

# **CEO Compensation and Managerial Power: Do CEOs Really Influence their own Compensation?**

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## Abstract

This paper investigates whether recent CEO compensation is influenced by managerial power. We contrast CEO compensation during the height of the recent stock market bubble (1999) with the depth of the latest recession (2002). We find that CEOs tend to receive similar levels of compensation in 2002 compared to 1999. We also show that CEOs receive 18.18 percent more compensation in the form of salary plus bonus, and 3.25 percent less in the form of executive stock options. Our evidence is consistent with the view that the managerial power helps explain levels and forms of CEO compensation.

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## **1. Introduction**

Two schools of thought exist on the determinants of CEO compensation. The traditional optimal contracting hypothesis sees boards of directors approving CEO pay packages that optimize contracts with CEOs to maximize shareholder value. These packages reflect a myriad of concerns, including the probability of early CEO termination with or without cause, incentives to align CEO and shareholder interests, and the market for CEOs. The more recent CEO power hypothesis advocated by Bebchuck, Fried, and Walker (2002) suggests CEOs possess and exert power over less than fully independent boards of directors, resulting in the inflation of CEO pay packages and the extraction of economic rents from shareholders (see also Garvey, Milbourn, and Todd, 2005; Hermalin and Weisbach, 1998; Denis, Denis and Sarin, 1997; and Weisbach, 1988). Potential public outrage over large CEO compensation packages constrains excessive rent taking, but sometimes leads to complex stealthy compensation arrangements that camouflage rent extraction. Complex compensation packages potentially create perverse incentives for CEOs to manipulate events and further adversely affect shareholder value (Yermack, 1996). It is an unanswered question in the empirical literature whether CEOs who possess greater influence within their own firms affect their own compensation, and whether CEOs influence the values and types of compensation they receive.

In this paper, we employ the 2000-2001 U.S. recession as a natural experiment to investigate whether CEO compensation is influenced by CEO power among a randomly selected sample of 292 large market capitalization and 292 small market capitalization

firms. Garvey and Milbourn (2005) show that CEO compensation tends to be asymmetric between rising and falling stock markets. When markets are rising, CEOs typically try to tie their pay to exogenous stock market influences. When markets are falling, CEOs try to insulate their pay from falling stock prices. The 2000-2001 recession resulted in generally lower stock prices, reduced profits, and a greater supply of managerial talent, all of which potentially reduce CEO compensation and make stock-based compensation less attractive. Our CEO power hypothesis suggests CEOs who possess greater bargaining power can and will influence their salaries by reducing the sensitivity of their compensation to stock prices while garnering relatively greater remuneration than they would otherwise receive. Specifically, we test whether CEO power is associated with changes in CEO compensation levels and forms between the boom and bust years of 1999 and 2002.<sup>1</sup>

This paper has two main findings. First, we find little evidence of a statistically significant difference in total CEO compensation between 1999 and 2002. This result is consistent with the CEO power hypothesis in that CEOs appear to have kept their compensation at levels similar to those of a bull market through a bear market. Second, we find that CEOs receive 18.18 percent more compensation in the form of salary plus bonus, and 3.25 percent less in the form of executive stock options. We conclude that CEO pay levels have been insulated from downturns associated with market declines, consistent with the CEO power hypothesis.

This paper contributes to a growing body of literature that supports the relatively recent CEO power explanation of CEO compensation (see Bebchuck, Fried, and Walker,

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<sup>1</sup> We plan to include an analysis of the relation between CEO pay and power between the bust year of 2002 and the mid-cycle year of 2005 for the future.

2002, Garvey, Milbourn, and Todd, 2005). It also provides some of the first empirical evidence linking the business cycle and financial markets to CEO compensation levels and forms.

The remainder of this paper proceeds as follows. Section two summarizes the literature and identifies testable hypotheses. Section three describes the data, variables, and methodology. Section four summarizes results. Section five discusses alternate explanations and possibilities for future research. Section six concludes.

## **2. CEO Compensation and Managerial Power Literature and Testable Hypotheses**

### *2.1. Determinants of CEO compensation*

Two approaches have been offered in the literature concerning the determinants of CEO compensation: the traditional optimal contracting hypothesis; and the newer CEO power hypothesis. The most prevalent explanation for CEO compensation patterns in the literature is the optimal contracting hypothesis.<sup>2</sup> It suggests CEO pay packages are designed to align CEO and shareholder incentives and minimize owner-manager agency costs. Specifically, CEO pay packages minimize the sum of agency costs, including the costs of contracting and monitoring agents and the costs of agents not acting in principals' interests (Grossman and Hart, 1983; Jensen and Meckling, 1976; Berle and Means, 1934). Shareholders and their boards of directors take into account the probability of early CEO termination, incentive alignment, and the market for CEOs when they approve CEO compensation packages, with a view toward maximizing shareholder value.

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<sup>2</sup> For an excellent survey of this literature, see Murphy (1999). Kevin J. Murphy, 1999. Executive Compensation, in Orley Ashenfelter and David Card, eds., *Handbook of Labor Economics* 2485. Elsevier.

In contrast, the CEO power explanation suggests CEOs influence their own compensation to extract economic rents from shareholders (see Bebchuk, Fried, and Walker, 2002). Directors who are ineffective or dependent on management approve such packages against shareholder interests. However, potential public outrage over perceived excessive CEO pay constrains the amount of rents CEOs take. CEOs concerned about their own reputations and the willingness of shareholders to support them during difficult takeover contests might be unwilling to seek excessive compensation. However, compensation consultants could be used to implicitly certify that CEO pay is fair, and rent taking could be made stealthy through the adoption of complex CEO compensation packages that are difficult for outsiders to value. Complex CEO compensation packages can in turn lead to seemingly strange CEO pay practices with perverse incentives for CEOs to manipulate events, potentially further adversely affecting shareholder value (Yermack, 1996).

