

ASYMMETRIC PAY-FOR-PERFORMANCE AND CORPORATE GOVERNANCE IN THE MARKET DOWNTURN

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Abstract

This paper examines the pay-for-performance, corporate governance, and their connection by analyzing the change of executive compensation when the stock market changes from upturn to downturn. We provide the evidence to support the managerial power explanation for the change in executive compensation. We find the asymmetric pay-for-performance and corporate governance in different market conditions and different firm's market performance. In addition, the outperformed firms reward CEO with more cash-based compensation and less stock-based compensation in the market downturn. Therefore, we conclude that the CEOs of outperformed firms have stronger managerial power than those of underperformed firms. We also find supportive evidence of our conclusion that the firms with lower debt ratio, smaller number of board meetings, and the presence of interlocked relationship have higher probability to be the outperformed firms. This evidence is consistent with the prediction of managerial power approach.

Keywords: asymmetric pay-for-performance, executive compensation, managerial power hypothesis, market downturn

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1. Introduction

Executive compensation is a major area in the research of corporate finance. Due to the changes of market conditions, such as accounting scandals and new regulations, more and more executive compensation issues draw researchers' attention. In this paper, we are interested in the three topics: asymmetric pay-for-performance, corporate governance, and the relationship between these two issues. The former two issues have been discussed extensively in academic research and practical world. However, the change in stock market, from upturn to downturn, provides a good opportunity to look into the relation between pay-for-performance and corporate governance. From the change of executive compensation in the market downturn, we want to test the managerial power hypothesis in determining the executive compensation.

In this paper, we provide evidence to support the managerial power explanation for executive compensation by looking at the change of CEOs' compensation with respect to the change of market condition and firms' market performance. The theoretical optimal contracting model, sometimes named as the arm's-length contracting model, in the

earlier research suggests that executive compensation is a sub-optimal resolution for agency problems. However, the model cannot provide a sufficient explanation for the recent pattern of executive compensation, especially the increase of stock-based compensation. The relative research finds that managerial power can significantly affect the design of the executive pay. Bebchuk, Fried, and Walker (2002) summarize the literature and conclude that the role of managerial power plays an important role in the design of executive compensation.

From our empirical result, we find asymmetric pay-for-performance relationship in different market conditions. Observing the trend of stock market, the 1990s is a booming market and the stock market becomes depressed after 2000. We collect the data of CEOs' compensation from 1992 to 2003 to perform all the tests. We find that the cash-based compensations of outperformed firms, which outperform the S&P 500 market index, become sensitive to their market performance when the stock market changes from upturn to downturn. In contrast, their stock-based compensations become insensitive to their market performance in the same change of the stock market. Therefore, we

conclude that the outperformed firms change their compensation packages significantly when the stock market changes from upturn to downturn.

In the tests of determinants of CEOs' compensation, we find that the effect of governance variables, such as firm leverage, the number of board meetings, CEOs' dual position, and interlocked relationship, changes when the stock market changes from upturn to downturn. In addition, we also find that, in the downturn, the outperformed firms reward their CEOs' with more cash-based compensation and less stock-based compensation. However, this is not the case in the market upturn. Therefore, based on this result and previous conclusion, we expect that the executives in the outperformed firms have stronger managerial power than those in the underperformed firms, especially in the market downturn.

The result of probit regression provides evidence to support our expectation. To test whether executives of outperformed firms have stronger managerial power, we construct a probit regression model to regress the dummy variable of outperformed firms on all governance variables. The result shows that, in the downturn, the firms with smaller number of board meetings and the presence of interlocked relationship have higher probability to be an outperformed firm than other firms. Under these two conditions, the executives should have stronger managerial power. Therefore, in sum, we provide the evidence to support that the managerial power can affect the executive compensation.

The remainder of the paper is as follows. We provide the brief description of research background and generate the research hypotheses based on the relative theories in Section 2. In Section 3, we introduce the econometric models we use in the tests and then summarize the statistics of the data. We show the empirical result in Section 4 and conclude in Section 5.

2. Background and hypothesis

In the extensive literature of executive compensation, most researchers explain the observed phenomena from firm-specific perspectives or executive-specific perspectives. These factors are important in either the design of compensation or the efficiency of the pay. However, the whole market condition is also a very important factor that significantly affect the executive pay or its components. For example, Hall and Murphy (2003) show that the trend in stock option grants has closely tracked Dow Jones industrial average index over the past three decades. In addition, a ten-year analysis in America shows that only 30% of variation of stock price is driven by corporate

performance and 70% is driven by general market conditions¹. In general, stock-based compensation is more preferred in a booming market than in a depressed market.

Another important reason for the executive compensation is the change of regulation. For example, the Securities and Exchange Commission liberalized Rule 16b-3 in 1996 that changes the required process of granting executive compensation². In addition, Financial Accounting Standards Board released FAS 123 in 1995 that requires all public firms to disclose the estimates of option values in their financial statements. Furthermore, it released FAS 148 in 2002 that provides three methods to help firms to expense their stock option rewards³. All of these market shocks may affect the design or the efficiency of executive. Therefore, the analysis of executive compensation from the market-wide viewpoint is very important and helpful in the design of future compensation contracts.

2.1. Research background

The amount of CEO compensation increased dramatically over the past three decades and one major reason is the explosion of granting stock options, especially in the 90s⁴. In addition, we also observe that the stock market is booming in the 90s. From Figure 1, we find that the long term trends of three major stock indices, Dow Jones industrial average, Nasdaq, and S&P 500, all increase in the 90s with small variations. After 2000, the trends go opposite to the previous decade and the variations increase, especially Nasdaq index. The significant market change, from the booming market to the depressed market, provides a good opportunity to look at the change of executive compensation in different market conditions. This is our main contribution in the literature.

There are four major components of executive compensation, salary, bonus, restricted stocks and stock options. They all provide some incentive for executives to achieve better firm performance. However, they have significant different incentive effects. Hall and Liebman (1998) and Murphy (1998) show that there exists strong pay-for-performance relationship of executive

¹ This analysis is given by SCA consulting. Interesting readers can see Simon Patterson and Peter Smith, How to make Top people's pay reflect performance, on Sunday Times at Business section (Aug. 9, 1998).

² Ryan and Wiggins (2004) show how the change in director compensation and how it affects the monitoring function of board after the liberalization of Rule 16b-3.

³ Chance (2004) has a detail survey of the issues of expensing stock options.

