thus, any deviation from the median total compensation seems to be related to a higher CPS. Finally, being a new CEO (tenure equal to one year) also has a negative association with CPS.

In columns 4-5, the dependent variable is Equity-CPS. In general, the same variables are significant as for CPS. The main difference is Abnormal Total Compensation, which has a positive and significant coefficient in column 4, which is driven by firms where the top 5 team is paid relatively well (see column 5). In addition, shorter tenure is associated with greater Equity-CPS, such that newer CEOs initially receive relatively more restricted stock and option grants. This may reflect the need to give them relatively stronger equity incentives in the beginning of their tenure. Finally, in column 6 the dependent variable is Non-Equity-CPS, where again the same variables are generally significant as for CPS.

3. CPS AND FIRM PERFORMANCE

3.1. How Could CPS and Firm Performance Be Expected to Correlate?

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

3.1.1. Optimal Selection Hypotheses

Consider a case in which there are no agency problems and firms therefore generally set CPS at the optimal level according to the relative importance of the CEO in the top executive team. Absent agency costs, the compensation of the top executive team is set by the board without any undue influence by the CEO. 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, depending 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.[10] 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.[11] 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 performance. 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.

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[10] 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.

[11] 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 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.

Hypothesis O2: Optimal CPS is negatively correlated with firm performance. 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 performance. 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 performance is determined by optimal selection, an empirical investigation is necessary to choose among these competing hypotheses O1-O3.

3.1.2. Governance/Agency Hypotheses

The discussion above assumed that all CPS levels are optimally set and that CPS measures the relative importance of the CEO in the top executive team. However, because choices are partly made by agents whose decisions are influenced by private interests and thus involve agency costs, some CPS choices may depart from their optimal level. Under this alternative hypothesis, CPS may reflect the extent to which a CEO's power and influence is used to push for a 'dominant player' model and an increase in CEO compensation, leading to a higher CPS than optimal for the firm. In this case, CPS would (partly) reflect rents that the CEO has been able to extract by influencing the pay-setting process to allocate a larger slice of the aggregate compensation of the top executive to himself/herself.[12]

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 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., Tobin's Q) can produce a correlation between observed CPS levels and this variable.

[12] In the management literature, there is related work on the psychology of managerial decisions that uses the pay of the CEO relative to other top executives as a measure of CEO 'self-importance' or 'narcissism.' For example, Hayward and Hambrick (1997) and Chatterjee and Hambrick (2007) use the CEO cash compensation divided by the cash compensation of the second-highest-paid officer in a small sample of firms (about 100 companies) as one among a set of indicators for CEO self-importance, and find some evidence of a negative association between CEO self-importance and firm performance.

A high level of excess CPS – that is, a substantial departure from the optimal CPS level – can be viewed as a reflection of significant governance problems. It might reflect a state of affairs in which the CEO is making significant use of the CEO's power. Accordingly, high levels of excess CPS, 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 performance.

3.1.3 Firm Performance and Endogenously-determined CPS

In this section 3, our primary empirical proxy for firm performance is the industry-adjusted 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)).

In studying the empirical association between CPS and Tobin's Q, it is critical to recognize that CPS is an endogenously determined variable which itself may be determined by factors that are also related to firm value. We try to account for this in several different ways when relating CPS to Tobin's Q, as described in the summary below:

- First, we use lagged rather than contemporaneous CPS (Table 3).[13]
- Second, we industry-adjust CPS by deducting the median CPS in each firm's industry at the four-digit SIC level in that year (Table 3).
- Third, we control for lagged Tobin's Q (Table 3).
- Fourth, we add firm fixed effects, effectively considering how changes in CPS are associated with changes in firm value (Table 3).
- Fifth, we add many additional controls that could affect the endogenous choice of CPS (see Table 4).
- Sixth, we use the 1,326 CEO changes in our sample to investigate whether we can find evidence for optimal selection, i.e., whether a low level of Tobin's Q is

[13] As we use lagged CPS, we require that the CEO remains in place the following year. The results are qualitatively similar without this constraint (not shown).

associated with an increase in the level of CPS for the new relative to the old CEO (see Table 5).

- Seventh, we introduce a system of equations to simultaneously estimate the associations between firm value and CPS, using a two-stage procedure (see Table 6). In the first stage, we use several instruments to estimate the endogenously determined CPS (see Table 2). In the second stage, we regress Tobin's Q on the firm fixed effects instrumental variable estimate of CPS.
- Eighth, we consider whether the association between Tobin's Q and lagged CPS is different in subsamples, where optimal selection and/or agency problems may differ (see Table 7).
- Ninth, and finally, to shed light upon the identified association between Tobin's Q and CPS, we investigate in the subsequent section 4 whether CPS is related to a host of other firm outcomes and behavior. These include (i) accounting profitability as measured by industry-adjusted ROA (see Table 8), (ii) acquirer stock market returns when the firm announces a takeover (see Table 9), (iii) opportunistic timing of CEO stock option grants (see Table 10), (iv) CEO compensation for industry-wide shocks (see Table 11), (v) CEO turnover (see Table 12), (vi) variability of firm-specific stock returns (see Table 13), (vii) abnormal stock returns around announcements of CPS changes (see Table 14).

In all of these settings, we discuss the extent to which the relationship between CPS and firm behavior is consistent with either of the two main hypotheses or interpretations of CPS.

3.2. The Association between CPS and Tobin's Q

In this section, we discuss our empirical results concerning the association between lagged CPS and firm performance as measured by industry-adjusted Tobin's Q.[14]

[14] Tobin's Q is the ratio of market-to-book of the firm. Specifically, we calculate Tobin's Q as (data199*data25+data6-data60-data74)/data6, where data199 is the stock price at the end of the fiscal year, data25 is the number of shares outstanding, data6 is the book value of total assets, data60 is the book value of equity, and data74 is the amount of deferred taxes. If data199 is missing, we use data24 instead. If data74 is missing, it is set to zero. We winsorize Q at 1%, but our main results are robust when we do not do so. The results are also robust to using [ln(TQ) - ln(industry median of TQ)] or ln[TQ-(industry median of TQ)], and when we remove the "bubble years" of 1999 and 2000. An alternative specification of our regressions, with log TQ as the dependent variable and SIC codes as industry fixed effects, yields similar results throughout.

Our regressions include the standard controls used in the 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 (2009).

The results, displayed in Table 3, indicate that higher CPS has a strong association with lower firm value. All standard errors are clustered at the firm level to account for correlations within firm observations. The first two regressions employ pooled panel regressions with year dummies. Column 1 uses lagged CPS and lagged ownership variables, and column 2 uses lagged industry-adjusted CPS (deducting the median CPS each year of all firms with the same four-digit SIC code). The economic significance is strongest for lagged CPS: 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).

In subsequent columns, we add lagged Tobin's Q as a control, effectively considering changes in firm value. We further add six other controls that may be related to the choice of CPS under the optimal selection hypothesis. In particular, we examine whether 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:[15]

1. *Founder CEO*: Founder-CEOs may have a relative importance in the top team in ways not expressed by their annual executive compensation. In addition, 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.
2. *Abnormal Total Compensation*: CPS might be 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

Using the Fama-French classification of 48 industry groups, rather than four-digit SIC codes, yields similar results throughout (not shown).

[15] In addition, we also tried using both lagged Equity-CPS and lagged Non-Equity-CPS in the Tobin's Q regressions, and find that for both there is a negative and significant coefficient, whereas the coefficient on Non-Equity-CPS tends to be more negative (or larger in absolute value). Results are not reported to save space.

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 of the top executives other than the CEO as well as of the top-five team. 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.

3. *Relative Equity Compensation*, capturing the 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.
4. *CEO Ownership >= 20%*: CPS may be related to whether the CEO has a large ownership, whereas previous literature has identified 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.
5. *CEO Tenure*: CPS may increase with the CEO's tenure, and the CEO's tenure could be related to the firm's value. Therefore, we include dummy variables for different levels of the CEO tenure, with tenure of seven years and more being the holdout group.
6. *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.