The managerial power story more easily explains CEO compensation practices typically viewed as anomalies in the optimal contracting literature. For example, indexed options might be avoided by CEOs seeking extra gains from general stock market rises during boom markets (see Garvey, Milbourn, Todd, 2003). Options could be granted at-the-money so CEOs can benefit from ten years of price inflation (on top of any value created or destroyed by the CEOs). Options could be repriced or reloaded to eliminate downside risk associated with poor performance or to generate extraordinary gains when stock prices are volatile. Gratuities beyond those previously authorized by shareholders could be granted to departing CEOs as means of defusing potential negative publicity over CEO compensation packages of existing CEOs, while implicitly ensuring current

CEOs can expect similar treatment when they leave. Similarly, executive stock option grants are a comparatively non-transparent form of CEO compensation, and firms are widely believed to over-compensate their CEOs with options. As noted in Bebchuk, Fried, and Walker (2002), the popular press widely supports the CEO power explanation for CEO compensation rather than the optimal contracting hypothesis advocated in most of the academic literature. This fact alone should be sufficient grounds for re-examining the possible role of CEO power as a possible determinant of CEO compensation levels or forms.

CEO power is widely believed to vary in cross-section and over time. CEOs with greater stock ownership, whom are not new, possess greater tenure, and serve at firms with larger or less independent boards, are likely to have greater power. CEOs with more established reputations through strong firm accounting or stock returns performance, or whose actions are more difficult to judge, are more likely to possess greater influence (see Aggarwal and Samwick, 1999; Daily and Johnson, 1997; Milbourn, 2002; Daily and Johnson, 1997). CEOs of small firms are also less likely to receive analyst and media scrutiny and thus experience publicity over possible rent extraction, with the result that they too are more likely to have greater power. Finally, CEOs of firms with little leverage are more likely to be entrenched and thus have power (Berger, Ofek, and Yermack, 1997).

## *2.2. Governance characteristics of firms and CEO power*

Governance characteristics of firms, including CEO ownership, CEO tenure, board effectiveness, and board independence, influence CEO power. Finance theory

presents three contrasting views of the effect of managerial ownership on managerial actions. The first view suggests managers with higher proportions of firm ownership are more likely to act in shareholder interests because they share in shareholder cash flows (Jensen and Meckling, 1976; Berle and Means, 1932). As managers own more of the firm, they are less apt to earn economic rents, instead choosing to transfer the value of these rents to shareholders. Some empirical evidence consistent with this theory shows a negative relation between CEO compensation and CEO ownership (Core, Holthausen, and Larcker, 1999; Lambert, Larcker, and Weigelt, 1993).

The second view is that managers with larger percentages of share holdings have more voting rights that increase their power relative to those that monitor them and can better control their fate within the firm (Morck, Shleifer, and Vishney, 1988; Hermalin and Weisbach, 1998). Nevertheless, some evidence suggests managers with greater ownership earn economic rents (Holderness and Sheehan, 1988) and are more likely to remain in a firm and earn a salary even when the firm performs poorly (Morck, Shleifer, and Vishney, 1989; and Parrino, 1997).

The third view is that the firm's governance, executive compensation, and ownership structures are jointly determined. Ownership will not necessarily affect performance or compensation, but instead is a profit maximizing response to the internal and external environment. Demsetz (1983) argues that ownership structure is in equilibrium and therefore bonding and contracting costs are at optimal levels. Demsetz and Lehn (1985) suggest performance and managerial ownership may differ between firms when there are differences in environments or when organizational structure

dictates, and firms structure their ownership and compensation in profit maximizing ways given their environments and capital needs.

Free-riding issues appear to make smaller boards more effective monitors than larger boards (Jensen, 1993; Lipton and Lorsch, 1992; Yermack, 1996). Core Holthausan and Larcker (1999) find higher CEO compensation when the board is larger.

Mixed evidence exists on the association between CEO compensation and board composition. Theory suggests outside directors have incentives to build reputations as expert monitors (Fama, 1980; Fama and Jensen, 1983; Kaplan and Reishus, 1990; and Farrell and Whidbee, 2000). Prior evidence shows that high proportions of outside board members increase board's ability to monitor managers. Weisback (1988) finds that CEOs are less likely to earn excessive benefits when boards are more independent, poorly performing CEOs are more likely replaced, and CEO turnover is more sensitive to performance, when the board is independent. The literature argues CEOs of poorly performing firms lose negotiating power because their ability relative to a replacement is reduced. Therefore, CEOs that perform poorly are more likely to be replaced. Evidence on this issue includes (Weisbach, 1988; Coughlan and Schmidt, 1985; Warner, Watts and Wruck, 1988; Weisbach, 1988; Jensen and Murphy, 1990). On the other hand, Larcker and Weigelt (1993) and Core, Holthausan, and Larcker (1999) show a positive relation between CEO compensation and the percent of the board composed of outside directors.

Mixed evidence also exists on the relation between CEO tenure and executive benefits. Some researchers argue that as CEO tenure increases, CEOs gain power through investment choices or board selection (e.g., Shleifer and Vishny, 1989; Hermalin and Weisbach, 1998). Other researchers, based on matching theory, conclude that CEO

power increases with tenure because poorly matched CEOs leave the firm quickly while well-matched CEOs stay (e.g., Jovanovic, 1979a, Allgood and Farrell, 2003). Empirical literature suggests that CEO tenure is positively related to CEO bargaining power (Bertrand and Mullainathan, 2001; Baker and Gompers, 2003). However, Murphy (2002) finds that new CEOs with less tenure receive similar salaries to CEOs with longer tenure, suggesting CEO tenure does not lead to increased management pay. Tenure and share ownership may to some degree be jointly determined. As CEOs have more time in their firms, they have more aggregated salary that can be used to purchase additional shares.

