

CEO Compensation and Firm Performance: An Empirical Investigation of UK Panel Data

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Abstract

This paper examines the link between CEO pay and performance employing a unique, hand-collected panel data set of 390 UK non-financial firms from the FTSE All Share Index for the period 1999-2005. We include both cash (salary and bonus) and equity-based (stock options and long-term incentive plans) components of CEO compensation in our analysis of a dynamic CEO compensation model. Different from previous studies, we use GMM-system estimation method, which controls for the presence of unobserved firm-specific effects and for the endogeneity of explanatory variables. In addition, we control for a comprehensive set of corporate governance variables. The empirical results indicate that there is a positive and significant relationship between firm performance and the level of CEO cash compensation while the relationship is positive but not significant for total compensation. This finding suggests that corporate governance reports in the UK, such as Greenbury Report (1995) that proposed CEO compensation be more closely linked to performance, have not been totally effective. We also find that proportion of non-executive directors on board does not have a significant impact on CEO cash compensation, while non-executive directors' share ownership has a nonlinear and significant impact suggesting that ownership can provide incentives for non-executive directors to be more active in monitoring for CEO compensation packages. Our results also indicate that institutional ownership has a positive and significant influence on CEO pay-for-performance sensitivity of option grants. Finally, we find that longer CEO tenure is associated with lower pay-for-performance sensitivity of option grants suggesting the entrenchment effect of CEO tenure.

JEL classification: G3

Keywords: CEO compensation; Corporate Governance

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1. Introduction

There has been a widespread public attention and media interest in CEO pay packages in the UK. Public anger at 'fat cat' salaries first erupted in 1995 over a 75% pay rise given to Cedric Brown, who was the chief executive of the newly-privatised British Gas. The second major event was about Vodafone's CEO compensation package; in 1999, large shareholders tried to block a £10m bonus awarded to Vodafone chief executive Chris Gent, following his firm's takeover of German mobile phone group Mannesmann. Recently, more and more shareholders, particularly institutional investors with large shareholdings have started to make a stand against generous pay awards for underperforming chief executives in the UK companies and emphasize a link between CEO pay and firm performance.

In this paper, we examine the link between CEO compensation and corporate performance in the UK. In comparison to the US, empirical literature on CEO compensation in UK is rather limited². For instance, Girma et al. (2007) investigates the effect of the Cadbury reforms on the CEO pay for a sample of UK companies. Their results suggest that the relationship between pay and performance remains weak for their sample of firms over the period 1981-1996. Gregg et al. (2005) also find a weak link between CEO pay and firm performance. One possible explanation for these weak statistical results is that those researchers have relied on total cash pay (that is, the sum of salary and cash bonus) as a measure of executive compensation. Thus, one can criticize those studies for their analysis excluding the equity-based component of compensation. They omit potentially performance-sensitive component of compensation, e.g., stock options and stock awards. As a result, they ignore interesting differences in the extent to which the cash and equity-based components of compensation are affected by firm performance.

² See Murphy (1999) for a survey of executive compensation literature.

Recently Ozkan (2007) finds that there is no significant relationship between firm performance and CEO compensation for a sample of large UK companies for the fiscal year 2003/2004. Although she includes both cash and equity-based components of CEO compensation in her analysis, one major limitation of her study is that her sample includes data for one year. Murphy (1985) argues convincingly how cross-sectional strategies would provide limited explanation to assess the relationship between compensation and performance. Thus, evidence from these studies relating firm performance and CEO compensation in UK is mixed and hard to interpret.

Consequently the aim of this study is to shed a new light on the link between CEO compensation and corporate performance for UK companies. For the empirical analysis, we include both cash and equity-based (stock options and long-term incentive plans) components of CEO compensation for a panel of large UK companies. In UK executive compensation consists of cash-based compensation, which is the sum of base salary and bonus, and equity-based compensation, that is the sum of stock options and long term incentive plans.