The results in columns 3 and 4 of Table 3 indicate that the negative association between industry-adjusted Tobin's Q and lagged (industry-adjusted) CPS is robust to adding these additional controls. In both columns, the coefficient of lagged (industry-adjusted) CPS is significant at 5%, albeit with a reduced magnitude. The main effect comes from adding lagged Tobin's Q, which greatly increases the R^2 and renders many of the standard controls insignificant or much less significant than before. Most of the additional controls are not statistically significant, with the main exception being the Diversification dummy.

In columns 5 and 6, we add firm fixed effects to the specifications with the additional controls of columns 3 and 4, thus considering how changes in Tobin's Q are related to changes in lagged (industry-adjusted) CPS. The association between Q and lagged CPS remains robustly negative, though again statistical significance is reduced. While the coefficient of lagged industry-adjusted CPS is still statistically significant at 5%, the coefficient for lagged CPS has a t-statistic of 1.89 and a p-value of 0.059.

Finally, in columns 7 and 8 of Table 3 (without and with firm fixed effects, respectively), we test whether the documented negative relation between lagged 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. (2005) as proxies for CEO-versus-group decision making. Including these two variables reduces the sample size since they are only available from 1996 onwards. CPS remains negatively and strongly associated with Tobin's Q even after controlling for these two additional variables, while neither of these two additional variables is significantly related to Tobin's Q.

Thus, the negative correlation between Tobin's Q and lagged CPS is robust to controlling for lagged Tobin's Q and for many other additional factors introduced in this subsection. It is also robust to adding firm fixed effects. In the most extensive specification with firm fixed effects, column 8 in Table 3, the coefficient of lagged CPS equals -0.228 with a t-statistic of 2.3. That means that the economic significance of a one standard deviation change in the value of CPS is associated with a reduction in next year's Tobin's Q of about 2.7% (= 11.73% x -0.228).[16]

The recent study of Kale, Reis and Venkateswaran (2009) finds a positive contemporaneous association between Tobin's Q and another measure of compensation inequality in the top executive team, "Gini Top 5," which is defined as the Gini coefficient for the top five executives including the CEO. A higher Gini Top 5 is viewed by Kale et al. (2009) as reflecting greater inequality and thus stronger tournament incentives. Because Gini Top 5 is naturally positively correlated with CPS, it is worth investigating the robustness of our result to including lagged Gini Top 5, and more generally to reconcile our respective results.

Gini Top 5 is a product of both (i) the extent to which the CEO's compensation differs from the average compensation of the other members of the top executive team – a factor captured by

[16] In addition, all results in Table 3 are robust to excluding firm-year observations with a founder CEO or where the CEO holds at least 20% equity ownership.

CPS, and (ii) the extent to which compensation is unequal among these other members of the team. To separately capture factor (ii), we use the variable "Gini Other 4," which is defined as the Gini coefficient for the four executives in the top team other than the CEO. Gini Top 5, which is defined as the Gini coefficient for the top five executives including the CEO, is positively correlated with CPS and "Gini Other 4." When compensation among the four top executives other than the CEO is equal, CPS and Gini Top 5 would give an identical rank ordering. And across firms with identical CPS, differences in Gini Top 5 are driven by differences in Gini Other 4. Empirically, the correlation between CPS and Gini Top 5 (Gini Top 4) is 62% (-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 slightly lower Gini Top 4 average indicates that the compensation of the top 4 non-CEO executives is a bit more equal relative to the top 5 executives including the CEO.

Table 4 presents Q regressions to which the Gini variables are added. In column 1, we include both lagged CPS and lagged Gini Top 5, and find that both are significant with a negative coefficient for CPS and a positive coefficient for Gini Top 5. However, once the additional controls from Table 3 plus firm fixed effects are added in column 2, lagged Gini Top 5 is only significant at the 10% level, while CPS gains significance relative to column 5 in Table 3.[17] Thus, the negative correlation between CPS and Q is robust to the inclusion of Gini Top 5.

How does one reconcile the negative correlation between Q and CPS with the positive correlation between Q and Gini Top 5? In column 3 and 4 of Table 4, we use lagged Gini Other 4 in conjunction with lagged CPS, with firm fixed effects used in column 4 but not in column 3. In both regressions, lagged CPS remains negative and significant, which reinforces the conclusion that, putting aside how compensation is distributed among the other four, inequality between the compensation of the CEO and the compensation of the other four is negatively correlated with Q. At the same time, Gini Other 4 is positive in both regressions, though it is significant only in the regression of column 3. Thus, to the extent that a positive correlation between Q and Gini Top 5 exists, it seems to be driven by a positive correlation between Gini Other 4 and Q. The relationship between Gini Other 4 and firm performance and behavior might be a worthwhile subject for future research.

3.3. Optimal Selection and Firm Value: CEO Changes and a System of Equations

[17] Kale, Reis and Venkateswaran (2009) use contemporaneous specifications and find a positive correlation between Gini and firm value. Our finding that lagged Gini is positively (albeit less significantly) related to firm value supports the importance of tournament incentives and suggests that CPS captures a different effect.

The negative correlation between CPS and Tobin's Q identified in the preceding subsection is inconsistent with two of the optimal selection hypotheses discussed in subsection 3.1. In particular, our findings are inconsistent with the hypothesis that firms' optimal CPS levels are positively correlated with firm value (hypothesis O1) or 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. 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 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.

Table 5 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.[18]

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 support the hypothesis that the identified

[18] 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.

negative correlation between CPS and Q can be explained by a tendency of low-value firms to provide new CEOs with relatively high levels of CPS.[19]

Another way to investigate the optimal selection hypothesis is by specifying a system of equations to explicitly estimate the association between endogenously determined lagged CPS and Tobin's Q. The estimation process proceeds in two stages. In the first stage (results presented previously in columns 1 – 2 in Table 2), we use CPS as the dependent variable to estimate how it is related to various firm characteristics. Four instruments are used to identify variation in CPS that only affects Tobin's Q through CPS, include Industry Median CPS, the Number of vice presidents (VPs) on the board, a dummy whether the CEO also chairs the board and finally whether the CEO is the only director. We also add contemporaneous Tobin's Q as an explanatory variable, next to the various controls and firm fixed effects. Column 1 in Table 2 uses only the first two instrumental variables, and column 2 uses all four instruments, showing that only the first two (Industry Median CPS and the Number of VPs) are significantly related to CPS.

We use the Industry median CPS, as the optimal CPS is likely to be different across industries and the choice of industry is basically exogenous to the board. Murphy (1999) for example shows that executive compensation has important industry-wide components. The use of the number of VPs is motivated by two observations: First, Kale et al. (2009) identify this as an important determinant of tournament incentives, i.e., the more executives with an equal job title the more the tournament incentives. Second, if the number of VPs is higher, the more likely it is that the other four executives are similar which might allow the CEO to clearly differentiate himself or herself from others and thus take relatively more of the compensation.

The results of the second stage estimation of Tobin's Q on the (estimated) endogenously determined lagged CPS is presented in Table 6. We also include lagged Tobin's Q, the standard and additional controls of Table 3 and firm fixed effects.[20] The two columns correspond to the two CPS specifications in columns 1 – 2 in Table 2. The main result is that the coefficient of lagged CPS is negative and significant in both columns (t-statistic of 1.8 and 1.96, respectively), suggesting that the

[19] The findings in Table 5 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.

[20] The regressions are estimated using Stata 9's extra command 'xtivreg2' written by Schaffer (2007).

negative association between Tobin's Q and CPS is robust to incorporating the endogenous choice of CPS.[21]

3.5. 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. We run firm fixed effects regressions as in column 5 of Table 3 with additional interaction terms, but only report the interaction variables to conserve space.