### *2.3. Firm characteristics and CEO power*

Firm characteristics, including accounting and stock returns, business risk, firm size, and leverage, may also affect CEO reputation or monitoring and thus CEO power. Agency theory suggests firm performance should be related to CEO compensation as a way of aligning incentives. Jensen and Murphy (1990) show a statistical relation between changes in performance and changes in compensation, although it is weaker than they expected. Hermalin and Weisbach (1998) predict CEO salary should be less sensitive to past performance when past performance is low and more sensitive when past performance is high. They assume a lower but not upper bound on CEO wages.

Firm risk may also affect the ability of outsiders to monitor managers. Banker and Dater (1989) developed a theoretical model that shows compensation levels may either increase or decrease with firm risk, although we suggest that greater firm risk will be

associated with reduced monitoring and thus increased CEO power.

CEOs of large firms face greater public scrutiny from analysts and the media than those of smaller firms, with the result CEOs of small firms have relatively greater power within their firms. However, managers of large firms also tend to be paid more (Fama, 1980). Large firms tend to have more complex operations and demand higher quality managers with higher equilibrium wages (Core Holthausen and Larcker, 1999; Demsetz and Lehn, 1985). Murphy (1999) shows CEOs of large firms tend to receive greater compensation. We expect large firm CEOs to receive more compensation than those of small firms, but we also expect small firm CEOs to have relatively greater power than CEOs of large firms.

Firms that are highly levered tend to be closely monitored by debt holders. Greater leverage tends to reduce agency costs of free cash flow (Jensen, 1986). We expect CEOs of unlevered firms to possess greater power than those of levered firms.

#### *2.4. Testable Hypotheses*

Our objective is to determine whether CEOs keep their pay levels high and reduce the sensitivity of their compensation to exogenous stock market effects between the bull market year of 1999 and the bear market year of 2002. We hypothesize that CEOs who hold great power are more likely to receive higher levels of compensation in both periods, and are less likely to experience a relative reduction in total pay between 1999 and 2002. We also hypothesize that CEOs who hold greater power are more likely to shift their compensation from stock options, i.e., the form of compensation that is most sensitive to exogenous market effects, to salary plus bonus, i.e., cash.

We view percentage of CEO ownership of the firm, CEO tenure, board size, return on assets, stock returns, and volatility of stock returns as evidence of greater CEO power, and instances of new CEOs, outside director domination of the board, firm size, and leverage, as evidence of lesser CEO power. CEOs with greater ownership stakes have greater voting power. Established CEOs, CEOs of firms with large and thus relatively ineffective boards of directors, CEOs of boards that are closely tied to management, and CEOs with histories of strong accounting or stock return performance, possess greater influence. The actions of CEOs of volatile firms, smaller firms, or under-levered firms are less easily monitored, rendering these CEOs comparatively powerful.

### **3. Sample Selection, Variables, and Methodology**

#### *3.1. The Sample*

The sample consists of 292 large firms plus 292 small firms for each of 1999 and 2002, giving us a total of 1,168 observations. Large firms are drawn from Compustat's ExecuComp database. We randomly select 292 large firms. To be included, firms must have a market capitalization of at least \$300 million in 1999, and firm financial data must be available in Compustat, ExecuComp, and CRSP, for 1999 and 2002.<sup>3</sup> Additional governance data are drawn from proxy statements. Consistent with the prior literature, we exclude firms from highly regulated and financial industries, i.e., Standard Industrial Classification (SIC) codes 4000-4999 and 6000-6999.

Table 1 shows that ExecuComp tends to cover a large proportion of the U.S. stock market in terms of market capitalization but not number of firms. In 1999, only 1,748 (18

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<sup>3</sup> The requirement that financial data be available for both 1999 and 2002 imposes some element of survivorship bias. This is an unavoidable limitation of our study design.

percent) of 9,642 Compustat firms were covered by ExecuComp. Our \$300 million market capitalization is the 20<sup>th</sup> percentile for ExecuComp, but the 66<sup>th</sup> percentile for Compustat. ExecuComp, advertised to cover the S&P 1500 plus a few additional firms, tends to focus on comparatively large firms.

To mitigate any potential effects of large firm selection bias, we also use an industry matched sample of 292 small firms drawn chiefly from that portion of Compustat not covered by ExecuComp, but also from ExecuComp for firms whose market capitalization is smaller than \$300 million. Small firms are randomly selected after matching to large firms on industry by four, three, two, and in some cases one digit SIC code. To be included in the small firm sample, financial data for 1999 and 2002 must be available in Compustat and CRSP. CEO compensation and governance data are drawn from proxy statements.

### 3.2. Variable definitions

CEO Compensation variables include *CEO compensation*, *CEO salary plus bonus*, and *CEO stock option grants*. *CEO compensation* is the natural log of total compensation, where total compensation is salary, bonus, and current year option grants. *CEO salary plus bonus* is the natural log of cash plus bonus.

The key indicator of change in our study design is *D2002*. It is a dummy variable that equals 1 if the firm-year observation is for 2002, and 0 if the year is 1999.

CEO governance variables believed to influence CEO power include *CEO ownership*, *New CEO*, *CEO tenure*, *Board size*, and *Outside director domination*. *CEO ownership* is the percentage of equity of the firm owned by the CEO. *New CEO* is a

dummy variable equal to 1 if the CEO has less than one year of tenure, and is 0 otherwise. *CEO tenure* is the number of years the CEO has held his position as CEO at the firm. *CEO change* is 1 if the CEO in 2002 is different from the CEO in 1999. *Board size* (or effectiveness) is the number of directors on the board of directors. *Outside director domination* (or board independence) is 1 if more than 50 percent of the board of directors are outside directors (where outside directors have no professional or other employment ties to the firm), and is 0 otherwise.