A key contribution of this paper is that it employs a unique, hand-collected panel data set of 390 UK non-financial firms from the FTSE All share index for the period 1999-2005. Panel data estimation allows us to exploit time series variation in CEO compensation, corporate performance and other relevant variables. It also makes it possible to control for unobserved time-invariant firm-specific effects, thus eliminating a potential source of omitted variable bias.

Additionally, in our empirical analysis we control for a comprehensive set of corporate governance variables; institutional ownership, blockholder ownership, proportion of non-executive directors on board, board size, executive and non-executive directors'

ownership. As argued by previous researchers, corporate governance mechanisms can reduce the potential agency problem between managers and shareholders and, thereby influence the way firms set their compensation packages.

Finally, different from previous studies we use GMM-system estimation technique, which controls for the presence of unobserved firm-specific effects and for the endogeneity of explanatory variables. One can note that in this context endogeneity issue can be important for several reasons. First, observable as well as unobservable shocks influencing CEO compensation packages might also have an impact on firm performance and some of the other firm-specific characteristics, e.g., growth opportunities, firm size, and ownership structure etc. Second, it is likely that observed relations between CEO compensation and firm-specific characteristics reflect the effects of CEO compensation on the latter rather than vice versa. Thus, it is important to control for the potential endogeneity problem in CEO compensation analysis.

The empirical results indicate that there is a positive and significant relationship between firm performance and the level of CEO cash compensation while the relationship is positive but not significant for total compensation. This finding suggests that corporate governance reports in the UK, such as Greenbury Report (1995) that proposed CEO compensation be more closely linked to performance, have not been totally effective. Consistent with the results in Ozkan (2007) we find that institutional shareholders play a significant role in determining the level of CEO compensation. In addition, our results show institutional share ownership has a positive and significant impact on CEO pay-for-performance sensitivity of option grants.

We also find that proportion of non-executive directors on board does not have a significant impact on CEO compensation, while non-executive directors' share ownership has

a significant and nonlinear impact suggesting that ownership can provide incentives for non-executive directors to be more active in monitoring for CEO compensation packages. Finally, our results indicate that longer CEO tenure is associated with lower pay-for-performance sensitivity of option grants suggesting the entrenchment effect of CEO tenure.

The remainder of the paper is organized as follows: Section 2 outlines the institutional framework in the UK. Section 3 provides an overview of literature review on executive compensation in the UK. Section 4 presents control variables used in the analysis and section 5 describes model specification. Section 5 provides information on data sources and also presents a description of data. The empirical findings are presented in Section 6. Section 7 presents conclusion and summarizes the findings of the paper.

2. Institutional Framework and CEO compensation in the UK

In the 1990s several reports aiming to correct corporate governance problems in the UK were issued: Cadbury (1992), Greenbury (1995) and Hampel (1998) reports. These have helped focusing attention on the importance of corporate governance issues. The Cadbury (1992) report viewed institutional investors as having important responsibility in corporate governance. It also recommended that companies should establish remuneration committees. In response to the recommendations, the overwhelming majority of publicly traded companies have established remuneration committees and they are comprised entirely of non-executive directors.

The Greenbury report (1995) concentrated specifically on executive compensation policies and recommended that all long term incentive schemes paid by firms, including share options, should be subject to challenging performance criteria. It also recommended the use of LTIPs over option grants and ruled out the common practice of discounting options by 15 % of the grant date share price. The report recommended that these measures should consider

performance relative to a group of comparable companies. It highlighted that directors should not be rewarded for increases in share prices (or any other indicators) which might reflect inflation or general market movements, i.e. which are not directly related to managerial actions. These recommendations have seen widespread approval and rapid implementation.³

Hampel (1998) report has further made it a requirement for UK companies to disclose US style compensation information, allowing for more detailed compensation analyses.

Hampel (1998) stresses the need to pay non-executives fixed fees and recommends the barring of giving them incentive compensation such as LTIPs. The recommendations of all three reports were combined to form part of the London Stock Exchange (LSE) Combined Code, which all companies listed on the LSE must abide by. More recently, Higgs (2003) report also emphasized that UK companies should establish a transparent procedure for developing policy on executive remuneration and for fixing the remuneration of individual directors.