3.5.1. Shareholder Rights

We first investigate whether firms with high versus low entrenchment levels, as measured by the Eindex (Bebchuk, Cohen, and Ferrell, 2009), display different sensitivities between CPS and firm value. In firms with higher entrenchment levels, the CEO and the board are relatively insulated from market discipline and the threat of removal. For those firms, the potential for agency problems in general, and departures from optimal levels of CPS in particular, may be higher.[22]

The first column of Table 7 displays the results of replacing lagged CPS with two variables to the specifications of Table 3: the interactions of lagged CPS with dummies of high versus low Eindex, where high (low) Eindex is a dummy equal to one if the firm's Eindex is above (below or equal to) the sample median's Eindex in a given year. The lower value for firms with higher CPS is driven by firms with high entrenchment as measured by the Eindex. This suggests a complementary relationship, as it is only firms with both entrenchment and high CPS that have lower firm values. 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 19% (= 11.73% x 6 x -0.273, see column 1).

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 may well be more significant, and as a result the distribution of actual CPS levels could be influenced to a greater extent by the distribution of excess CPS levels and the governance

[21] We report the results from the Sargan-Hansen test of over-identifying restrictions (see e.g. Hayashi (2000, pages 227-228, 407 and 417)), which tests the null hypothesis that the instruments are valid instruments (i.e., uncorrelated with the error term in the second stage), and that the excluded instruments are correctly excluded from the estimation second-stage regression. A rejection would cast doubt on the validity of the instruments. Using robust standard errors, this null hypothesis is not rejected for both specifications in Table 6.

[22] The level of entrenchment is endogenous as well, and will (at least partly) be driven by optimal selection.

problems they reflect. Thus, the finding reported in this subsection is consistent with the hypothesis that the negative correlation between CPS and Q is at least partly due to CPS levels including a component that reflects agency problems.

3.5.2. Quality of the Pool of Executive Candidates

We create two more subsets of firms: one where the compensation paid to the top 5 executives (including the CEO) is positive or negative, and another where the compensation to the top 4 executives (excluding the CEO) is positive or negative. Firms with relatively high compensation of the top 5 executives as a group may be in a particular challenging business environment and need to attract or retain valuable talent. Firms that pay the top executives other than the CEO more than peer companies may face a pool of executive candidates that has a different quality. 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.

Column 2 (3) of Table 7 shows the interactions of lagged CPS with dummy variables indicating whether the abnormal total compensation of the top-five (top-five team other than the CEO) executives is positive or negative. The negative association between lagged 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. However, the coefficient estimate is only significant for those firms whose abnormal total compensation is positive. This finding is consistent with the interpretation that high CPS is particularly negatively associated with firm value if total compensation to the top five executives is in excess of what comparable firms in the industry and of similar size pay. The findings in column 3 do not provide support for the hypothesis that the negative association between lagged CPS and Q is driven by the quality of the pool of executive candidates (poor bench) faced by firms with lower industry-adjusted value since both interaction terms are significant.

Finally, we investigate whether the negative relation between lagged CPS and firm value is particular to firms with outside versus inside CEOs. Research stressing the difference between firms with inside and outside CEOS include Murphy (2002) and Murphy and Zabojnik (2007). Column 4

shows that both types of firms display a negative, and at least marginally significant, association between lagged CPS and Q. This suggests that it is unlikely that our finding of a negative correlation is driven by firms where performance is bad and which have to recruit a CEO from the outside who needs to be compensated more highly. The result of this regression is consistent with our findings in Table 5 where we did not find evidence for reverse causality.

4. CPS AND COMPANY DECISIONS AND BEHAVIOR

Thus far we have focused on the relation between CPS and one measure of firm outcomes and performance – Tobin's Q. We now turn to examining whether CPS is associated with several other significant aspects of firms' decisions and behavior. This section provides a critical counterpart to the preceding section focusing the association between CPS and firm value. In particular, this section can shed light on the reasons why high-CPS firms seem to have lower value. As such, this inquiry can help in assessing whether cross-sectional differences in CPS could be at least partly due to governance/agency problems rather than just 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 firms' decisions and outcomes: accounting profitability (subsection 1); quality of acquisition decisions as judged by the stock market's reaction to their announcement (subsection 2); opportunistic timing of CEO option grants (subsection 3): rewards to the CEO in terms of compensation for luck after industry-wide positive shocks to value (subsection 4); CEO turnover (subsection 5); variability of firm-specific stock returns (subsection 6); and the stock market returns accompanying the filing of proxy statements for periods with changes in CPS (subsection 7).

4.1. Accounting Profitability and CPS

The first dimension of firm outcomes and performance we consider is that of accounting profitability. Our dependent variable is accounting profitability as proxied by ROA, defined as net income divided by the book value of assets, industry-adjusted using the median profitability of the

four-digit SIC industry in a given year using all firms in Compustat, and winsorized at the 1 and 99 percentiles. Table 8 reports pooled panel regressions using robust standard errors that are clustered at the firm level, and all specifications include year dummies.

In columns 1 and 2, we use lagged CPS and lagged industry-adjusted CPS, respectively, next to lagged Tobin's Q and the various standard controls we used in the Q regressions (see Table 3). In the third and fourth columns, we add the additional controls from Table 3 plus firm fixed effects to columns 1 and 2. Finally, in column 5, we use the instrumented lagged CPS from column 1 of Table 2 together with firm fixed effects.

In the specifications without firm fixed effects, the coefficient on lagged (industry-adjusted) CPS is negative and clearly significant throughout. The effect of CPS is also economically meaningful. For example, using the estimate in column 1, a one standard deviation increase in CPS (0.1172) is associated with a decrease of industry-adjusted ROA by 0.48% (=0.1172 * -4.094). Given the average ROA of 3.7%, the impact of a one standard deviation change in CPS corresponds to a change of about 10% of the mean value. If we include firm fixed effects, the coefficient on lagged (industry-adjusted) CPS remains negative but is only marginally significant with a t-statistic of about 1.7 in columns 3 and 4, and with a t-statistic of 1.9 in column 5.

The negative association of CPS with (industry-adjusted) accounting profitability is consistent with and reinforces our earlier finding that high CPS is associated with lower firm value as measured by Tobin's Q.

4.2. CPS 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) which 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. The Masulis et al. study finds that announcement returns for acquirers with high entrenchment levels are significantly lower, and it concludes 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).[23] The sample is based on acquisitions recorded by the Securities Data Corporation (SDC) between January 1, 1990 and 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.[24] 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 9 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

[23] 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.

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

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).

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 hypothesis that cross-sectional differences in CPS levels are at least partly due to and reflective of differences in governance/agency problems.

4.3. 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 (2009)), Heron and Lie (2009)), 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 (2009) 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 "Lucky" dummy 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 (High tech 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 10. 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.[25] 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.

4.4. CEO 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.[26] We explore in this section whether CPS is related to such rewards for luck.

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[25] In further unreported results, if we add the interaction of CPS with the SOX-dummy to Table 10, 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 and significant.

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

Table 11 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 industry-median 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 11.

Column 1 confirms the main result in Bertrand and Mullainathan (2001) that exogenous, positive performance shocks produce, on average, an increase in CEO compensation. Columns 2 – 4 show that this only seems to be the case for firms where CPS is relatively high or went up during the year of the industry Tobin's Q shock. Likewise, columns 6 – 8 show the equivalent results using industry ROA shocks. 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 which 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 6–8 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 findings are consistent with the notion that cross-sectional differences in CPS are correlated with such problems.

4.5. CPS and CEO Turnover

We have seen that firms with higher CPS have lower firm value and 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 12 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 experience turnover 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.[27]

To assess 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), 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

[27] Powers (2005) suggests computing the marginal effect (basically the local derivate at the mean of the variables) to get the correct test statistic. Doing so confirms and strengthens the significance of our results. For example, in regression 2 we find that the marginal effect is positive (0.144) with a standard error of 0.033, making it significant at the 1% level, with similar results for the other interaction variables.

(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.