Firm characteristics also believed to influence CEO power include *Return on assets (ROA)*, *Stock returns*, *Firm risk*, *Firm size*, and *Leverage*. *ROA* is operating income measured as earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by book value of total assets. *Stock returns* is the prior year's one year holding period stock return. *Firm risk* is the standard deviation of the stock price over the prior three years. *Firm size* is the book value of total assets, expressed in millions of dollars. *Leverage* is the book value of liabilities divided by book value of firm size less book equity plus market equity.

### 3.3. Summary descriptive statistics

Summary descriptive statistics for selected variables, by CEO ownership, are reported for 1999 in Table 2. Most (392) CEOs have between 0 and 5 percent ownership in their firms. Firms with the lowest CEO ownership tend to have the highest CEO compensation. With the exceptions of the mean and median for the 10-20 percent ownership range, and the median for the 20-30 percent range of CEO ownership, mean

and median CEO pay decreases as CEO ownership increases. This result, *ceteris paribus*, is inconsistent with the CEO power hypothesis.

CEO ownership is lowest for CEOs with little tenure. Ownership builds over time as CEOs receive restricted stock and stock options. Boards tend to be largest when CEO ownership is lowest, and also tend to be the most independent. Risky and larger firms tend to have low CEO ownership.

In Figure 1, most (180) of our large firms have less than one percent CEO ownership. Most (103) small firms have CEO ownership in the 1-5 percent range. For large and smaller firms, the majority of CEOs have a low level of share ownership. For large firms, 217 (74 percent) have ownership less than 5 percent of the firm. For small firms, 175 (60 percent) have ownership that is less than 5 percent. This suggests CEOs of large and small firms tend not to own a great deal of their firms' stock. The evidence suggests CEOs of small firms tend to own greater proportions of their firms, implying that small firm CEOs have comparatively great power.

#### *3.4. Methodology*

We use a three-part methodology to assess whether CEO power is associated with changes in CEO compensation levels or forms between a bull (1999) and a bear (2002) market. First, we report univariate evidence on differences between 2002 and 1999. Second, we document multivariate evidence on changes in CEO compensation levels. Third, we provide multivariate evidence on changes in the amount of compensation awarded in salary plus bonus and stock options.

Our multivariate tests for changes in levels of CEO compensation are based on the following ordinary least squares model:

$$\begin{aligned}
 CEOcompensation = & \alpha_0 + \beta_1 D_{2002} + \beta_2 CEOownership + \beta_3 CEOownership^2 \\
 & + \beta_4 D_{2002} \times CEOownership + \beta_5 NewCEO + \beta_6 CEOtenure + \beta_7 CEOchange \\
 & + \beta_8 Boardsize + \beta_9 Outsidedirectordomination + \beta_{10} CEOownership \times Outsidedirectordomination \\
 & + \beta_{11} ROA + \beta_{12} Stockreturns + \beta_{13} Firmrisk + \beta_{14} Firmsize + \beta_{15} Leverage + \varepsilon
 \end{aligned}$$

Our tests for changes in form of CEO compensation substitute *CEO salary plus bonus* or *CEO stock options* for *CEO compensation* in this equation, although we use a Tobit specification for the *CEO stock options* regression. Approximately 28 percent of our observations do not award CEO stock option grants in 1999 or 2002 (option grants are not always offered every year or by every firm) – Tobit is more appropriate than ordinary least squares for censored data.

## 4. Empirical Results

### 4.1. Univariate evidence on differences (2002 vs. 1999)

Summary descriptive statistics for differences in selected variables for 2002 vs. 1999 are reported in Table 3. Except for median CEO compensation for the 0-1 percent and 20-30 percent CEO ownership ranges, none of the changes in CEO compensation are statistically significant. With these two exceptions, CEO pay did not increase between the bull market of 1999 and the bear market of 2002, notwithstanding long term trends toward higher CEO compensation documented in the literature (Milliron, 2000).

One explanation for the finding that CEO compensation did not decrease between 1999 and 2002 is that CEOs exerted influence over their firms, keeping their pay comparatively high despite weaker economic circumstances. Alternatively, CEOs with

little influence may not have been able to prevent boards from arresting routine increments in CEO compensation that might otherwise have happened. Long term trends toward higher CEO compensation documented by Milliron (2000) are consistent with the later interpretation. Nevertheless, we interpret maintenance of bull market pay levels as evidence consistent with CEO power.

Other changes also occurred between 1999 and 2002. Mean and median CEO tenure varied somewhat depending on CEO ownership level. Mean board size increased for CEOs in the 10-20 percent and 20-30 percent ownership ranges. The percentage of outside directors on boards of directors increased in the 0-1 percent, 5-10 percent, and 10-20 percent CEO ownership ranges. ROA and stock returns were almost uniformly negative, reflecting the change from a period of economic growth and bullish stock market to a period of weaker growth and a bearish stock market. Firm risk increased, reflecting increased volatility in stock returns. Firm size and leverage also increased.

Given that Table 3 suggests a large number of statistically significant changes occurred in the determinants of CEO power, we control for these and related variables in our subsequent multivariate tests.

#### *4.2. Multivariate evidence on changes in CEO compensation levels*

Evidence in Table 4 suggests no change occurred in CEO compensation between 1999 and 2002, and provides mixed support for a direct relation between CEO power and CEO pay levels. The coefficient on the 2002 indicator variable is negative but not statistically significant from zero. This finding suggests CEOs managed to insulate

themselves from downward pressures in compensation that might have otherwise accompanied the economic downturn, consistent with the CEO power hypothesis.