Additionally, it was recommended that executive directors' remuneration should be structured so as to link rewards to corporate performance.

Overall, those reports played an important role in enforcing detailed disclosure rules for UK executive compensation. Now, UK company annual reports contain sufficient information about executive compensation packages to analyse total annual compensation. Previously it was not possible to evaluate the total executive compensation including the value of share options, because of poor disclosure requirements for the UK companies.

3. Literature Review

Although there is a large literature on CEO compensation using data for US companies, the literature for UK companies is relatively limited. To date, research on executive compensation in the UK has concentrated mainly on cash component of compensation, which is available in electronic form⁴. For example, Conyon (1997) uses only cash compensation

³ See, Conyon and Muphy (2000).

⁴ Currently, other components of compensation, such as stock options and stock awards, are not available in electronic form, but only available in the companies' annual reports.

data for a sample of 213 large UK companies between 1988 and 1993 and shows that remuneration committees, an increasingly popular institutional device for setting top pay in the UK, may have some influence on director compensation but his result is not particularly robust. He concludes that there is only mixed evidence. He also finds that separating the roles of chairman and chief executive officer which might potentially mitigate agency problems associated with top pay setting, plays a minor role in influencing director pay.

Gregg et al. (2005) examine the relationship between executive cash compensation and company performance for a sample of large UK companies over the period 1994-2002. Their findings show that overall there is little relationship between cash compensation and performance. Main, Bruce, and Buck (1996) consider both cash and equity-based components of executive compensation for a sample of 60 companies for the period 1983 to 1989. Their findings show that the sensitivity of total compensation including share options to share performance for the highest paid director is rather small⁵. Hence, their data is for an earlier period, when the target of creating shareholder wealth was not as commonly emphasized as it is today. Additionally, from that period to today corporate governance mechanisms have changed considerably in the UK. For example, recent empirical evidence shows that institutional investors have become active in their attitude towards corporate issues in the UK (see, Ozkan(2007)) . Thus, one would expect that a study analyzing a more recent period could provide a different set of results.

There is another strand of the compensation literature consisting of studies that consider both cash and equity-based components of CEO compensation for UK companies using one-year data. Conyon and Murphy (2000) analyses differences in CEO pay and incentives in the U.S. and UK for 1997. Their findings show that after controlling for economic determinants of CEO pay, CEO compensation in the US is higher than in the UK

⁵ In their study they do not investigate the impact of corporate governance mechanisms on executive pay.

based on their sample for the fiscal year 1997. Ozkan (2007) examines the influence of corporate governance mechanisms on the level of CEO compensation for a sample of 414 UK companies for the year 2003. Her findings show that firm performance does not have a significant impact on CEO compensation, while measures of board and ownership structures explain a significant amount of cross-sectional variation in the total CEO compensation, which is the sum of cash and equity-based compensation. One major caveat of those studies is that although they use a detailed composition of CEO compensation including both cash and equity-based components, their analysis is only limited to 1-year data, and this may affect their results (See, Murphy (1985)).

This study contributes the literature by using a unique, hand-collected panel data set of 390 UK non-financial firms from the FTSE All Share Index for the period 1999-2005 to empirically examine the link between CEO pay and performance.

4. Control Variables: Corporate Governance Variables

Agency theory suggests that corporate governance mechanisms could reduce conflicts of interests arising from separation of ownership and control in modern corporations. The corporate governance mechanisms that have been examined (in various contexts) include equity ownership by institutional shareholders, outside blockholders, proportion of executive and non-executive directors, director ownership, board characteristics, CEO's age and tenure.

4a. Institutional Investors as Monitors

In many countries including the UK institutional investors have become dominant shareholders in financial markets. Large shareholdings can allow institutional investors to exert greater impact on corporate issues⁶. For a sample of US companies, Hartzell and Starks

⁶ See, for example, Gillan and Starks (1998) for a survey of institutional investor activism.