⁴ Jensen and Murphy (2004) have a brief survey about the history of executive remuneration, which includes the trends of least three decades started from the 1970s.

compensation, but it is generated almost entirely by changes in the value of CEO holdings of stock and stock options. For example, the median pay-for-performance elasticity of CEO total compensation in 1994 is about 30 times larger than that of CEO cash-based compensation. But, we are interested in how the pay-for-performance changes when there is a market-wide change. Does this strong relationship of pay-for-performance in stock-based compensation still hold in the downturn of the stock markets? Before setting our research hypotheses, we observe the general pattern of executive compensation in two different market conditions. From Figure 2, we find that the trend of executive pay increases in the 90s, but starts to decrease after 2000. Therefore, the trend is like that of those stock market indices. In addition, it is also obvious that the proportion of stock options achieves the highest level in 2000 and then decreases. Two main reasons for the change of using stock options are the changes of stock markets and accounting principles. Downturn of stock markets causes stock options out of money and new accounting principles propose expensing stock options. In contrast, some firms increase the use cash-based components, which may use to substitute for stock options. The consequence of these changes of regulation and market condition is not the main issue in this paper, but the common effect of these changes is that grantees change their preference of stock options and prefer other rewards. Even though it is not the major determinant of executive compensation, CEOs' preference may induce CEOs to exercise their managerial power and then affect the pay components. There exists extensive literature shows evidence that managerial power can affect executive compensation, either in the pay level or the proportion of the components. We are interested in whether CEOs exercise their managerial power to affect their compensations in the market downturn and how it is related to the pay-for-performance. Based on the relative theories, we generate our research hypotheses in the following section.

2.2. Theories and hypotheses

2.2.1. Pay-for-performance

The efficiency of executive compensation is an important issue in the relative academic research. Grossman and Hart (1983) show that an optimal incentive scheme exists between the principle and the agent because the principle cannot observe the agent's action. On the one hand, this is an ex ante theoretical analysis under the assumption of maximization of shareholders' wealth. On the other hand, the ex post empirical result of optimal incentive scheme is a sharing rule called pay-for-performance. There are two common measures of performance in the literature, stock-based performance measures and accounting performance

measures. Under the optimal contracting approach, if the executive pay follows optimal compensation practices, then the pay-for-performance should significantly exist in the business world.

Our first interest is whether all firms, in general, follow optimal compensation practices in different market conditions. In other word, our first research hypothesis is that firms should have significant pay-for-performance in either the market upturn or the market downturn. There are many empirical results show the evidence of significant pay-for-performance. For example, Jensen and Murphy (1990) show the larger incentive from stock grantees' stock ownership than that from other pay and dismissal incentive. In addition to the significant pay-for-performance relationship, Mertrand and Mullainathan (2001) find that executive compensation reward for luck as much as for general accounting or market performance. Therefore, the significant pay-for-performance may come from the market windfalls. From the result of Mertrand and Mullainathan, we are curious about what happens about the executive compensation in the market downturn.

(H1) *Firms should have significant pay-for-performance in different market conditions, such as the market upturn or the market downturn.*

Joskow and Rose (1994) show the significant pay-for-performance from cash-based and total compensation. In addition, they also provide no evidence that board of directors tend to reward good performance and ignore poor performance in setting executive compensation⁵. From their findings, we are interested in whether firms that have different performance have asymmetric pay-for-performance. We classified two different types of firms in the test. If the firm has the market performance better than the market index, then it is an outperformed firm. Otherwise, it is an underperformed firm. The pay-for-performance should independent of firms' market performance, if all firms set their compensation optimally. Therefore, the second hypothesis is that the pay-for-performance should be independent of the firm's market performance.

(H2) *Firms should have significant pay-for-performance no matter what the market performance is.*

2.2.2. Corporate governance

In contrast to the optimal contracting approach, the managerial power approach plays a more important

⁵ They test three types of possible asymmetries. First, whether compensation has asymmetric response with respect to accounting losses? Second, whether compensation respond differently between good and bad performance? Third, whether compensation respond differently with large changes in performance? However, they cannot find strong evidence to support any type of asymmetry.

role in the recent research of executive compensation. Bebchuk, Fried, and Walker (2002) conclude that the role managerial power plays in the design of executive compensation is significant and should be taken into account in any examination of executive pay arrangements. From the previous literature, we also find lot of research that provides supportive evidence of managerial power explanation in executive compensation. For example, Bertrand and Mullainathan (2001) find that better governed firms have compensation package that can filter some luck out. Weisbach (1988) shows that the probability that CEO will be fired has a negative relation with the firm's market performance. In addition, the probability is enhanced with the large effect of outside boards. Therefore, the pay-for-performance would have certain relationship with corporate governance.

If the firm has good corporate governance, then the governance should still hold in different market conditions. Therefore, the corporate governance is independent of market conditions. This is our third hypothesis. We are interested in whether the change of market condition can affect the corporate governance in the setting of executive compensation.

(H3) *The corporate governance should be independent of market conditions. Therefore, the effect of corporate governance on setting executive compensation should be the same in different market conditions.*

There may have an endogenous problem between market performance and corporate governance. We discuss the endogenous problem in Section 3.1.3. Jensen and Murphy (2004) mention that the firm's sole governing objective is to create firm value. The detail of corporate governance issue is not the main concern in this paper. However, from the concept of corporate governance, the firm with good governance should have good performance in the long run. Therefore, the final hypothesis is the firm with good governance should have higher probability to outperform the market.

(H4) *The firm with good governance should have higher probability to outperform the market no matter what the market condition is.*

3. Research method and data summary

3.1. Research method

To perform all tests of these four hypotheses, we apply three regression models in the empirical tests. First, we use the Ordinary Least Square, OLS, regression to test the pay-for-performance hypotheses. Second, we test the determinants of executive compensation and corporate governance hypotheses in the Tobit econometric framework. Finally, we get the inference between firms' market performance and corporate governance from the

result of the Probit regressions.

3.1.1. OLS regression

There are many different ways to test the pay-for-performance relationship and it also depends on different assumption of the impact of past performance. Joskow and Rose (1994) provide the test result of pay-for-performance under different extreme assumptions⁶. In this paper, we assume that the current pay-for-performance is a function of contemporaneous performance only. Following the setting of empirical models in Bertrand and Mullainathan (2001) and Joskow and Rose (1994), we set our empirical model as follows:

$$\ln(\text{Compensation}_i) = \alpha_0 + \alpha_1 \times \text{MktPerformance}_i + \alpha_2 \times \text{AccPerformance}_i + \sum_{i=3}^n \alpha_i \times \text{ControlVariable}_i + \varepsilon_i \quad (1)$$

The current total compensation included cash-based (salary + bonus) and stock-based (restricted stocks + stock options) compensation. We use current stock return as the proxy of the firm's market performance and return on equity as the proxy of its accounting performance⁷. In this and all following models, we control firm size effect by using total asset, and executive-specific effect by using the CEO's tenure².

We also control the fixed industry effect and year effect by using dummy variables. The dummy variables of the industry effect are generated by two-digit SIC codes.