The coefficient on CEO ownership is negative and significant at the 5 percent level, suggesting CEOs tend to hold lower ownership in their firms in 2002 than in 1999. This evidence would be consistent with a desire among CEOs to receive more of their compensation in cash (salary plus bonus) than equity (restricted stock or stock options). The coefficients on the CEO ownership interaction terms are not statistically significant.

The coefficient on outside director domination is 0.183, significant at the 5 percent level. This result suggests CEOs of firms with independent boards tend to pay their CEOs 20.08 percent more. It is inconsistent with the view that CEOs who possess greater power (in this case in the form of dependent boards) tend to extract greater rent from shareholders in the form of higher levels of compensation.

Coefficients on ROA, stock returns, and firm risk, are positive, as expected. To the extent CEOs who have achieved positive accounting or stock returns, or manage firms that are difficult to monitor, enjoy greater compensation levels, these results are consistent with the CEO power explanation of CEO compensation. However, better performing CEOs may also simply receive higher pay.

The coefficient on leverage is negative. CEOs of levered firms tend to be compensated less than CEOs of unlevered firms. This result is consistent with higher compensation for more powerful CEOs.

#### *4.3. Multivariate evidence on changes in the form of CEO compensation*

Importantly, evidence contained in Table 5 shows that CEOs tend to receive more of their pay in the form of cash (salary plus bonus) and less in the form of equity-based pay (stock option grants) in the bear market of 2002 than in the bull market of 1999. Specifically, the coefficient on the 2002 indicator variable in column 1 is 0.167, significant at the 5 percent level. This result suggests CEOs tend to receive 18.18 percent more cash based pay in 2002 than 1999. On the other hand, the 2002 indicator coefficient in column 2 is  $-0.033$ , also significant at the 5 percent level. This result shows CEOs tend to receive 3.25 percent less in stock option grant value in 2002 than in 1999, notwithstanding higher underlying volatility. Taken together, these results are consistent with the CEO power explanation of CEO compensation in that CEOs use their influence to shift compensation from market sensitive forms in bullish markets to market insensitive forms in bearish markets. It is also consistent with Garvey and Milbourn (2005), who find CEOs attempt to insulate their pay from declining stock prices when stock prices are falling.

The coefficient on board size in column 2 is negative and significant at the 5 percent level. This result suggests smaller (more effective) boards tend to award greater quantities of stock options. Coefficients on ROA in column 1 and stock returns in columns 1 and 2 suggest CEOs with greater reputations for performance (more powerful CEOs) receive greater cash and stock-based compensation, although the pay for performance explanation for higher CEO pay is equally plausible. The negative firm risk coefficient in column 1 is consistent with volatile firms husbanding scarce cash resources instead of unnecessarily paying out cash in the form of higher CEO salaries and bonuses.

The coefficients on leverage in columns 1 and 2 are negative, as in Table 4, although this time they are not statistically significantly different from zero.

## **5. Discussion**

Evidence contained in Tables 3, 4 and 5 suggest CEOs tend to receive the same amount of compensation in the bear market of 2002 as the bull market of 1999. This finding is consistent with the CEO power explanation for CEO compensation in that CEO compensation did not decline with the market. On the other hand, evidence in Table 5 shows CEOs tend to receive 18.18 percent more salary plus bonus and 3.25 percent less in executive stock option grant values. These findings are also consistent with the CEO power explanation for CEO compensation in that the form of CEO compensation shifted from market sensitive stock options to market insensitive cash in a down market.

### *5.1. Alternate explanations for findings, and areas for future research*

Alternate explanations may exist for our findings. First, CEO compensation may rarely go down due to a ratchet effect in compensation – if so, only the changes in form of CEO pay would support the CEO power hypothesis.

Second, some other event that occurred between 1999 and 2002, like scandals associated with Enron, Worldcom, and Tyco, or the passage of Sarbanes Oxley, could have led to a secular shift away from option compensation in favor of cash based pay. One way to mitigate this possibility would be to expand our study to cover a longer time period through several business cycles. Such an approach would also have the advantage

of covering CEO compensation during all parts of the business cycle – not just an approximate peak and trough.

Third, differences between large and small firms could be more powerful than previously accounted for. We could make greater use of our large vs. small samples, and compare large vs. small firms by segregating our sample.

Fourth, the probability of dismissal, with or without cause, is also a factor in CEO compensation. Our analysis could be expanded to include the probability of CEO turnover, forced turnover, or takeover, as additional dimensions in the CEO compensation mix.

Fifth, our paper uses the 2000-2001 recession as a natural experiment to observe how CEO compensation changes due to the effects of CEO power. We currently estimate CEO power indirectly through a battery of governance variables like CEO compensation, new CEO, CEO tenure, CEO change, board size, outside director domination, and various firm financial characteristics. We could instead try to separate our sample into powerful vs. weak CEOs, develop a factor score of CEO power, or use excess CEO compensation as a measure of managerial power (Core, Holthausan, and Larcker, 1999).

In short, many opportunities exist for exciting research in the area of CEO power and CEO compensation.

## **6. Conclusion**

This paper employs the 2000-2001 U.S. recession as a natural experiment to investigate whether CEO compensation is influenced by CEO power among a random sample of 292 large market capitalization and 292 small market capitalization firms.