(2003) find that institutional investors play an active role in designing executive compensation. A recent study by Ozkan (2007) finds that institutional ownership has a significant and negative impact on the level of CEO compensation for a sample of UK companies for the year 2003. Her findings are consistent with the recent anecdotal evidence that institutions as large shareholders have become more active in their monitoring role. One major limitation of her analysis is that it is based on 1-year data. This paper adds to the literature on CEO compensation by investigating the link between CEO pay and performance for a panel of UK non-financial companies for the period 1999-2005 while controlling for institutional share ownership, blockholder ownership, and board structure variables. Furthermore, different from Ozkan (2007), we investigate whether institutional share ownership has an impact on CEO pay-for-performance sensitivity.

4b. Board of Director Characteristics

The corporate governance reports in the UK, such as the Cadbury(1992), the Greenbury report(1995) and the Hampel report (1998) focused attention on the company board's monitoring role and emphasized the contribution that non-executive directors can make to this process. Core et al. (1999) find that less independent outside directors are associated with greater CEO compensation for his sample of US companies. For a sample of 414 UK companies in 2003, Ozkan (2007) finds that proportion of non-executive directors has a positive impact on CEO compensation suggesting that non-executive directors do not play a monitoring role. However, she does not test whether share ownership by executive and/or non-executive directors would induce them to provide effective monitoring. In this paper, we investigate both the impact of proportion of non-executive directors and share ownership by non-executive and executive directors on CEO compensation packages.

Following Ozkan (2007) and other previous researchers, we also include board size as a control variable.

4b.i. Executive and Non-executive Directors' Shareholdings

The separation of ownership and control in corporations creates the potential for conflicts of interest between directors and shareholders. There is an extensive literature that supports the notion that director ownership can help align the interests of directors with those of shareholders. That is, with increased director ownership, directors would be less likely to divert resources away from value maximization as they bear part of the costs of their actions. Thus, one would expect higher director shareholdings might limit excessive CEO compensation packages leading to a negative relationship between director ownership and CEO compensation (i.e. incentive alignment effect).

Hence, the relationship between directors' ownership and the alignment of shareholder and directors' interests can be non-monotonic, implying that the marginal effect of increased directors' share ownership depends on the current level. At higher levels of directors' ownership outside investors might find it difficult to monitor the directors' behavior since higher ownership gives directors more direct control over the company, increasing their ability to resist outside investors' pressures. Increased director ownership can also give directors greater voting power and control, which could lead to their entrenchment. Furthermore, higher director shareholdings might inhibit the external corporate control market and, in so doing reduce the effectiveness of internal monitoring. For instance, existence of an external control threat might increase the likelihood that the board of directors would feel pressured to take action against a poorly performing CEO (See, e.g., Stulz (1988)). Consequently, entrenched directors who are relatively free of external

discipline could provide less effective monitoring, which could lead to excessive level of CEO compensation.

The net impact of these two effects would determine the sign of the relationship between director ownership and CEO compensation. To test the hypothesized non-monotonic nature of the relationship between director ownership and CEO compensation I estimate a quadratic model that implies existence of a turning point. That is, as director ownership increases, I expect to observe first a negative (i.e. incentive alignment), then a positive effect (i.e. entrenchment) exerted by director ownership on CEO compensation.

Non-executive and executive directors could have different incentives for monitoring the corporate management. Non-executive's main task is to review the performance of both the board and executive directors (Cadbury, 1992). They usually work part-time and have positions on more than one company boards, and are paid relatively less than executive directors. Given that monitoring requires both time and effort, non-executive directors' shareholdings provide them with incentives to do active monitoring. Additionally, their concern about their own reputations and future career prospects might provide them with incentives to be effective in monitoring. Thus, in this paper we examine separately the impact of executive and non-executive directors' ownership on CEO compensation. Previously, Bhagat and Black (2002) attempt to investigate separately the impact of share ownership by executive and non-executive directors on firm value using US data. However, in the context of CEO compensation there has not been any empirical study examining the role of executive and non-executive directors using their ownership. So, one of the aims of this paper is to fill this gap in the literature.