We regress the executive compensation on these variables by using OLS regression model. To separate the market conditions into upturn and downturn, we take reference of Figure 1 and find that all three major market indices go down around year 2000. Therefore, we set the booming market is from 1993 to 2000 and the depressed market is from 2001 to 2003³. In order to classify firm's market performance, we create a return dummy variable and use the market index (S&P 500 index) return as a standard⁴. The return dummy equal to 1 when the

⁶ There are two extreme specifications in Joskow and Rose (1994). First, they assume all coefficients of performance are equal. Second, they assume that all coefficients of performance, except the current performance, are equal to zero. The second assumption implies that the current compensation is a function of contemporaneous performance only.

⁷ The annual stock return is calculated by $\sum_{i=1}^n \ln(1 + R_i)$, where R_i is

the monthly return from CRSP. The return on equity is the net income before extraordinary items and discontinued operations divided by total common equity.

² Bertrand and Mullainathan (2001) and Ryan and Wiggins (2001) use tenure as a control variables for executive-specific effect.

³ We use the market conditions from 1993 to 2003, because it just matches our data of executive compensation.

⁴ We use the S&P 500 index to calculate the market index return because our data of executive compensation include all firms in S&P 500. Therefore, S&P 500 is more appropriate as a market benchmark in this paper.

firm's market return is higher than the market index return and equal to 0, otherwise. We consider the firm an outperformed firm when the return dummy equal to 1 and an underperformed firm when the return dummy equal to 0.

3.1.2. Tobit econometric framework

To find out the determinants of executive compensation, either cash-based or stock-based components, we follow the previous research and define eight possible factors that affect the executive compensation. These variables result from different perspectives, but we focus on the variables from the perspective of corporate governance.

Market-to-book ratio, MB. We define the market-to-book ratio as (market value of equity + book value of debt) / book value of total asset. Ryan and Wiggins (2001) consider the ratio as a proxy for growth opportunity and expect that the growth opportunity should have a positive relationship with stock-based compensation and a negative relationship with cash-based compensation. In addition, Yermack (1995) mention that the information asymmetry grows with growth opportunity, so the firm with high growth opportunities should use more stock-based compensation⁵.

CEO stock ownership, SHP. The variable is defined as the percentage of firm stocks owned by CEO. There are two effects of the variable on executive compensation.

First, higher ownership may have higher managerial power that can affect the executive compensation toward his or her personal preference. Second, higher ownership reduces the incentive of stock-based compensation. Therefore, we expect that the CEO stock ownership has a positive relationship with cash-based compensation and a negative relationship with stock-based compensation. Bryan, Hwang, and Lilien (2000) and Ryan and Wiggins (2001) find that significant negative part of the expectation.

Number of board meeting, NMT. The variable is defined as the number of board meetings held during the indicated fiscal year. Vafeas (1999) mentions that the number of board meetings is a proxy for monitoring and efforts of board of directors. Following Vafeas, We use the variable as a proxy of the magnitude of corporate governance. When the number of board meetings increases, we expect that the monitoring function of board is enforced and that the managerial power is lower. Therefore, the executive compensation may toward the optimal level that predicted by theories, rather

than CEOs' preference.

Debt ratio, DR. Debt ratio is defined as the ratio of long term debt divided by market value of equity. Due to the agency cost of debt, John and John (1993) show in their model that it is optimal to lower stock-based compensation when the firm has high leverage ratio. They expect that debt ratio has a negative relationship with stock-based compensation. In addition, Ittner, Lambert, and Larcker (2002) mention that bondholders have incentives to limit managers to transfer wealth from bondholders to shareholders.

Therefore, the firm leverage can be a proxy of monitoring functions provided by bondholders.

Cash ratio, CR. The variable is defined as (cash inflows from operating activities + cash outflows to investing activities) / the market value of equity. We use the variable as a proxy of the firm's liquidity constraints. The more cash on hands on the grant date, the lower liquidity constraint. Firm with higher liquidity may use more stock-based compensation.

Therefore, the variable should negatively relate to stock-based compensation. Bryan, Hwang, and Lilien (2000) show that the negative relationship exists in the case of stock options but does not exist in the case of restricted stocks, even though both of them belong to stock-based compensation.

Dual CEO and director dummy, CDD. This is a dummy variable and equal to 1 when the CEO served as director during the indicated fiscal year and equal to 0, otherwise. Ryan and Wiggins (2001) mention that this dual position has different explanations for executive compensation and has the uncertain effect on executive pay.

However, due to the focus of managerial power of this paper, we expect that the dual position may enforce the managerial power and then align the executive compensation toward CEO's preference.

Interlock dummy, ITD. This is also a dummy variable and equal to 1 when the CEO is involved in a relationship requiring disclosure in the "Compensation Committee Interlocks and Insider Participation" section of the proxy statement and equal to 0, otherwise.

Like dual CEO and director dummy, the interlocked relationship may also increase the managerial power to affect other CEO's compensation or indirectly affect their own compensation. Core and Guay (1999) show that the executive compensation has a positive relationship with the presence of interlocked directors.

Based on these variables, we apply the Tobit econometric framework to perform the test and the functional form is as follows:

(2)

$$\ln(\% \text{ of cash based or stock based Compensation}) = C_i + \alpha_1 \times MB_i + \alpha_2 \times SHP_i + \alpha_3 \times NMT_i + \alpha_4 \times DR_i + \alpha_5 \times CR_i + \alpha_6 \times CDD_i + \alpha_7 \times ITD_i + \alpha_8 \times \text{ReturnDummy}_i + \sum_{j=29}^n \alpha_j \times \text{ControlVariable}_j + \varepsilon_i$$

⁵ Yermack (1995) uses Tobin's Q as a proxy of growth opportunity. However, the formula of Tobin's Q he used is the same as our market-to-book ratio.

The control variables are the same as (1). We find that many firms do not use stock options or restricted stocks as their instruments of compensation every year. Yermack (1995) mention that Tobit framework is more appropriate for the truncated distribution of stock option award data with its large number of zero-valued observations.

3.1.3. Probit regression

We mention in Section 2.2 that there may have endogenous problem between firm's market performance and corporate governance. Based the research hypothesis H(4), we test the endogenous problem by applying a Probit regression model. We use the return dummy as the dependent variable and regress it on all other variables on the right hand side of (2). The functional form is as follows:

$$\text{ReturnDummy}_i = \alpha_0 + \alpha_1 \times \text{MB}_i + \alpha_2 \times \text{SHP}_i + \alpha_3 \times \text{NMT}_i + \alpha_4 \times \text{DR}_i + \alpha_5 \times \text{CR}_i + \alpha_6 \times \text{CDD}_i + \alpha_7 \times \text{ITD}_i + \sum_{i=8}^n \alpha_i \times \text{ControlVariable}_i + \varepsilon_i \quad (3)$$

In the Probit regression, we apply the maximum likelihood estimation and use the heteroskedasticity-consistent covariance matrix estimator to performance the tests.