4.6. CPS 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 CPS and the variability of firm-specific stock returns. On the one hand, it can be argued that CPS 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 13 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 CPS 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).[28]

4.7. 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 – 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

[28] 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 all firms in ExecuComp rather than those in the 1998 Fortune 500 only.

distribution of the proxy.[29] We assign events to groups according to the change in CPS in the event year relative to the previous year.[30]

Table 14 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 correlated with worse governance, is that increases in CPS are also correlated with other information released in firms' proxy statements that investors view unfavorably.

5. CONCLUSION

In this paper, we conduct an empirical investigation of CPS, the fraction of top-five compensation captured by the CEO. We show that CPS has a rich set of relations with the performance, value, and behavior of firms. In particular, cross-sectional differences in CPS are associated with lower Tobin's Q, lower accounting profitability, less favorable market reaction to

[29] 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).

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

acquisition announcements made by the firm, more opportunistic timing of CEO option grants, more luck-based CEO pay, less CEO turnover controlling for performance and tenure, and lower variability of firm-specific stock returns. The identified negative correlation between CPS and Tobin's Q is especially concentrated among firms with higher entrenchment levels.

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, some of our findings are consistent with the possibility that 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 CPS 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 -- could consider using CPS as a useful control or a subject of investigation. We hope that our work can provide a framework and a starting point for this line of work.

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TABLE 1: DESCRIPTIVE STATISTICS

CPS is the fraction of the total compensation (ExecuComp item TDC1) to the group of top 5 executives that is received by the CEO. Equity-CPS is the fraction received by the CEO using only restricted stock and option grants, and Non-Equity-CPS is using all other components of pay. Industry Median CPS is the median CPS in the four-digit SIC group. 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 using all Compustat firms. ROA is the return on assets computed as operating income divided by book value of assets. Eindex is the entrenchment index of Bebchuk, Cohen and Ferrell (2009). Log Book Value is the log of the book value of assets. Insider Ownership is the fraction of shares held by all insiders as reported by ExecuComp. Capex/Assets is the ratio of capital expenditures to assets. Leverage is the long-term debt to assets ratio. 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. Founder is a dummy equal to one if the CEO was already CEO when the firm first appeared on CRSP. CEO Outsider is a dummy equal to one if the CEO was working at the firm for less than one year before becoming CEO. Log Abnormal Total Compensation is the residual of a regression of total compensation of the top 5 executives on Log Book Value with industry and year fixed effects. CEO Ownership >= 20% is a dummy equal to one if the CEO holds at least 20% of outstanding shares. CEO Tenure is the number of years since becoming CEO. Diversification is a dummy variable equal to one if the firm reports more than one segment on Compustat's segment database. CEO is Chair is a dummy equal to one if the CEO is also the Chairman of the Board. CEO is only Director is a dummy variable equal to one if the CEO is the only executive officer on the board. Number of VPs is the number of vice Presidents among the top five executives. We present the number of observations, the overall sample mean and standard deviation, as well as the minimum and maximum values.

PANEL A. UNIVARIATE STATISTICS

Variable	*Obser.*	*Mean*	*Std.Dev.*	*Min*	*Max*
CPS	8,659	0.357	0.114	0	1
Equity-CPS	8,659	0.348	0.188	0	1
Non-Equity-CPS	8,659	0.351	0.100	0	1
Industry Median CPS	8,683	0.336	0.035	0.089	0.587
Industry-adjusted Tobin's Q	8,557	0.339	1.095	-1.32	5.77
Eindex	8,683	2.227	1.294	0	6
Log Book Value	8,663	7.689	1.699	0.644	13.9
Insider Ownership	8,683	0.061	0.070	0.000	0.825
Insider Ownership2	8,683	0.009	0.030	0.000	0.681
ROA	8,662	0.037	0.090	-0.475	0.238
Capex/Assets	8,662	0.183	1.997	-19.9	132
Leverage	8,647	0.196	0.164	0	1.87
R&D	8,683	0.121	4.616	0	0.31
R&D missing dummy	8,683	0.517	0.500	0	1
Company Age	8,683	25.992	18.805	0	78
Founder	8,683	0.144	0.351	0	1
CEO Outsider	8,680	0.153	0.360	0	1
Abnormal Total Compensation (Log)	8,651	-0.115	0.672	-3.84	5.03
Relative Equity Compensation	8,683	1.106	0.710	0	6
CEO Ownership >= 20%	8,683	0.045	0.206	0	1
CEO Tenure	8,139	7.736	7.172	0	52
Diversified	8,662	0.580	0.494	0	1
CEO is Chair	6,626	0.753	0.431	0	1
CEO is only Director	8,683	0.507	0.500	0	1
Number of VPs	8,683	2.577	1.273	0	4

PANEL B. TIME TRENDS OF CPS

The table displays average CPS per year and for the full sample (Obs. gives the number of firms each year), and using three different definitions of CPS. CPS is based on total executive compensation and is the ratio of CEO total compensation to the sum of all top five executives' total compensation. Total compensation is the 'TDC1' data item from ExecuComp containing salary, bonus, other annual compensation, the total value of restricted stock granted, the Black-Scholes value of stock options granted, long-term incentive payouts, and all other total incentive payouts. If more than five executives are reported for a given year, CPS is based on those five executives with the highest total compensation. Equity-CPS uses only the sum of the values of restricted stocks granted and the Black-Scholes value of the options granted. Non-Equity-CPS is based on total compensation minus equity-based compensation.

Sample	*CPS*	*Equity-CPS*	*Non-Equity-CPS*	*Obs.*
1993	0.340	0.330	0.346	233
1994	0.345	0.326	0.347	588
1995	0.347	0.331	0.347	717
1996	0.349	0.336	0.351	697
1997	0.344	0.323	0.352	631
1998	0.347	0.330	0.347	839
1999	0.352	0.347	0.348	755
2000	0.355	0.346	0.352	753
2001	0.361	0.361	0.345	723
2002	0.367	0.367	0.350	896
2003	0.375	0.372	0.358	904
2004	0.376	0.374	0.361	925
All	0.357	0.348	0.351	8,661

PANEL C. CORRELATION TABLE

The panel presents the rank correlations between contemporaneous CPS ("CPS, t") and one-year lagged CPS ("CPS, t-1"), CPS from equity-based compensation only ("Equity-CPS"), CPS from non-equity-based compensation only ("Non-equity-CPS"), the Industry median CPS computed as the median CPS of the same four-digit SIC industry in a given year, plus a number of other variables. For a description of the other variables, see the descriptions of Panels A and B of this table. The p-value, based on robust standard errors, is given between parentheses below the correlation.