4c. CEO age and horizon problem

We control for the CEO's age and tenure, which is defined as the number of years he has been CEO⁷. One would expect that older CEO age and longer CEO tenure might lead to entrenchment. Older CEOs and CEOs with longer tenure might have more power to design their compensation packages. However, a CEO with longer tenure might also have larger share ownership from the previous share awards and options. Consequently, the relation between CEO tenure and compensation level would be expected to be ambiguous.

5. Model Specification and Estimation

5b. Corporate Governance Mechanisms and the Level of CEO Compensation

A dynamic specification

To investigate whether corporate governance variables and firm performance have significant association with level of CEO compensation, I estimate the following dynamic model;

$$compensation_{it} = \alpha compensation_{it-1} + \eta_1 performance_{i,t} + \sum_{j=1}^n \beta_j control\ variable_{i,t} + \theta_i + \theta_t + \varepsilon_{it} \quad (1)$$

where θ_i is the time-invariant unobservable firms-specific (or fixed) effect, such as firm's organizational culture; θ_t time specific effects, e.g. macro economic shocks, which are common to all sample firms and change over years; ε_{it} is the time-varying error term. The dependent variable "compensation" is measured by either cash compensation (the sum of salary and bonus) or total compensation (the sum of salary, bonus, value of stock options and LTIP). Following the prior studies on CEO compensation, industry-specific effects and time-effects are also included. Additionally, the model allows for persistence in CEO pay by including a lagged dependent variable. The coefficient α gives an estimate of the degree of CEO pay persistence. Most previous researchers have usually omitted the lagged variable for

⁷ Ryan et al. (2001) investigates the impact of CEO age and tenure on CEO compensation for a sample of US companies for 1997.

compensation in their regression model. Thus, they implicitly imposed the restriction that $\alpha = 0$. We test the validity of such restriction for our sample data.

Firm performance is measured by the stock return⁸. As control variables we use a comprehensive set of corporate governance variables, which include institutional ownership concentration, blockholders ownership concentration, number of blockholders, directors' ownership concentration (the sum of executive and non-executive directors' share ownership), board size and percentage of non-executive board members on the board⁹. Other control variables are firm size, which is measured by firm's sales, and growth opportunities (which can be measured by Tobin's q)¹⁰.

In the CEO compensation model, all regressors are potentially endogenous since shocks that affect CEO compensation level are also likely to affect other regressors such as growth opportunities, size, board structure and institutional ownership. Moreover, reverse causality might complicate relations among the variables. For instance, firms might decide on certain compensation packages to attract institutional investors. Additionally, as argued by Hartzell and Starks (2003), increasing trends in institutional shareholdings and CEO compensation level could lead to a spurious relationship between the two variables. Thus, one would observe an endogeneity in the relationship between institutional share ownership and CEO compensation level. As a result, OLS would yield biased and inconsistent estimates.

Moreover, given our dynamic specification, the lagged dependent variable is correlated with the firm-specific (fixed) effects. Because of this correlation between $compensation_{it-1}$ and θ_i , the OLS estimate of the coefficient for $compensation_{it-1}$ in Equation (1) would be biased

⁸ We also use industry adjusted stock return and ROA (return on assets calculated as the ratio of EBIT to total assets).

⁹ Institutional ownership concentration is measured as the fraction of total company shares outstanding held by the institutions. Director ownership concentration is measured as the fraction of total company shares outstanding held by the directors.