3.2. Data summary

3.2.1. Sample selection

There are three main data sources in this research, ExecuComp database, CRSP database and Compustat database. First, we get all the compensation related data from ExecuComp database from 1992 to 2003, which includes the value of each component in the compensation, interlocked relationship, the number of board meetings, and the return on equity. In addition, the tenure data is calculated from the date the individual became CEO. We get the accounting data from Compustat database, which include the firm market value, long term debt, cash and short term investment, and total asset. Finally, the monthly stock returns and market index return are from CRSP database.

We first collect all CEO compensation data in the ExecuComp database from 1992 to 2003, which include all firms in the S&P 500 index, the S&P 400 midcap index and S&P 600 small cap index. There have total 13,887 firm-year observations. Then, we exclude all financial firms and regulated utilities⁶. Finally, we have 10,008 firm-year observations in our sample.

⁶ We exclude the data that have SIC code between 6000~6999 and 4900~4999. In addition, we also delete data that have missing value in the number of board meetings and total compensation value less than \$1000.

3.2.2. Descriptive statistics

We summarize all components of executive compensation and all other variables in Table 1. From Panel A, we find that the mean and median of stock options are \$2,175,990 and \$607,680 with standard deviation 9534.17. This is the most volatile component in executive compensation during this period. Part of reason is that stock options are broadly used in the 1990s. In Panel B, we find that cash-based compensation, on average, is around 50% of total compensation and stock-based compensation, on average, is around 39% of total compensation.

From Panel C, we find that the mean and median of market return are 5.7% and 6.7%, the difference is not significant. This means that most of companies in the S&P indices do have more stable return than other small companies in other indices. We also find that the tenure have a wide range, from minimum 0 year to maximum 52 years. However, the mean and median of tenure is around 8 and 6 years. As to the CEO stock ownership, we find that there exists significant difference between maximum and minimum. From the results not reported in Table 1, there are 26 observations, including 10 CEOs who hold more than 50% shares of their firms. However, there is an interesting phenomenon that most of CEOs are also one of directors. The dual positions happen in the 99.4% of observations in our sample. Finally, the cases that the CEO presents as interlocked director are about 8.6% of our sample.

To avoid multi-collinear problems in our regression models, we also look at the correlation among these variables. Table 2 presents the correlation matrix. There are only three coefficients of correlation are higher than 0.4. We find that the cash-based and stock-based compensation are highly correlated with total asset. Therefore, we use the total asset to control the effect of firm size in each regression model.

4. Empirical result

We are interested in three issues mentioned in the Section 2, which include four research hypotheses. Before showing the empirical results, we point out two features of this paper that are different from other relative research. First, we look at the executive compensation in two different market conditions, the market upturn and downturn. The market upturn is from 1992 to 2000 and the market downturn is from 2001 to 2003. Second, we also analyze the executive compensation with respect to the firm's market performance, which classified as outperformed firms and underperformed firms. We use the market return of S&P 500 index as a benchmark to classify different types of firms.

4.1. Pay-for-performance

We look at the pay-for-performance from three types of executive compensation. Table 3 shows the pay-for-performance of total compensation. From the result of all firms in the whole range, we find that executive compensation is significantly sensitive to market performance and accounting performance. The coefficient 0.125 and 0.052 are significant different from zero at 1% significant level. However, the significant relationship of pay for market performance does not hold in the market downturn. Therefore, there exists asymmetric pay-for-performance in different market conditions under market performance measure. To find out the reason, we try to look at pay-for-performance with respect to firms' market performance.

In Table 3, the coefficient of the return dummy is significant in the whole range sample and the market upturn but not significant in the market downturn. Two possible explanations are that better than market performance is not significantly rewarded and that the market windfalls are not significant in the market downturn. We find the evidence of other explanation when we look at pay-for-performance for outperformed firms and underperformed firms in the downturn. Both types firms have significant market return coefficients but the sign are different. Therefore, there exists asymmetric pay-for-performance in different market performance. The different responses to market performance between outperformed firms and underperformed firms cause the insignificance of the return dummy. However, we find that total compensation of outperformed firms respond market return positively. The higher the firm's market returns the greater amount the total compensation. The underperformed firms respond in the opposite way. To look at the pay-for-performance of different components of total compensation should be helpful in figuring out the explanations of the different responses.

Tables 4 and 5 show the same analysis but use cash-based and stock-based compensation as dependents variables. From Table 4, in the market upturn, the result of return dummy shows that the better than market performance is significantly rewarded by salary or bonuses, but just for underperformed firms. The outperformed firms do not significantly reward CEO with cash based on the market performance. However, in the market downturn, both outperformed and underperformed firms reward CEO with cash significantly. The cash-based compensation of outperformed firms has significant change in different market conditions. This fact seems to imply that outperformed firms can change their compensation contracts significantly when the market condition changes.

From Table 5, we find the result of stock-based compensation is different from that of cash-based

compensation. In the market upturn, outperformed firms significant reward stock-based compensation based on the market performance, but underperformed firms do not. However, in the market downturn, the stock-based compensation of all firms, in general, is negatively related to market performance⁷. Both outperformed and underperformed firms incline not to use stock-based compensation to reward better market performance. To do so, all firms need to change their stock-based compensation to cash-based compensation. From Table 4, we find that outperformed firms adjust their compensation toward cash-based components more significantly than underperformed firms.

4.2. Determinant of executive compensation

To find out the reason of the previous result of the asymmetries of pay-for-performance, we look at the determinants of executive compensation under the Tobit econometric framework. The results are in Tables 6 and 7.

From Tables 6 and 7, the significant determinants of cash-based compensation are consistent with the theoretical expectation and empirical finding in the literature. The firms with more growth opportunities use less cash-based compensation and more stock-based compensation. Smith and Watts (1992) also show that the firms with more growth options use more stock options⁸. In addition, when the CEO has higher stock ownership, they receive more cash-based compensation and less stock-based compensation to limit the firm-specific risk. The effects of the number of board meetings, either on cash-based or stock-based compensation, are significant in the market upturn but not significant in the downturn. One possible reason is that the effect may mix in the market downturn. We come back this effect in the Section 4.3. The effects of debt ratio on either cash-based or stock-based compensation are significant in the market upturn⁹, but mix in the market downturn. We find that the monitoring function of bondholders can significantly affect executive compensation during the market upturn, but have no significant effect or have mixed effects on cash-based compensation in the downturn. In addition, in the downturn, the bondholders' monitoring can

⁷ Hall and Knox (2003) mention that the pay-for-performance of stock options becomes weaker as options fall underwater. Our result of pay-for-performance does not reflect this effect because we use the current compensation data and do not take previous grants of stock options into account.

⁸ Smith and Watts (1992) use the ratio of book value of assets to firm value as the proxy of investment opportunities.