	CPS, t	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) CPS, t-1	0.442	1.000														
	(0.00)															
(2) Equity-CPS,t	0.740	0.245	1.000													
	(0.00)	(0.00)														
(3) Non-Equity-CPS,t	0.704	0.470	0.257	1.000												
	(0.00)	(0.00)	(0.00)													
(4) Industry Median CPS,t	0.250	0.169	0.208	0.189	1.000											
	(0.00)	(0.00)	(0.00)	(0.00)												
(5) Industry-adjusted Tobin's Q	-0.024	-0.048	-0.042	-0.012	-0.103	1.000										
	(0.03)	(0.00)	(0.00)	(0.29)	(0.00)											
(6) Eindex	0.090	0.067	0.102	0.079	0.125	-0.139	1.000									
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)										
(7) Insider Ownership	-0.118	-0.111	-0.152	-0.085	-0.083	0.022	-0.190	1.000								
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)									
(8) Founder	-0.049	-0.032	-0.074	-0.032	-0.072	0.038	-0.074	0.184	1.000							
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
(9) CEO Outsider	-0.020	0.005	-0.048	-0.001	-0.068	0.076	-0.053	0.019	0.078	1.000						
	(0.07)	(0.67)	(0.00)	(0.90)	(0.00)	(0.00)	(0.00)	(0.08)	(0.00)							
(10) Abnormal Total Compensation	0.005	0.027	0.042	-0.024	0.040	0.255	0.054	-0.160	-0.051	0.067	1.000					
	(0.65)	(0.01)	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)						
(11) Relative Equity Compensation	0.353	0.023	0.743	-0.102	0.080	-0.053	0.051	-0.094	-0.041	-0.039	0.049	1.000				
	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)					
(12) CEO Ownership>=20%	-0.043	-0.030	-0.096	0.007	-0.065	0.014	-0.097	0.483	0.117	0.045	-0.081	-0.089	1.000			
	(0.00)	(0.00)	(0.00)	(0.49)	(0.00)	(0.18)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)				
(13) CEO Tenure	-0.006	0.027	-0.099	0.067	-0.053	0.067	-0.108	0.221	0.385	0.222	-0.011	-0.103	0.184	1.000		
	(0.61)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.31)	(0.00)	(0.00)			
(14) CEO is Chair	0.062	0.083	0.024	0.096	0.029	-0.050	0.074	0.021	0.048	0.028	0.044	-0.010	0.025	0.180	1.000	
	(0.00)	(0.00)	(0.05)	(0.00)	(0.02)	(0.00)	(0.00)	(0.09)	(0.00)	(0.02)	(0.00)	(0.41)	(0.04)	(0.00)		
(15) CEO is only Director	0.099	0.091	0.075	0.100	0.079	-0.016	0.071	-0.172	-0.099	0.040	0.001	0.010	-0.054	-0.152	-0.050	1.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.14)	(0.00)	(0.00)	(0.00)	(0.00)	(0.92)	(0.35)	(0.00)	(0.00)	(0.00)	
(16) Number of VPs	0.192	0.116	0.133	0.175	0.054	-0.009	0.051	-0.090	-0.066	0.025	-0.145	0.025	-0.024	-0.039	-0.078	0.151
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.42)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.02)	(0.03)	(0.00)	(0.00)	(0.00)

TABLE 2. CPS REGRESSIONS

Firm fixed-effects regressions with t-statistics based on robust standard errors clustered at the firm level. Each regression includes year dummy variables (not shown). The dependent variable is CPS. CPS is the ratio of CEO total compensation to the sum of all top executives' total compensation. Total compensation is data item TDC1 from ExecuComp. We limit the sample to firms with 5 or more executives listed in Execucomp and use only the top 5 executives determined by total compensation to form the denominator. We also require that the CEO is the same as last year and that last year he was in office for a full year. Industry median CPS is computed as the median CPS of the same four-digit SIC industry in a given year. The number of VPs is determined based on Execucomp data that identify the main position of the executive listed. See Table 1 for further variable descriptions. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

VARIABLES	(1) CPS	(2) CPS	(3) CPS	(4) Equity-CPS	(5) Equity-CPS	(6) Non-equity-CPS
Industry Median CPS	0.493**	0.458**	0.492**	0.402**	0.401**	0.376**
	(8.251)	(7.088)	(8.275)	(4.484)	(4.462)	(6.761)
Number of VPs	1.79**	1.86**	1.76**	2.489**	2.435**	1.305**
	(10.64)	(9.758)	(10.56)	(13.16)	(12.79)	(7.850)
CEO is Chair		0.593				
		(1.141)				
CEO is only Director		0.549				
		(1.292)				
Industry-adjusted Tobin's Q	0.387	0.173	0.408	-0.0226	0.0228	0.381
	(1.429)	(0.788)	(1.522)	(-0.0838)	(0.0841)	(1.434)
Eindex	-0.0254	-0.300	-0.0374	0.0555	0.0324	0.212
	(-0.0895)	(-0.924)	(-0.132)	(0.147)	(0.0860)	(0.766)
Log Book Value	-0.0455	0.332	0.0138	0.254	0.388	-0.787
	(-7.53)	(0.466)	(0.0227)	(0.362)	(0.551)	(-1.382)
Insider Ownership	-17.1*	-11.7	-17.2*	-8.997	-8.979	-16.97*
	(-2.275)	(-1.455)	(-2.279)	(-1.052)	(-1.049)	(-2.198)
Insider Ownership^2	28.3*	16.2	28.4*	9.962	9.895	23.12$
	(1.969)	(0.950)	(1.976)	(0.441)	(0.439)	(1.651)
ROA	5.68*	7.63**	5.55*	5.600*	5.251$	3.520$
	(2.493)	(2.982)	(2.429)	(2.077)	(1.932)	(1.660)
Capex/Assets	-0.0315	-0.0548	-0.0292	-0.00657	-1.47e-05	-0.00944
	(-0.707)	(-1.147)	(-0.660)	(-0.129)	(-0.000296)	(-0.429)
Leverage	-2.12	-2.81	-2.06	-1.938	-1.749	-2.519
	(-1.271)	(-1.300)	(-1.231)	(-0.983)	(-0.889)	(-1.539)
R&D	0.215**	-0.0657	0.218**	-0.0670	-0.0562	0.209**
	(14.54)	(-0.769)	(14.19)	(-0.283)	(-0.253)	(14.18)
R&D missing	-0.197	-1.61	-0.236	1.282	1.173	-0.482
	(-0.127)	(-1.029)	(-0.153)	(0.749)	(0.689)	(-0.343)
Company Age	0.293**	0.269**	0.288**	0.376**	0.365**	0.224**
	(3.474)	(2.833)	(3.408)	(3.544)	(3.433)	(2.872)
Founder	0.316	0.363	0.350	0.280	0.356	0.200
	(0.314)	(0.292)	(0.349)	(0.252)	(0.320)	(0.170)
Abnormal Total compensation	-0.668$	-0.736$		1.085*		-0.598$
	(-1.768)	(-1.837)		(2.425)		(-1.772)
Abnormal Total Compensation * (dum=1 if abn tot comp<0)			-2.26*		-0.377	
			(-4.064)		(-0.575)	
Abnormal Total Compensation * (dum=1 if abn tot comp>=0)			0.913*		3.111**	
			(2.020)		(4.144)	
Relative Equity Compensation	5.35**	5.38**	5.36**	18.37**	18.37**	-1.418**
	(19.93)	(17.17)	(19.96)	(35.75)	(35.94)	(-7.024)
CEO Ownership >= 20%	-0.435	0.624	-0.497	-1.804	-1.993$	0.525
	(-0.395)	(0.498)	(-0.451)	(-1.514)	(-1.679)	(0.470)

CEO Tenure =1	-1.01*	-1.28*	-1.00$	1.659**	1.668**	-1.890**
	(-1.971)	(-2.111)	(-1.953)	(2.650)	(2.658)	(-3.598)
CEO Tenure =2	-0.197	-0.328	-0.199	1.628**	1.628**	-1.090*
	(-0.416)	(-0.607)	(-0.419)	(2.809)	(2.810)	(-2.314)
CEO Tenure =3 or 4	0.0193	-0.0498	0.0172	2.045**	2.032**	-0.761$
	(0.0456)	(-0.101)	(0.0406)	(3.624)	(3.602)	(-1.869)
CEO Tenure =5 or 6	0.430	0.171	0.434	1.382**	1.383**	-0.424
	(1.160)	(0.371)	(1.172)	(2.616)	(2.615)	(-1.195)
CEO Tenure missing	0.885	0.0141	0.886	-0.347	-0.341	-0.502
	(0.697)	(0.00801)	(0.697)	(-0.271)	(-0.266)	(-0.348)
Diversified	-0.673	-0.886$	-0.674	-1.016	-1.000	-0.0891
	(-1.545)	(-1.729)	(-1.555)	(-1.588)	(-1.571)	(-0.214)
CEO is Outsider	-0.0208	-0.584	-6.46e-03	0.0988	0.156	-0.662
	(-0.0232)	(-0.542)	(-0.00725)	(0.0878)	(0.138)	(-0.734)
Observations	8,129	6,141	8,129	8,129	8,129	8,129
R-squared	0.245	0.243	0.246	0.628	0.629	0.090
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes

TABLE 3: RELATION BETWEEN TOBIN'S Q AND CPS

This table presents OLS regressions in columns 1-4 and 7, and firm fixed-effects regressions in columns 5, 6 and 8. In all 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 sum of book value of equity and deferred taxes, all divided by the book value of assets. The industry adjustment is done by subtracting the industry median Tobin's Q from the firm Tobin's Q. The dependent variable is winsorized at the 1% and 99% level. CPS is the ratio of CEO total compensation to the sum of all top executives' total compensation, and is expressed as decimals. Total compensation is data item TDC1 from ExecuComp. The industry adjustment in CPS is made at the four-digit SIC level, by taking the difference between CPS and the industry median CPS. See Table 1 for further variable descriptions. 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.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Industry-adjusted Tobin's Q				
CPS, t-1	-0.475**		-0.181*		-0.168$		-0.193*	-0.234*
	(-3.226)		(-2.527)		(-1.892)		(-2.398)	(-2.370)
Ind-adj CPS, t-1		-0.344*		-0.170*		-0.159*		
		(-2.291)		(-2.280)		(-2.181)		
Ind-adj Tobin's Q, t-1			0.767**	0.768**	0.287**	0.287**	0.758**	0.246**
			(47.92)	(47.95)	(11.11)	(11.08)	(45.10)	(9.092)
Eindex	-0.0966**	-0.0977**	-0.00441	-0.00471	0.00856	0.00842	0.00103	0.0200
	(-5.874)	(-5.944)	(-0.868)	(-0.927)	(0.459)	(0.452)	(0.162)	(0.815)
Log Book Value	-0.0379*	-0.0382*	-0.00993$	-0.00984$	-0.400**	-0.401**	-0.00547	-0.525**
	(-2.408)	(-2.425)	(-1.871)	(-1.852)	(-9.964)	(-9.927)	(-0.884)	(-8.674)
Insider Ownership	0.413	0.454	0.0739	0.0750	0.565	0.578	0.161	0.286
	(0.633)	(0.694)	(0.317)	(0.322)	(1.285)	(1.316)	(0.630)	(0.562)
Insider Ownership^2	-2.113$	-2.157$	-0.112	-0.109	-0.850	-0.872	-0.241	-0.514
	(-1.655)	(-1.681)	(-0.269)	(-0.263)	(-1.535)	(-1.569)	(-0.534)	(-0.680)
ROA, t	4.089**	4.074**	0.849**	0.844**	1.470**	1.468**	1.119**	1.976**
	(10.95)	(10.92)	(5.327)	(5.307)	(5.843)	(5.840)	(5.756)	(7.694)
Capex/Assets	0.00584	0.00587	0.000513	0.000519	0.00381	0.00376	0.00158	0.00446
	(1.374)	(1.385)	(0.142)	(0.145)	(1.368)	(1.345)	(0.396)	(1.360)
Leverage	-0.739**	-0.750**	-0.187*	-0.191*	-0.402**	-0.404**	-0.291**	-0.526**
	(-3.759)	(-3.806)	(-2.530)	(-2.569)	(-3.077)	(-3.091)	(-3.177)	(-3.383)
R&D	0.0169**	0.0168**	0.0101$	0.0101$	0.00357	0.00354	0.0190	-0.0183
	(2.745)	(2.721)	(1.715)	(1.711)	(0.621)	(0.616)	(0.325)	(-0.352)
R&D missing	-0.192**	-0.193**	-0.00269	-0.00295	0.0189	0.0199	0.00291	0.0864
	(-4.396)	(-4.388)	(-0.202)	(-0.221)	(0.293)	(0.308)	(0.186)	(0.926)
Company Age	-0.00328*	-0.00339*	0.000891*	0.000857*	0.0323**	0.0321**	0.000731$	0.0307**
	(-2.358)	(-2.427)	(2.199)	(2.110)	(6.687)	(6.654)	(1.675)	(4.795)
Founder			-0.00732	-0.00709	-0.0237	-0.0242	-0.0129	-0.0904
			(-0.338)	(-0.328)	(-0.380)	(-0.388)	(-0.517)	(-0.982)
Abnormal Total Compensation, t-1			0.0173	0.0172	0.0110	0.0123	0.0154	-0.00747
			(1.341)	(1.333)	(0.590)	(0.660)	(1.038)	(-0.319)
Relative Equity Compensation, t-1			-0.00166	-0.00175	0.00147	0.00219	-0.00765	-0.00750
			(-0.182)	(-0.192)	(0.142)	(0.212)	(-0.818)	(-0.641)
CEO Ownership >= 20%			-0.0472	-0.0469	-0.0568	-0.0567	-0.0820*	-0.0412

			(-1.225)	(-1.215)	(-1.137)	(-1.135)	(-2.013)	(-0.646)
CEO Tenure =1			-0.000833	0.000233	-0.0694*	-0.0681*	0.0109	-0.0712
			(-0.0328)	(0.00920)	(-2.084)	(-2.044)	(0.358)	(-1.593)
CEO Tenure =2			0.0139	0.0146	-0.0495	-0.0486	0.0277	-0.0346
			(0.640)	(0.674)	(-1.573)	(-1.544)	(1.016)	(-0.860)
CEO Tenure =3 or 4			-0.00193	-0.00183	-0.0467	-0.0467	0.00997	-0.0365
			(-0.0946)	(-0.0898)	(-1.414)	(-1.414)	(0.422)	(-0.911)
CEO Tenure =5 or 6			-0.0203	-0.0203	-0.0400	-0.0399	-0.00890	-0.0213
			(-1.054)	(-1.057)	(-1.489)	(-1.489)	(-0.384)	(-0.665)
CEO Tenure missing			-0.0523*	-0.0518*	-0.0610	-0.0625	-0.0511$	-0.0866
			(-2.022)	(-1.994)	(-0.821)	(-0.839)	(-1.815)	(-0.993)
Diversified			-0.0632**	-0.0641**	-0.0166	-0.0164	-0.0730**	-0.0243
			(-4.232)	(-4.298)	(-0.533)	(-0.528)	(-3.965)	(-0.654)
CEO Outsider			0.0129	0.0137	0.0267	0.0249	0.0250	0.0809
			(0.559)	(0.598)	(0.381)	(0.356)	(0.955)	(0.829)
CEO is Chair							-0.0113	-0.000404
							(-0.503)	(-0.00979)
CEO is Only Director							-0.00970	-0.0575
							(-0.536)	(-1.560)
Constant	1.013**	0.852**	0.105$	0.0437			0.293**	
	(7.227)	(6.555)	(1.724)	(0.801)			(4.470)	
Observations	8,661	8,661	8,077	8,077	8,077	8,077	6,124	6,124
R-squared	0.192	0.191	0.702	0.702	0.273	0.272	0.710	0.269
Firm Fixed Effects	No	No	No	No	Yes	Yes	No	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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