Garvey and Milbourn (2005) show CEO compensation tends to be asymmetric between rising and falling stock markets: when markets are rising, CEOs typically try to tie their pay to exogenous stock market influences; when markets are falling, CEOs try to insulate their pay from falling stock prices. The 2000-2001 recession resulted in generally lower stock prices, reduced profits, and a greater supply of CEOs, all of which potentially reduce CEO compensation and make stock-based compensation less attractive than cash. Our CEO power hypothesis suggests CEOs who possess greater bargaining power can and will influence their salaries more by reducing the sensitivity of their compensation to stock prices while protecting their levels of remuneration from downward pressure associated with a recession. Specifically, we tested whether CEO power is associated with changes in CEO compensation levels and forms between the boom and bust years of 1999 and 2002.

This paper has two major findings. First, we find little evidence of a statistically significant difference in total CEO compensation between 1999 and 2002. This result is consistent with the CEO power hypothesis in that CEOs kept their compensation at levels similar to those of a bull market through a bear market. Second, we find that CEOs receive 18.18 percent more compensation in the form of salary plus bonus, and 3.25 percent less in the form of executive stock options. We conclude that CEO power helps insulate CEO pay levels from downturns associated with market declines, and helps account for differences in the sensitivity of CEO compensation to stock performance.

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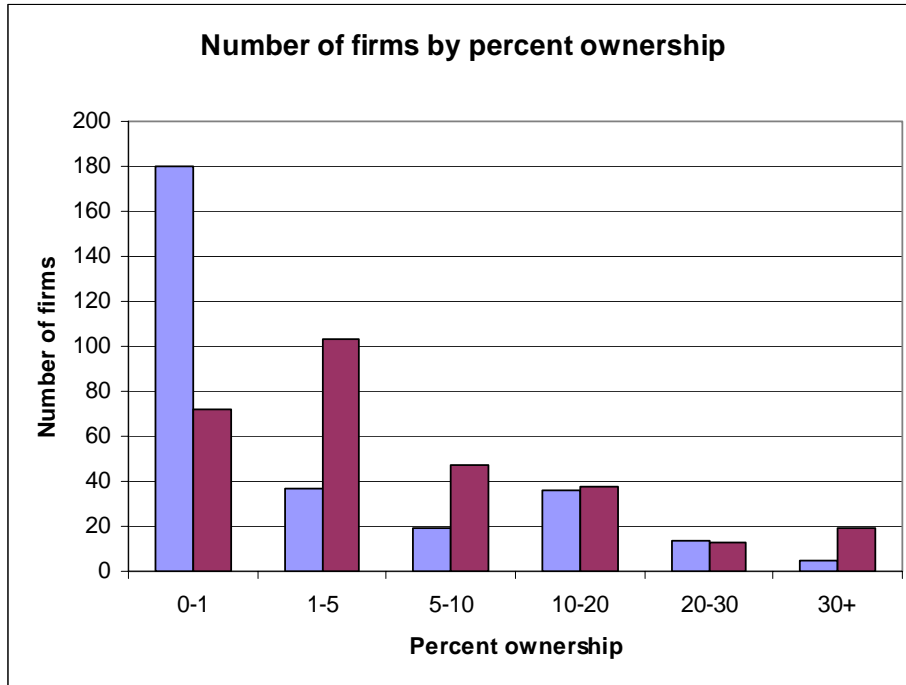
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**Figure 1.**  
**Large vs. small firms, by percentage of ownership**

Large firms are reported on the left (in blue), small firms on the right (in red). Data are the same as shown in Table 2 only broken out by large vs. small.



**Table 1.**  
**Compustat, ExecuComp, and Compustat excluding ExecuComp firm market capitalization**

Descriptive statistics on firm market capitalization are shown for Compustat, ExecuComp, and Compustat excluding ExecuComp firms for the year 1999. Firm market capitalization is the number of shares outstanding times the closing market price per share on the last day of the relevant accounting period.

	Firm market capitalization			
	25 <sup>th</sup> percentile (1)	Median (2)	75 <sup>th</sup> percentile (3)	N (4)
Compustat firms	24.44	104.77	566.39	9,642 (100%)
ExecuComp firms	448.32	1,212.33	4,163.12	1,748 (18%)
Compustat firms excluding Execucomp firms	17.63	66.55	255.86	7,894 (82%)

**Table 2.**  
**Sample descriptive statistics (1999)**

Sample descriptive statistics are shown for selected variables, by CEO ownership, for the year 1999. *CEO compensation* is the natural log of total compensation, where total compensation is salary, bonus, and current year option grants. *CEO ownership* is the percentage of equity of the firm owned by the CEO. *CEO tenure* is the number of years the CEO has held his position as CEO at the firm. *Board size* (or effectiveness) is the number of directors on the board of directors. The percentage of outside directors on the board refers to the percentage of directors who have no professional or other employment ties to the firm to the total number of directors on the board. *ROA* is operating income measured as earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by book value of total assets. *Stock returns* is the prior year's one year holding period stock return. *Firm risk* is the standard deviation of the stock price over the prior three years. *Firm size* is the book value of total assets, expressed in millions of dollars. *Leverage* is the book value of liabilities divided by book value of firm size less book equity plus market equity. The significance of differences in means (medians) are shown based on t-tests (Wilcoxon rank sum tests).