⁹ Ryan and Wiggins (2002) find that stock options are negatively related to leverage that has the same definition with our leverage variable. Bryan et al. (2000) find the same negative relation in the cases of restricted stocks and stock options.

significantly affect the stock-based compensation of underperformed firms but cannot affect that of outperformed firms. The result of return dummy is very interesting in the Tables 6 and 7. The coefficient of return dummy is not significant in the market upturn, but significant in the market downturn. The signs of the significant coefficients are also different. This may imply that the outperformed firms reward CEOs with cash for their better than market performance and reduce the stock-based compensation in the market downturn. When we compare the effect of CEOs' dual position and interlocked relationship between outperformed firms and underperformed firms in the market downturn, only coefficient of interlocked relationship for outperformed firms is significant. In addition, it is negatively related with stock-based compensation. Based on the information of the significant effect of the interlocked relationship, it seems easier for outperformed firms than for underperformed firms to change their compensation contracts. In sum, from the result of Tables 3 to 5, we find that cash-based compensation of outperformed firms becomes sensitive to market performance and stock-based compensation of the same firms becomes insensitive to market performance in the market downturn. From Tables 6 and 7, we find outperformed firms reward more cash-based components and less stock-based components in the market downturn. Based on the result of executive compensation, we expect that the CEOs of outperformed firms have stronger managerial power than other CEOs of underperformed firms. However, if the research hypothesis H(4) is true, then our expectation should not be true, because outperformance comes from better corporate governance. To test this hypothesis, we construct the Probit model in the next section.

4.3. Market performance and corporate governance

In Table 8, we regress the return dummy on all other variables we use in (2) for market upturn and downturn. Consistent with theoretical prediction, outperformance comes significantly from the growth opportunities. However, the result of governance variables supports our expectation and does not support H(4). We find that the number of board meetings is significantly negatively related with outperformance. In addition, the debt ratio also has a negative relationship with the probability of being an outperformed firm. This evidence supports our expectation that CEOs of outperformed firms have stronger managerial power to affect their own compensation. Consistent with the result of governance variables in Table 7, the interlocked relationship has significantly positive relation with outperformance in the downturn. The coefficient is significant at 1% level, which provides supportive

evidence to our expectation.

5. Conclusion

From our empirical result, we show the evidence to support the managerial power explanation of executive compensation by showing the change of executive compensation in the market downturn. Due to the significant change of stock market, we can conduct the comparative static analysis of pay-for performance and determinant of executive compensation between market upturn and downturn. The result also sheds some light on the connection between pay-for-performance and corporate governance in different market conditions. The result of pay-for-performance shows that there exists asymmetric pay-for-performance with respect to different market conditions and different firms' market performances. We conclude that the market conditions, even though out of manager's control, can affect the pay-for-performance. In addition, firms' market performance also can affect the pay-for-performance. However, the outperformed firms have significant change in the compensation contracts when the stock market changes. The result of determinants of executive compensation shows that governance variables, such as firm leverage, the number of board meetings, CEO's dual position, and interlocked relationship, change when the market conditions or firms' market performances change. Therefore, the evidence does not support the hypotheses that corporate governance is independent of market conditions. The result also shows that the interlocked relationship of outperformed firms can significantly affect the stock-based compensation, which implies that the CEOs in outperformed firms have stronger managerial power. To deal with the endogenous problem between firms' market performance and corporate governance, we find the evidence to support that the CEOs of outperformed firms have stronger managerial power than the CEOs of underperformed firms. In the market downturn, the firms with lower debt ratio, lower number of board meetings and presence of interlocked relationship have higher probability to outperform the market index. Therefore, the fact does not support the hypothesis that the firm with good corporate governance has higher probability to outperform the market index.

Finally, we conclude that firms that their CEOs have higher managerial power have higher probability to outperform the market index. Moreover, these firms can change their compensation contracts in different market conditions. Therefore, the asymmetric pay-for-performance comes from the different managerial power, which is not predicted by optimal contracting approach.

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Appendices

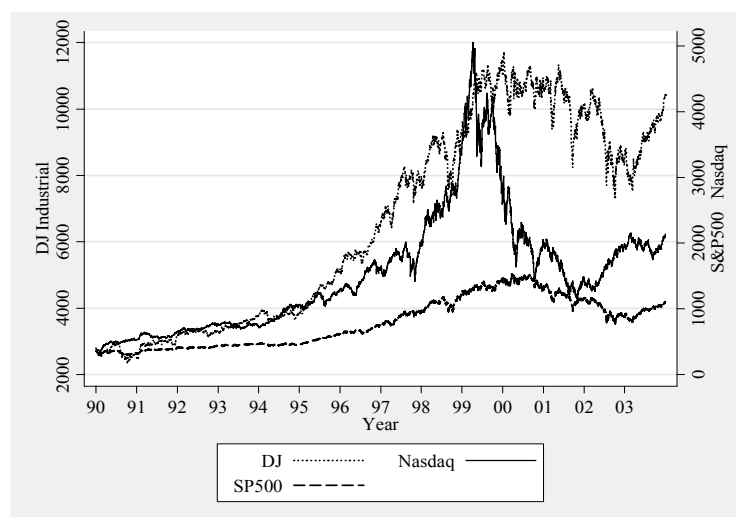


Figure 1. The time trend of Dow Jones Industrial, Nasdaq, and S&P500 index

The trends of these three indices are based on the adjusted daily closing prices from the Yahoo finance website. We show the trends on two different scales, Dow Jones industrial average index on the left hand side axis and S&P500 and Nasdaq indices on the right hand side axis. The data range is from 01/02/1990 to 12/31/2003.

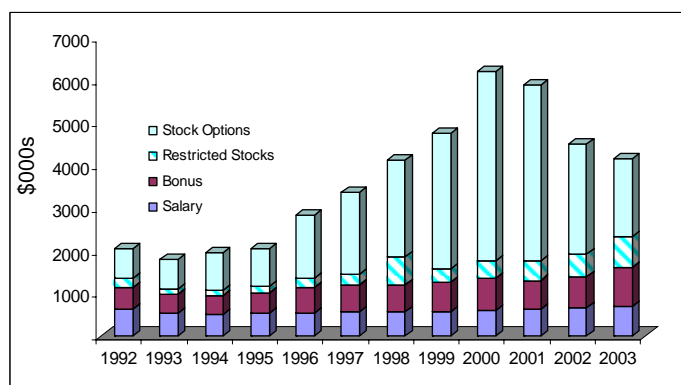


Figure 2. The average of executive compensation during 1992-2003

The amount of average level of executive compensation in each year includes salary, bonus, restricted stocks, and stock options. The stock options are valued by using ExecuComp's modified Black-Scholes formula. All dollar amounts are in 2003-constant dollar. The data include all CEOs pay level for S&P 500, S&P 400 mid cap and S&P 600 small cap companies in ExecuComp databased from 1992 to 2003.