This table presents OLS regressions in columns 1 and 3, and firm fixed-effects regressions in columns 2 and 4, with t-statistics based on robust standard errors clustered at the firm level. The dependent variable is the four-digit SIC industry-adjusted Tobin's Q. The dependent variable is winsorized at the 1% and 99% level. Gini Top 5 is the gini coefficient of the top 5 executives, including the CEO, while Gini Other 4 is the gini coefficient of the top team excluding the CEO. See Table 1 for a description of the other variables. Included in the regression, but not displayed, for brevity, are the following variables: Constant (in OLS regressions), Eindex, Log book value, Insider ownership, ROA, Capex/Assets, R&D, R&D missing dummy, Company age, Diversified, CEO Outsider, CEO tenure missing, CEO tenure = 5 or 6, CEO tenure = 3 or 4, and Year dummies. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	Industry-adjusted Tobin's Q			
CPS, t-1	-0.804**	-0.173*	-0.489**	-0.148*
	(-4.757)	(-2.103)	(-3.434)	(-2.091)
Gini Top 5, t-1	0.353*	0.102$		
	(2.182)	(1.738)		
Gini Other 4, t-1			0.225*	0.0624
			(2.497)	(1.063)
TQ, t-1		0.291**		0.293**
		(10.09)		(11.43)
Eindex	-0.0948**	0.00656	-0.0944**	0.00971
	(-5.681)	(0.340)	(-5.814)	(0.522)
Log Book Value	-0.0307$	-0.423**	-0.0361*	-0.396**
	(-1.895)	(-9.702)	(-2.289)	(-9.917)
Insider Ownership, t-1	0.402	0.740	0.412	0.588
	(0.607)	(1.625)	(0.645)	(1.335)
Insider Ownership^2, t-1	-2.107$	-1.144*	-2.139$	-0.872
	(-1.673)	(-2.029)	(-1.746)	(-1.575)
ROA, t	4.197**	1.398**	4.063**	1.449**
	(10.67)	(5.386)	(10.86)	(5.713)
Capex/Assets	0.00606	0.00393$	0.00590	0.00386
	(1.385)	(1.681)	(1.363)	(1.411)
Leverage	-0.741**	-0.279*	-0.728**	-0.389**
	(-3.640)	(-2.136)	(-3.669)	(-2.952)
R&D	0.0161*	0.00226	0.0167**	0.00356
	(2.536)	(0.426)	(2.664)	(0.613)
R&D missing dummy	-0.181**	0.0203	-0.192**	0.0240
	(-4.039)	(0.284)	(-4.396)	(0.373)
Company Age	-0.00317*	0.0314**	-0.00306*	0.0319**
	(-2.214)	(6.182)	(-2.190)	(6.549)
Founder		-0.0362		-0.0278
		(-0.552)		(-0.442)
Abnormal Total Compensation, t-1		0.0194		0.00340
		(0.881)		(0.162)
Relative Equity Compensation, t-1		0.00636		0.00217
		(0.585)		(0.210)
CEO Ownership >= 20%		-0.0536		-0.0610
		(-1.057)		(-1.220)
CEO Tenure =1		-0.0706*		-0.0748*
		(-2.010)		(-2.234)
CEO Tenure =2		-0.0330		-0.0489
		(-1.031)		(-1.557)
Observations	7,828	7,300	8,580	8,004
R-squared	0.198	0.281	0.193	0.273
Firm fixed-effects	No	Yes	No	Yes
Year dummies	Yes	Yes	Yes	Yes

TABLE 5: 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	0.335	-0.21	0.040	1,124
TQ<1	0.344	0.76	0.059	202
p-value difference	(0.26)	(0.26)	(0.11)	
Ind-adj TQ>=0	0.336	-0.16	0.042	725
Ind-adj TQ<0	0.337	0.05	0.044	601
p-value difference	(0.83)	(0.73)	(0.82)	

TABLE 6: SYSTEM OF EQUATIONS OF TOBIN'S Q AND CPS

The table presents the second-stage results for a system of equations estimation, using a firm fixed effects instrumental variable regression. The first stage CPS regression equals CPS, t-1 = a + b X + c Z + u_i + e_{it}, and the results of those as used in columns (1) and (2) below are given in columns (1) and (2) of Table 2, respectively. The second stage is a Tobin's Q regression as in Table 3, column 5. The instruments in the first stage are (all measured at t-1): industry median CPS, the number of VPs in the top 5 executives, and in regression 2 also two dummy variables for CEO is also Chairman and CEO is the only director. The latter two are only available for a subset of years, thus reducing the sample size. The Hansen J statistic is a test of over-identifying restrictions, where the p-value is reported between parentheses. T-statistics are based on robust standard errors clustered at the firm level. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

	(1)	(2)
VARIABLES	Industry-adjusted Tobin's Q	
CPS, t-1 (endogenous)	-0.637$	-0.782*
	(-1.80)	(-1.960)
Ind-adj TQ, t-1	0.290**	0.244**
	(11.33)	(8.59)
Eindex	0.00885	0.0268
	(0.47)	(0.997)
Log Book Value	-0.397**	-0.534**
	(-10.12)	(-7.70)
Insider Ownership, t-1	0.461	-0.102
	(1.05)	(-0.202)
Insider Ownership^2, t-1	-0.690	-0.0250
	(-1.26)	(-0.03)
ROA	1.468**	1.912**
	(5.81)	(6.16)
Capex/Assets	0.00422	0.00818**
	(1.61)	(6.85)
Leverage	-0.394**	-0.421*
	(-2.98)	(-2.25)
R&D	0.00374	-0.00746**
	(0.67)	(-11.49)
R&D missing	0.00994	0.0842
	(0.15)	(0.82)
Company Age	0.0326**	-0.026
	(6.67)	(-1.02)
Founder	-0.0245	-0.109
	(-0.39)	(-1.10)
Abnormal Total Compensation, t-1	0.00159	-0.0232
	(0.08)	(-0.86)
Relative Equity Compensation, t-1	-0.00405	-0.00366
	(-0.37)	(-0.25)
CEO Ownership >= 20%	-0.0551	-0.0404
	(-1.11)	(-0.63)
CEO Tenure =1	-0.0788*	-0.127**
	(-2.31)	(-2.65)
CEO Tenure =2	-0.0552$	-0.0694
	(-1.75)	(-1.57)
CEO Tenure =3 or 4	-0.0469	-0.0463
	(-1.43)	(-1.05)
CEO Tenure =5 or 6	-0.0404	-0.0507
	(-1.50)	(-1.42)
CEO Tenure missing	-0.0520	-0.0538
	(-0.70)	(-0.57)
Diversified	-0.0167	-0.0215
	(-0.54)	(-0.49)
CEO Outsider	0.0378	0.113
	(0.54)	(1.11)
R^2	0.27	0.26
Observations	8,077	5,448
Hansen J statistic	1.29 (26%)	2.18 (14%)

TABLE 7: CPS AND TOBIN'S Q IN DIFFERENT SUBSAMPLES

The table shows firm fixed-effects regressions with year dummies and t-statistics based on robust 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 sum of the book value of equity and deferred taxes, all divided by the book value of assets. The dependent variable is winsorized at the 1% and 99% level. 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 compensation 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 Total Compensation Pos (Neg) and Abnormal compensation other 4 Pos (Neg) are dummy variables equal to one if Abnormal Total Compensation or Abnormal compensation other 4 is positive (negative). For additional variable definitions see Table 1. Included in the regression, but not displayed, for brevity, are the following variables: lagged industry-adjusted Tobin's Q, Eindex, Log Book Value, Insider Ownership, Insider Ownership^2, ROA, Capex/Assets, Leverage, R&D, R&D missing dummy, Company Age, Founder, CEO Ownership >=20%, CEO Tenure dummies, Diversified, CEO Outsider, and year dummies. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

Dependent Variable: Industry-adjusted Tobin's Q				
	(1)	(2)	(3)	(4)
CPS, t-1 *	-0.273*			
High Eindex	(-2.35)			
CPS, t-1 *	-0.111			
Low Eindex	(-1.16)			
CPS, t-1 *		-0.249**		
Abnormal Total Compensation Pos		(-2.95)		
CPS, t-1 *		-0.105		
Abnormal Total Compensation Neg		(-1.14)		
CPS, t-1 *			-0.198*	
Abnormal compensation other 4 Pos			(-2.02)	
CPS, t-1 *			-0.217*	
Abnormal compensation other 4 Neg			(-1.99)	
CPS, t-1 *				-0.160$
CEO Outsider				(-1.75)
CPS, t-1 *				-0.221*
CEO Not Outsider				(-2.02)
Firm fixed-effects	Yes	Yes	Yes	Yes
Additional Control Variables	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	8,100	8,077	8,096	8,100
R-squared	0.27	0.27	0.27	0.27