		CEO ownership (percentage)						
		0-1	1-5	5-10	10-20	20-30	30+	Entire sample
CEO compensation	Mean	<b>7.525***</b>	<b>6.892**</b>	<b>6.752***</b>	6.918	<b>6.608***</b>	<b>6.119***</b>	7.108
	Median	<b>7.459***</b>	<b>6.783**</b>	<b>6.700**</b>	6.783	<b>6.739**</b>	<b>6.111***</b>	6.964
CEO tenure	Mean	<b>4.559***</b>	7.057	<b>9.894**</b>	<b>13.054**</b>	<b>12.704**</b>	7.000	7.319
	Median	<b>3.000***</b>	5.000	<b>9.000***</b>	<b>11.000***</b>	<b>12.000***</b>	3.500	5.000
Board size	Mean	<b>7.948***</b>	<b>6.664***</b>	<b>6.515**</b>	<b>6.581**</b>	7.037	6.500	7.202
	Median	<b>8.000***</b>	<b>7.000**</b>	<b>6.000**</b>	<b>6.500*</b>	7.000	<b>6.000*</b>	7.000
Percentage of outside Directors on board	Mean	<b>0.699***</b>	<b>0.561**</b>	<b>0.537**</b>	<b>0.526***</b>	<b>0.531*</b>	<b>0.490***</b>	0.609
	Median	<b>0.750***</b>	<b>0.571**</b>	<b>0.500***</b>	<b>0.500***</b>	<b>0.500**</b>	<b>0.500***</b>	0.667
ROA	Mean	0.130	0.103	0.102	0.119	<b>0.169***</b>	0.065	0.118
	Median	0.147	0.131	0.127	0.137	0.160	<b>0.105**</b>	0.138
Stock returns	Mean	0.201	0.330	0.179	0.286	0.500	0.479	0.265
	Median	0.019	-0.028	-0.072	0.054	0.137	0.119	0.012
Firm risk	Mean	<b>0.435***</b>	<b>0.507**</b>	<b>0.515*</b>	<b>0.509*</b>	0.487	0.509	0.479
	Median	<b>0.397***</b>	<b>0.496**</b>	<b>0.495*</b>	<b>0.533*</b>	0.429	0.489	0.462
Firm size	Mean	<b>6.681***</b>	<b>5.427***</b>	<b>5.346***</b>	<b>5.590***</b>	5.812	<b>5.226***</b>	6.068
	Median	<b>6.804***</b>	<b>5.285***</b>	<b>5.292***</b>	<b>5.592***</b>	5.871	<b>5.525**</b>	5.939
Leverage	Mean	0.307	0.299	0.291	0.264	0.252	0.311	0.296
	Median	0.289	0.230	0.219	0.229	0.217	0.190	0.256
N		252	140	66	74	27	24	583

\*, \*\*, \*\*\* Significance at the 10%, 5%, 1% level.

**Table 3.**  
**Differences in selected descriptive statistics (2002 minus 1999)**

Differences in descriptive statistics between 2002 and 1999 are shown for selected variables, by CEO ownership, for the year 1999. *CEO compensation* is the natural log of total compensation, where total compensation is salary, bonus, and current year option grants. *CEO ownership* is the percentage of equity of the firm owned by the CEO. *CEO tenure* is the number of years the CEO has held the position of CEO at the firm. *Board size* (or effectiveness) is the number of directors on the board of directors. The percentage of outside directors on the board refers to the percentage of directors who have no professional or other employment ties to the firm to the total number of directors on the board. *ROA* is operating income measured as earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by book value of total assets. *Stock returns* is the prior year's one year holding period stock return. *Firm risk* is the standard deviation of the stock price over the prior three years. *Firm size* is the book value of total assets, expressed in millions of dollars. *Leverage* is the book value of liabilities divided by book value of firm size less book equity plus market equity. Differences in means (medians) are shown based on t-tests (Wilcoxon rank sum tests).

		CEO ownership (percentage)					
		0-1	1-5	5-10	10-20	20-30	30+
CEO compensation	Mean	0.054	-0.009	-0.074	0.119	0.176	0.188
	Median	<b>0.180**</b>	0.140	-0.012	0.159	<b>0.244*</b>	0.000
CEO tenure	Mean	0.214	<b>-1.271**</b>	0.242	-1.703	0.111	<b>2.875*</b>
	Median	<b>3.000***</b>	3.000	<b>3.000**</b>	3.000	3.000	<b>3.000***</b>
Board size	Mean	-0.087	0.100	0.015	<b>0.432**</b>	<b>0.370*</b>	0.000
	Median	0.000	0.000	0.000	<b>0.000**</b>	<b>0.000*</b>	0.000
Percentage of outside Directors on board	Mean	<b>0.029***</b>	0.012	<b>0.057***</b>	<b>0.043**</b>	-0.009	0.005
	Median	<b>0.000***</b>	0.000	<b>0.000**</b>	<b>0.000**</b>	0.000	0.000
ROA	Mean	<b>-0.038***</b>	<b>-0.044***</b>	<b>-0.033</b>	-0.018	<b>-0.049***</b>	0.028
	Median	<b>-0.024***</b>	<b>-0.027***</b>	<b>-0.023**</b>	<b>-0.020**</b>	<b>-0.032***</b>	<b>0.005***</b>
Stock returns	Mean	<b>-0.257***</b>	<b>-0.434***</b>	<b>-0.162</b>	<b>-0.294**</b>	<b>-0.567**</b>	-0.414
	Median	<b>-0.054***</b>	<b>-0.128***</b>	<b>0.037***</b>	<b>-0.145**</b>	0.013	-0.245
Firm risk	Mean	<b>0.098***</b>	<b>0.106***</b>	<b>0.087***</b>	<b>0.093***</b>	<b>0.082***</b>	<b>0.097***</b>
	Median	<b>0.073***</b>	<b>0.098***</b>	<b>0.077***</b>	<b>0.072***</b>	<b>0.087***</b>	<b>0.109***</b>
Firm size	Mean	<b>0.147***</b>	<b>0.252***</b>	<b>0.166**</b>	<b>0.271***</b>	<b>0.321***</b>	0.111
	Median	<b>0.112***</b>	<b>0.205***</b>	<b>0.082**</b>	<b>0.279***</b>	<b>0.216***</b>	0.149
Leverage	Mean	<b>0.026***</b>	<b>0.027*</b>	0.027	0.012	<b>0.060**</b>	<b>0.047*</b>
	Median	<b>0.019***</b>	<b>0.013*</b>	0.018	0.015	<b>0.028*</b>	<b>0.041*</b>
N		252	140	66	74	27	24

\*, \*\*, \*\*\* Significance at the 10%, 5%, 1% level.