Table 1. Descriptive statistics of data (N=10,008)

The value of stock options granted to the CEO during the year is valued by S&P's Black-Scholes methodology. The other compensation includes all cash or non-cash items that do not belong to salary, bonus, and stock-based compensation. CB includes salary and bonus, SB includes stock options and restricted stocks, SR is the market rate of return of the firm stock, ROE is the net income before extraordinary items and discontinued operations divided by total common equity, TA is log of total assets, MB is equal to (market value of equity + book value of debt) / total asset, SHP is the % of firm stocks held by CEO, NMT is the number of board meeting in the year, DR is the long term debt divided by the market value of equity, CR is (cash inflows from operating activities plus cash outflows to investing activities) / the market value of equity, CDD is 1 if CEO is also the board of director, and 0 otherwise, ITD is 1 if CEO is involved in a relationship requiring disclosure in the "Compensation Committee Interlocks and Insider Participation" section of the proxy statement, and 0 otherwise.

	Mean	Median	Maximum	Minimum	Standard Deviation
Panel A: CEO compensation summary (\$000s)					
Salary & Bonus	1191.79	891.71	43511.54	0	1200.89
Stock options	2175.99	607.68	600347.36	0	9534.17
Restricted stocks	376.17	0.0002	650812.05	0	6729.46
Other compensation	333.96	44.57	96422.87	0	1497.60
Total compensation	4077.90	1995.19	655448.00	2.68	12318.47
Panel B: CEO compensation summary (% of total compensation)					
Cash-based compensation, CB	53.30%	50.89%	100%	0%	28.29%
Stock-based compensation, SB	38.77%	39.24%	100%	0%	29.36%
Other compensation	7.93%	2.32%	100%	0%	13.49%
Panel C: Determinants of CEO compensation and governance variables					
Market rate of return, SR	0.057	0.067	3.303	-3.194	0.446
Return on equity, ROE	0.106	0.120	49.423	-39.380	0.807
Total Assets, TA	7.146	6.966	13.381	2.316	1.486
Tenure	8.561	6.105	52	0	7.666
Market-to-book ratio, MB	2.126	1.609	77.634	0.328	1.897
CEO stock ownership, SHP	0.030	0.004	0.761	0	0.069
Number of meetings, NMT	6.964	6.523	32	1	2.819
Debt ratio, DR	0.370	0.152	66.647	0	1.157
Cash ratio, CR	0.101	0.048	10.712	0	0.251
CEO-Director, CDD	0.994	1	1	0	0.077
Interlock director, ITD	0.086	0.000	1	0	0.281

Table 2. Correlation matrices of CEO compensation and its determinants

CB includes salary and bonus, SB includes stock options and restricted stocks, SR is the market rate of return of the firm stock, ROE is the net income before extraordinary items and discontinued operations divided by total common equity, TA is log of total assets, MB is equal to (market value of equity + book value of debt) / total asset, SHP is the % of firm stocks held by CEO, NMT is the number of board meeting in the year, DR is the long term debt divided by the market value of equity, CR is (cash inflows from operating activities plus cash outflows to investing activities) / the market value of equity, CDD is 1 if CEO is also the board of director, and 0 otherwise, ITD is 1 if CEO is involved in a relationship requiring disclosure in the "Compensation Committee Interlocks and Insider Participation" section of the proxy statement, and 0 otherwise.

	ln(CB)	ln(SB)	SR	ROE	TA	Tenure	MB	SHP	NMT	DR	CR	CDD	ITD
ln(CB)	1												
ln(SB)	.391	1											
SR	.119	.017	1										
ROE	.069	.041	.113	1									
TA	.546	.469	-.008	.038	1								
Tenure	.021	-.042	.028	-.009	-.090	1							
MB	.011	.225	.298	.070	-.085	.045	1						
SHP	-.189	-.124	.020	.004	-.228	.392	.061	1					
NMT	.083	.131	-.078	-.050	.236	-.136	-.048	-.159	1				
DR	-.039	-.070	-.203	-.108	.080	-.045	-.154	.016	.053	1			
CR	-.095	-.039	-.167	-.143	-.059	-.007	-.103	.034	.062	.442	1		
CDD	.022	.005	.038	.011	-.020	.038	.028	.026	-.048	-.068	-.080	1	
ITD	-.095	-.031	.013	.001	-.009	.189	.036	.197	-.100	-.013	-.002	.024	1

Table 3. Ordinary least-squares estimates of Pay-for-Performance of total compensation from 1993 to 2003

The total compensation includes salary, bonus, stock options and restricted stocks, SR is the market rate of return of the firm stock, ROE is the net income before extraordinary items and discontinued operations divided by total common equity, TA is log of total assets. The Return dummy is 1 when the firm's market rate of return is greater than the rate of return of S&P 500 index and 0 otherwise. We call a firm is an Outperformed firm when the Return dummy=1 and an Underperformed firm when the Return dummy=0. We control the industry fixed effect by including dummy variables determined by the two-digit SIC code level. Coefficients of year dummies and industry dummies are suppressed for expositional convenience. Numbers in parentheses denote t-statistics.

dependent variable: ln(total compensation)									
Sample	Whole range			1993-2000			2001-2003		
	All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed
Intercept	3.733 (54.03)***	3.849 (38.46)***	3.575 (36.26)***	3.802 (49.16)***	3.935 (32.36)***	3.691 (35.19)***	4.213 (32.12)***	4.150 (26.43)***	4.072 (17.41)***
Market return	0.125 (4.58)***	0.236 (5.15)***	0.061 (1.60)	0.186 (6.07)***	0.254 (4.46)***	0.141 (3.46)***	-0.078 (-1.30)	0.192 (2.48)**	-0.271 (-2.50)**
ROE	0.052 (4.41)***	0.117 (4.26)***	0.044 (3.38)***	0.050 (3.88)***	0.143 (3.09)***	0.044 (3.36)***	0.064 (2.26)**	0.100 (2.95)***	0.048 (0.97)
Total assets	0.437 (75.57)***	0.435 (51.84)***	0.446 (54.10)***	0.424 (63.59)***	0.417 (39.81)***	0.435 (48.14)***	0.466 (40.54)***	0.472 (33.63)***	0.473 (23.5)***
Tenure	-0.003 (-2.60)***	-0.004 (-2.24)**	-0.002 (-1.4)	-0.001 (-0.78)	-0.003 (-1.33)	0.0004 (0.27)	-0.008 (-3.73)***	-0.005 (-2.00)**	-0.015 (-3.58)***
Return dummy	0.058 (2.42)**			0.079 (2.88)***			0.018 (0.36)		
Adjusted R ²	0.42	0.41	0.43	0.41	0.40	0.41	0.42	0.43	0.43
N	9882	4768	5114	7255	3070	4185	2627	1698	929

Table 4. Ordinary least-squares estimates of Pay-for-Performance of cash-based compensation from 1993 to 2003

The cash-based compensation includes salary and bonus, SR is the market rate of return of the firm stock, ROE is the net income before extraordinary items and discontinued operations divided by total common equity, TA is log of total assets. The Return dummy is 1 when the firm's market rate of return is greater than the rate of return of S&P 500 index and 0 otherwise. We call a firm is an Outperformed firm when the Return dummy=1 and an Underperformed firm when the Return dummy=0. We control the industry fixed effect by including dummy variables determined by the two-digit SIC code level. Coefficients of year dummies and industry dummies are suppressed for expositional convenience. Numbers in parentheses denote t-statistics.