TABLE 8: RETURN ON ASSETS

The dependent variable is the industry-adjusted operating income divided by book value of asset ratio (ROA). The industry adjustment is made at the four-digit SIC level by year and by subtracting the industry median (using all firms in Compustat) ROA from the firm's ROA. The dependent variable is winsorized at the 1% and 99% level and is expressed in percentage terms. All regressions include year dummies (not shown) and standard errors are clustered at the firm level. Regressions 1, and 2 are OLS. Regressions 3 - 5 are firm fixed-effects regressions. In regression 5, CPS is instrumented by two exogenous variables, the industry-median CPS and the number of VPs among the top 5 executives (Column 1 of Table 2). Included in the regression, but not displayed for brevity, are the following variables: Constant, Diversified, CEO Outsider, CEO tenure missing, CEO tenure = 5 or 6, CEO tenure = 3 or 4, and Year dummies. T-statistics are based on robust standard errors clustered at the firm level. $, *, ** indicate significance at the 10%, 5%, 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Industry-adjusted ROA				
CPS, t-1	-4.094**		-2.380$		
	(-3.174)		(-1.775)		
CPS, t-1 (instrumented)					-3.136$
					(1.945)
Ind-adj CPS, t-1		-4.050**		-2.365$	
		(-3.090)		(-1.757)	
Ind-adj TQ, t-1	1.899**	1.903**	1.489**	1.488**	1.458**
	(10.73)	(10.72)	(7.638)	(7.634)	(13.56)
Eindex	0.218$	0.210$	-0.154	-0.156	-0.156
	(1.728)	(1.670)	(-0.695)	(-0.705)	(-0.797)
Log Book Value	0.480**	0.479**	1.089$	1.087$	1.062**
	(3.452)	(3.447)	(1.806)	(1.802)	(3.574)
Insider Ownership, t-1	7.544*	7.538*	2.951	2.979	3.913
	(1.999)	(1.995)	(0.507)	(0.511)	(0.889)
Insider Ownership^2, t-1	-0.760	-0.617	-0.883	-0.933	-2.413
	(-0.109)	(-0.0881)	(-0.116)	(-0.122)	(-0.300)
Capex/Assets	0.00947	0.00974	-0.0227	-0.0226	-0.0267
	(0.162)	(0.166)	(-1.002)	(-0.991)	(-0.638)
Leverage	-8.629**	-8.694**	-13.00**	-13.01**	-13.09**
	(-6.383)	(-6.422)	(-6.396)	(-6.401)	(-12.22)
R&D	-0.184**	-0.185**	-0.0191*	-0.0192*	-0.0208
	(-8.485)	(-8.502)	(-2.050)	(-2.065)	(-1.166)
R&D missing	-0.673*	-0.681*	0.598	0.596	0.682
	(-2.062)	(-2.082)	(0.661)	(0.658)	(0.895)
Company Age	0.0205*	0.0196*	-0.0935	-0.0960	-0.0968
	(2.399)	(2.291)	(-1.364)	(-1.403)	(-1.574)
Founder			-1.216$	-1.226$	-1.217$
			(-1.732)	(-1.750)	(-1.887)
Abnormal Total Compensation, t-1			0.0521	0.0568	0.144
			(0.230)	(0.251)	(0.764)
Relative Equity Compensation, t-1			-0.664**	-0.663**	-0.611**
			(-4.471)	(-4.468)	(-4.572)
CEO Ownership >= 20%			-1.202	-1.197	-1.219*
			(-1.531)	(-1.526)	(-1.961)
CEO Tenure =1			-0.438	-0.436	-0.347
			(-1.014)	(-1.008)	(-0.883)
CEO Tenure =2			-0.481	-0.476	-0.422
			(-1.205)	(-1.192)	(-1.272)
CEO Outsider			1.138	1.128	1.034*
			(1.320)	(1.309)	(1.999)
Observations	8,672	8,672	8,181	8,181	8,181
R-squared	0.130	0.129	0.081	0.081	0.077
Firm fixed-effects	No	No	Yes	Yes	Yes

TABLE 9: 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 (CAR) 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 t-statistics based on 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 (2009). '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 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. Year dummies and a constant are included but omitted to save space. Column 5 includes two additional variables. CEO is Chair 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. $, *, ** indicate significance at 10%, 5%, and 1% level, respectively.

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)
CEO is Chair					0.615
					(1.07)
CEO is only Director					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	1,241	1,241	1,241	1,241	857
R-squared	0.10	0.09	0.05	0.05	0.11

TABLE 10: CPS AND OPPORTUNISTIC TIMING OF OPTION GRANTS

The sample consists of 11,712 firm-year observations between 1996 and 2004. The dependent variable, Lucky, 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, Grinstein, and Peyer (2009). The independent variables are: CPS, the ratio of CEO to the sum of all top executives' total 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; High tech dummy 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, Cohen, and Ferrell (2009); 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:		Lucky	
	(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)
High tech dummy	0.333		
	(3.31)**		
Insider Ownership	1.816	1.685	-1.803
	(1.79)$	(1.00)	(0.82)
Insider Ownership^2	-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)**		
Firm Fixed Effects	No	Yes	No
CEO Fixed Effects	No	No	Yes
Observations	11,712	11,712	11,712

TABLE 11: CPS AND COMPENSATION FOR INDUSTRY-WIDE SHOCKS

This table presents industry fixed effects regressions where t-statistics are based on robust standard errors and 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 1 for the description of the remaining variables. *, ** indicate significance at 5% and 1% level, respectively.

Dependent Variable:	$\ln(\text{CEO Total Compensation})_t$							
	(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)**
CEO is Chair	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)**
Observations	8,755	8,755	8,400	8,755	8,755	8,755	8,400	8,755
R-squared	0.33	0.33	0.31	0.23	0.33	0.33	0.31	0.23

TABLE 12: 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 t-statistics based on robust 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 by subtracting the industry median. 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. CEO is Chair 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)	
CEO Tenure = 1, t-1	7.279	7.281	7.285	7.202
	(10.04)**	(10.05)**	(10.04)**	(9.88)**
CEO Tenure = 2, t-1	5.146	5.142	5.142	4.851
	(7.26)**	(7.25)**	(7.25)**	(6.81)**
CEO Tenure = 3, t-1	0.069	0.069	0.070	-0.305
	(0.08)	(0.08)	(0.08)	(0.33)
CEO Tenure = 4, t-1	-1.187	-1.193	-1.191	-1.265
	(0.97)	(0.97)	(0.97)	(1.03)
CEO Tenure = 5, t-1	0.057	0.057	0.056	0.035
	(0.06)	(0.06)	(0.06)	(0.04)
CEO Tenure = 6, t-1	-0.142	-0.142	-0.146	-0.151
	(0.14)	(0.14)	(0.15)	(0.15)
CEO Tenure > 6, t-1	0.483	0.480	0.482	0.106
	(0.63)	(0.62)	(0.62)	(0.14)
CEO is Chair				-0.363
				(2.91)**
CEO is only Director				0.144
				(1.09)
Constant	-5.739	-5.734	-5.734	-5.318
	(8.09)**	(8.08)**	(8.10)**	(7.37)**
Observations	11,221	11,221	11,221	8,658
Pseudo R-squared	0.63	0.55	0.55	0.65

TABLE 13: 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 t-statistics based on robust 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 Table 1. $, *, ** 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	-0.002	-0.005
	(0.96)	(0.85)
CEO is only Director	0.002	-0.001
	(0.10)	(0.77)
CEO is Chair	-0.005	-0.011
	(3.17)**	(6.13)**
CEO Tenure	0.037	-0.032
	(1.62)	(0.97)
CEO Tenure^2	-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 Ownership^2	-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)
Observations	87,536	87,536
R-squared	0.0363	0.0279
Regression technique:	Industry fixed-effects	Firm fixed-effects

TABLE 14: ABNORMAL RETURNS AROUND ANNOUNCEMENTS OF CPS

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. 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%**	2,062
For Firms decreasing CPS	1.028%**	2,000
Difference (decrease-increase):	0.329%	
Top quartile change in CPS	0.531%	1,015
Lowest quartile change in CPS	1.691%**	1,015
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)
Log book value	-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