**Table 4.**  
**CEO Compensation regressed on 2002 dummy variable plus governance and firm characteristics**

CEO compensation is regressed on the 2002 indicator variable and governance and firm characteristics. *CEO compensation* is the natural log of total compensation, where total compensation is salary, bonus, and current year option grants. *D2002* is 1 if the year is 2002, and 0 if 1999. *CEO ownership* is the percentage of equity of the firm owned by the CEO. *New CEO* is 1 if the CEO has less than 1 year of tenure, and 0 otherwise. *CEO tenure* is the number of years the CEO has held the position of CEO at the firm. *CEO change* is 1 if the CEO in 2002 is different from the CEO in 1999. *Board size* (or effectiveness) is the number of directors on the board of directors. Outside director domination (or board independence) is 1 if more than 50 percent of the board is outside directors (i.e., have no professional or other employment ties to the firm), and 0 otherwise. *ROA* is operating income measured as earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by book value of total assets. *Stock returns* is the prior year's one year holding period stock return. *Firm risk* is the standard deviation of the stock price over the prior three years. *Firm size* is the book value of total assets, expressed in millions of dollars. *Leverage* is the book value of liabilities divided by book value of firm size less book equity plus market equity. t-statistics are in parentheses.

	CEO compensation (OLS)
Intercept	<b>4.330***</b> <b>(22.79)</b>
D2002	-0.012 (0.866)
CEO ownership	<b>-1.793**</b> <b>(-2.01)</b>
CEO ownership <sup>2</sup>	1.382 (1.18)
D2002 x CEO ownership	0.115 (0.21)
New CEO	-0.091 (-1.13)
Tenure	-0.002 (-0.41)
CEO change	-0.111 (-1.35)
Board size	0.004 (0.29)
Outside director domination	<b>0.183**</b> <b>(2.55)</b>
CEO ownership x Outside director domination	-0.078 (-0.52)
ROA	<b>0.118***</b> <b>(0.72)</b>
Stock returns	<b>0.149***</b> <b>(3.81)</b>
Firm risk	<b>0.513***</b> <b>(3.08)</b>
Firm size	0.460 (20.96)
Leverage	<b>-1.146***</b> <b>(-8.32)</b>
N	1168
Adjusted R <sup>2</sup>	0.45

\*, \*\*, \*\*\* Significance at the 10%, 5%, 1% level.

**Table 5.**  
**CEO salary plus bonus, and CEO stock option grants, regressed on 2002 indicator variable plus governance and firm characteristics**

CEO salary plus bonus, and CEO stock option grants, are regressed on a 2002 indicator variable and governance and firm characteristics. *CEO salary plus bonus* (*CEO stock option grants*) is the natural log of salary plus bonus (current year stock option grants valued using the ExecuComp version of the Black Scholes option pricing model). *D2002* is 1 if the year is 2002, and 0 if 1999. *CEO ownership* is the percentage of equity of the firm owned by the CEO. *New CEO* is 1 if the CEO has less than 1 year tenure, and 0 otherwise. *CEO tenure* is the number of years the CEO was CEO of the firm. *CEO change* is 1 if the CEO changed between 2002 and 1999. *Board size* (or effectiveness) is the number of directors on the board. Outside director domination (or board independence) is 1 if more than 50 percent of the board is outsiders (i.e., have no professional or other employment ties to the firm), and 0 otherwise. *ROA* is operating income, measured as earnings before interest, taxes, depreciation, and amortization (EBITDA) scaled by book value of total assets. *Stock returns* is the prior year's one year holding period stock return. *Firm risk* is the standard deviation of the stock price over the prior three years. *Firm size* is the book value of total assets, expressed in millions of dollars. *Leverage* is the book value of liabilities divided by book value of firm size less book equity plus market equity. t-statistics are in parentheses.

	CEO salary plus bonus (OLS) (1)	CEO stock option grants (Tobit) (2)
Intercept	<b>4.641***</b> (25.61)	1.468 (0.001)
D2002	<b>0.167**</b> (2.44)	<b>-0.033**</b> (0.020)
CEO ownership	-0.498 (-0.59)	-0.093 (0.682)
CEO ownership <sup>2</sup>	0.990 (0.89)	0.115 (0.730)
D2002 x CEO ownership	-0.125 (-0.24)	-0.057 (0.691)
New CEO	-0.085 (-1.11)	0.015 (0.375)
Tenure	0.004 (1.15)	-0.0003 (0.782)
CEO change	-0.112 (-1.42)	-0.010 (0.552)
Board size	0.000 (0.00)	<b>-0.005**</b> (0.033)
Outside director domination	0.100 (1.46)	0.012 (0.463)
CEO ownership x Outside director domination	-0.112 (-0.78)	0.052 (0.247)
ROA	<b>0.503***</b> (3.20)	0.041 (0.136)
Stock returns	<b>0.139***</b> (3.73)	<b>0.013*</b> (0.086)
Firm risk	<b>-0.565***</b> (-3.56)	0.213 (0.001)
Firm size	<b>0.317***</b> (15.14)	0.082 (0.001)
Leverage	-0.156 (-1.19)	-0.338 (0.001)
N	1168	1168
Adjusted R <sup>2</sup>	0.36	

\*, \*\*, \*\*\* Significance at the 10%, 5%, 1% level.