dependent variable: ln(Salary and Bonus)									
Sample	Whole range			1993-2000			2001-2003		
	All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed
Intercept	3.939 (66.59)***	4.062 (45.92)***	3.995 (48.74)***	3.923 (62.81)***	4.107 (40.70)***	3.990 (48.47)***	4.130 (32.5)***	4.115 (26.08)***	4.256 (18.69)***
Market return	0.198 (8.47)***	0.103 (2.54)**	0.308 (9.70)***	0.168 (6.80)***	-0.008 (-0.18)	0.305 (9.55)***	0.273 (4.71)***	0.305 (4.01)***	0.240 (2.28)**
ROE	0.055 (5.51)***	0.133 (5.45)***	0.032 (2.97)***	0.038 (3.65)***	0.170 (4.43)***	0.021 (2.02)**	0.131 (4.81)***	0.113 (3.40)***	0.157 (3.14)***
Total assets	0.322 (65.09)***	0.326 (43.98)***	0.311 (45.32)***	0.323 (59.98)***	0.323 (37.16)***	0.311 (43.93)***	0.319 (28.62)***	0.329 (23.92)***	0.298 (15.22)***
Tenure	0.008 (9.05)***	0.008 (5.51)***	0.009 (7.31)***	0.010 (10.08)***	0.009 (5.73)**	0.011 (8.46)***	0.004 (1.73)*	0.004 (1.70)*	0.002 (0.47)
Return dummy	0.064 (3.13)**			0.071 (3.21)***			0.036 (0.73)		
Adjusted R ²	0.34	0.32	0.34	0.37	0.35	0.38	0.29	0.29	0.28
N	9882	4768	5114	7255	3070	4185	2626	1698	929

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

Table 5. Ordinary least-squares estimates of Pay-for-Performance of stock-based compensation from 1993 to 2003

The stock-based compensation includes stock options and restricted stocks, SR is the market rate of return of the firm stock, ROE is the net income before extraordinary items and discontinued operations divided by total common equity, TA is log of total assets. The Return dummy is 1 when the firm's market rate of return is greater than the rate of return of S&P 500 index and 0 otherwise. We call a firm an Outperformed firm when the Return dummy=1 and an Underperformed firm when the Return dummy=0. We control the industry fixed effect by including dummy variables determined by the two-digit SIC code level. Coefficients of year dummies and industry dummies are suppressed for expositional convenience. Numbers in parentheses denote t-statistics.

Variable	dependent variable: ln(Stock options and restricted stocks)								
	Whole range			1993-2000			2001-2003		
	All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed
Intercept	2.499 (22.14)***	2.532 (15.54)***	2.227 (13.82)***	2.728 (20.98)***	2.701 (13.46)***	2.463 (13.86)***	3.111 (15.99)***	3.134 (12.73)***	2.793 (8.55)***
Market return	0.093 (2.13)**	0.397 (5.40)***	-0.148 (-2.38)**	0.225 (4.40)***	0.626 (6.70)***	-0.066 (-0.95)	-0.266 (-3.11)***	-0.016 (-0.14)	-0.406 (-2.82)***
ROE	0.040 (2.27)**	0.085 (2.09)**	0.045 (2.30)**	0.044 (2.24)**	0.096 (1.34)	0.048 (2.36)**	0.033 (0.85)	0.066 (1.36)	0.013 (0.19)
Total assets	0.472 (51.61)***	0.472 (35.90)***	0.493 (37.52)***	0.440 (40.69)***	0.430 (26.00)***	0.475 (31.82)***	0.546 (32.44)***	0.556 (25.77)***	0.552 (19.71)***
Tenure	-0.004 (-2.08)**	-0.002 (-0.64)	-0.006 (-2.25)**	-0.003 (-1.41)	-0.001 (-0.14)	-0.005 (-1.67)	-0.005 (-1.33)	-0.003 (-0.77)	-0.008 (-1.25)
Return dummy	0.061 (1.58)			0.076 (1.70)*			0.004 (0.05)		
Adjusted R ²	0.35	0.34	0.37	0.33	0.33	0.32	0.39	0.36	0.42
N	7758	3767	3991	5618	2383	3235	2140	1384	756

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.

Table 6. Tobit regression results for CEO cash-based compensation

The cash-based compensation includes salary and bonus. The whole data period is from 1993 to 2003 and we analyze two sub-periods, 1993-2000 and 2001-2003. We set up the Return dummy that is equal to 1 when the firm's stock return is higher than that of S&P 500 index and 0 otherwise. We denote the firm with Return dummy=1 as an Outperformed firm and Return dummy=0 as an Underperformed firm. TA is log of total assets, MB is equal to (market value of equity + book value of debt) / total asset, SHP is the % of firm stocks held by CEO, NMT is the number of board meeting in the year, DR is the long term debt divided by the market value of equity, CR is (cash inflows from operating activities plus cash outflows to investing activities) / the market value of equity, CDD is 1 if CEO is also the board of director, and 0 otherwise, ITD is 1 if CEO is involved in a relationship requiring disclosure in the "Compensation Committee Interlocks and Insider Participation" section of the proxy statement, and 0 otherwise. We control the industry fixed effect by including dummy variables determined at the two-digit SIC code level. Coefficients of year dummies and industry dummies are suppressed for expositional convenience. Numbers in parentheses denote t-statistics.

Variable	Dependent Variable: % of cash-based compensation						
	Sample	1993-2000			2001-2003		
		All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed
Intercept		1.066 (8.78)***	0.747 (4.55)***	0.991 (17.33)***	0.796 (6.79)***	0.945 (6.92)***	0.599 (2.67)***
Market to Book ratio, MB		-0.013 (-8.27)***	-0.011 (-5.94)***	-0.019 (-5.17)***	-0.033 (-7.26)***	-0.034 (-6.70)***	-0.031 (-3.15)***
Tenure		0.003 (6.67)***	0.003 (4.59)***	0.003 (4.87)***	0.003 (3.96)***	0.002 (2.53)**	0.005 (3.35)***
CEO ownership, SHP		0.546 (11.55)***	0.551 (7.32)***	0.546 (8.99)***	0.634 (6.72)***	0.567 (4.87)***	0.740 (4.59)***
Number of board meeting, NMT		-0.005 (-4.52)***	-0.006 (-3.20)***	-0.005 (-3.33)***	-0.002 (-1.02)	-0.001 (-0.25)	-0.004 (-1.11)
Total assets, TA		-0.042 (-18.95)***	-0.037 (-10.79)***	-0.046 (-15.74)***	-0.049 (-13.34)***	-0.053 (-11.32)***	-0.044 (-7.12)***
Debt ratio, DR		0.014 (4.91)***	0.038 (2.47)**	0.013 (4.38)***	0.006 (0.83)	-0.002 (-0.13)	0.008 (0.94)
Cash ratio, CR		-0.065 (-3.38)***	-0.087 (-1.69)*	-0.065 (-3.13)***	0.035 (2.23)**	0.052 (1.85)*	0.031 (1.51)
Dual CEO/Director, CDD		-0.027 (-0.72)	0.044 (0.70)	-0.064 (-1.37)	-0.112 (-1.41)	-0.109 (-1.18)	-0.101 (-0.64)
Interlock dummy, ITD		0.037 (3.50)***	0.029 (1.77)*	0.040 (3.06)***	0.034 (1.31)	0.043 (1.44)	0.010 (0.19)
Return dummy		0.0004 (0.06)			0.063 (5.74)***		
Pseudo R ²		0.6430	0.6117	0.6905	0.5342	0.6089	0.4885
Number of uncensored observations		7334	3006	4328	2604	1671	933
Log likelihood		-378.959	-177.893	-186.169	-226.110	-101.342	-109.108

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

Table 7. Tobit regression results for CEO stock-based compensation

The stock-based compensation includes stock options and restricted stocks. The whole data period is from 1993 to 2003 and we analyze two sub-periods, 1993~2000 and 2001~2003. We set up the Return dummy that is equal to 1 when the firm's stock return is higher than that of S&P 500 index and 0 otherwise. We denote the firm with Return dummy=1 as an Outperformed firm and Return dummy=0 as an Underperformed firm. TA is log of total assets, MB is equal to (market value of equity + book value of debt) / total asset, SHP is the % of firm stocks held by CEO, NMT is the number of board meeting in the year, DR is the long term debt divided by the market value of equity, CR is (cash inflows from operating activities plus cash outflows to investing activities) / the market value of equity, CDD is 1 if CEO is also the board of director, and 0 otherwise, ITD is 1 if CEO is involved in a relationship requiring disclosure in the "Compensation Committee Interlocks and Insider Participation" section of the proxy statement, and 0 otherwise. We control the industry fixed effect by including dummy variables determined at the two-digit SIC code level. Coefficients of year dummies and industry dummies are suppressed for expositional convenience. Numbers in parentheses denote t-statistics.

Variable	Dependent Variable: % of stock-based compensation						
	Sample	1993~2000			2001~2003		
		All firms	Out-performed	Under-performed	All firms	Out-performed	Under-performed
Intercept		-0.259 (-1.52)	0.132 (0.60)	-0.134 (-1.74)*	0.081 (0.53)	-0.087 (-0.50)	0.275 (0.91)
Market to Book ratio, MB		0.016 (7.94)***	0.013 (5.51)***	0.025 (5.09)***	0.044 (7.74)***	0.045 (6.94)***	0.045 (3.65)***
Tenure		-0.003 (-5.51)***	-0.004 (-3.90)***	-0.003 (-3.98)***	-0.004 (-4.17)***	-0.003 (-2.39)**	-0.007 (-3.99)***
CEO ownership, SHP		-1.091 (-15.04)***	-1.085 (-9.54)***	-1.098 (-11.67)***	-0.961 (-7.32)***	-0.945 (-5.91)***	-0.972 (-4.25)***
Number of board meeting, NMT		0.004 (2.92)***	0.007 (2.31)**	0.004 (1.94)*	0.0001 (0.03)	0.000 (0.08)	0.002 (0.39)
Total assets, TA		0.033 (11.09)***	0.028 (5.97)***	0.037 (9.56)***	0.048 (10.30)***	0.051 (8.52)***	0.046 (5.87)***
Debt ratio, DR		-0.020 (-5.06)***	-0.053 (-2.52)**	-0.018 (-4.46)***	-0.021 (-2.54)**	-0.020 (-1.20)	-0.023 (-2.25)**
Cash ratio, CR		0.077 (2.92)***	0.120 (1.73)*	0.075 (2.62)**	-0.021 (-1.06)	-0.021 (-0.59)	-0.023 (-0.89)
Dual CEO/Director, CDD		0.147 (2.88)***	0.079 (0.93)	0.182 (2.85)***	0.204 (1.90)*	0.198 (1.63)	0.245 (1.08)
Interlock dummy, ITD		-0.082 (-5.86)***	-0.053 (-2.35)**	-0.100 (-5.63)***	-0.075 (-2.16)**	-0.089 (-2.27)**	-0.024 (-0.34)
Return dummy		-0.001 (-0.16)			-0.056 (-4.03)***		
Pseudo R ²		0.1515	0.1483	0.1591	0.1618	0.1541	0.1916
Number of uncensored observations		5664	2333	3331	2123	1365	758
Log likelihood		-3380.927	-1414.629	-1951.676	-1180.399	-719.637	-444.559

Table 8. Probit regression from the two sub-period of 1993~2003

We use the data in the two sub-period, 1993~2000 and 2001~2003. The dependent variable is the Return dummy that is equal to 1 when the firm's stock return is higher than that of S&P 500 index and 0 otherwise. TA is log of total assets, MB is equal to (market value of equity + book value of debt) / total asset, SHP is the % of firm stocks held by CEO, NMT is the number of board meeting in the year, DR is the long term debt divided by the market value of equity, CR is (cash inflows from operating activities plus cash outflows to investing activities) / the market value of equity, CDD is 1 if CEO is also the board of director, and 0 otherwise, ITD is 1 if CEO is involved in a relationship requiring disclosure in the "Compensation Committee Interlocks and Insider Participation" section of the proxy statement, and 0 otherwise. We control the industry fixed effect by including dummy variables determined at the two-digit SIC code level. Coefficients of year dummies and industry dummies are suppressed for expositional convenience. Numbers in parentheses denote z-statistics.

Variable	Dependent variable: Return dummy (1=Outperformed firm, 0=Underperformed firm)	
	1993~2000	2001~2003
Intercept	0.399 (0.63)	1.170 (1.92)*
Market to Book ratio, MB	0.227 (12.73)***	0.106 (3.61)***
Tenure	0.002 (0.71)	-0.002 (-0.45)
CEO stock ownership, SHP	-0.114 (-0.46)	-0.303 (-0.66)
Number of board meeting, NMT	-0.016 (-2.73)***	-0.023 (-2.29)**
Total assets, TA	0.035 (2.95)***	-0.010 (0.52)
Debt ratio, DR	-0.307 (-7.06)***	-0.099 (-2.57)***
Cash ratio, CR	-0.586 (-3.03)***	-0.173 (-1.10)
Dual CEO/Director, CDD	-0.178 (-0.69)	-0.279 (-0.68)
Interlock dummy, ITD	-0.132 (-2.43)**	0.413 (3.04)***
Pseudo R ²	0.1143	0.0458
Wald statistics	710.36***	130.33***

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level.