¹⁰ Tobin's q is calculated as the sum of the market value of equity and the book value of debt (that is, the difference between the book value of assets and book value of equity), divided by book value of assets. To the extent that Tobin's q captures firm's expected performance, I control for that by including a measure of firm performance (that is, change in shareholder wealth)

upwards¹¹. This correlation would also invalidate estimates based on data where firm means are removed, e.g. the Within Groups (WG) estimation (or fixed-effects estimation) or instrumental variable (IV) estimation used to correct for simultaneity. For instance, I can remove the firm means from equation (1) and get

$$\begin{aligned} compensation_{it} - \overline{compensation}_i = & \alpha (compensation_{it-1} - \overline{compensation}_i) + \eta_1 (performance_{i,t} \\ & - \overline{performance}_i) + \sum_{j=1}^n \beta_j (control\ variable_{i,t} - \overline{control\ variable}_i) + (\varepsilon_{it} - \overline{\varepsilon}_i) \end{aligned} \quad (2)$$

One can notice that $(compensation_{it-1} - \overline{compensation}_i)$ and $(\varepsilon_{it} - \overline{\varepsilon}_i)$ are correlated by construction. Thus the estimate for α would be biased downwards. As Bond (2002) points out since the OLS and WG estimators are biased in opposite directions, a consistent estimate would lie between those two estimate values.¹²

Thus, we can use GMM (generalised method of moments)-system estimation method to solve these problems. This method controls for the presence of unobserved firm-specific effects and for the endogeneity of the explanatory variables. It is a variant of the GMM-difference estimation and it is reported to perform well with highly persistent data like ownership and firm performance.¹³ The GMM-system estimator combines a set of first-differenced equations with equations in levels and lagged first-differences are used as instruments for level equations and lagged level terms are used as instruments for equations in first differences.

4c. Corporate Governance Mechanisms and Pay-for Performance Sensitivity of Stock Options

¹¹ See Bond (2002) for further discussion.

¹² See also Zhou (2001) for potential problems with using fixed-effects estimation for models that include ownership variables, such as directors' ownership etc.

¹³ The GMM estimation method was originally proposed by Arellano and Bond (1991) and Arellano and Bover (1995) and then improved by Blundell and Bond (1998). See also Cheung, A.W.K and Wei, K.C.J (2006) about GMM-system estimation.

In this section, we examine the relation between corporate governance variables and pay-for-performance sensitivity. In particular, we focus on the option grant sensitivity. We use Yermack (1995)'s methodology to compute option grant sensitivity. We calculate the delta of every option grant, $\partial C / \partial P$ (where C is the value of the call option and P is the price of the stock) using the Black-Scholes model. We then multiply the delta of the options by the number of the options granted, and divide by the number of shares outstanding at the beginning of the year. This number will be the sensitivity of the option grant per pound change in share value.

To analyse the relation between option-grant sensitivity and corporate governance variables, we use a Tobit model. Some firms do not pay their CEOs with stock options, and even those firms that use options do not necessarily grant them every year. Thus, stock options data have large number of zero-valued observations and have a truncated distribution, which would make Tobit approach appropriate¹⁴. The regression model is as follows:

$$\Delta(\text{value of options granted per unit } \pounds \text{ change in shareholder wealth})_{it} = v_1 \Delta(\text{shareholder wealth})_{it} + v_2 \Delta(\text{shareholder wealth})_{it-1} + \sum_{j=1}^n \beta_j \text{control variable}_{it-1} \quad (3)$$

Control variables include corporate governance variables, that is, institutional ownership, directors' ownership, board size and percentage of non-executive board members on the board. Other control variables are firm size (which can be measured by firm's market capitalisation)¹⁵ and growth opportunities (which can be measured by Tobin's q). Industry-specific effects and time-effects are also included. The model is similar to Hartzell and Stark (2003), who focus on the impact of institutional ownership on pay for performance sensitivity. However, different from their study we also control for the impact of board structure and directors' ownership, CEO age and tenure on option grant sensitivity. A positive coefficient estimate for institutional ownership would suggest that institutional shareholders provide

¹⁴ Tobit model has been previously used by Yermack (1995) and Hartzell and Stark (2003).

¹⁵ Alternative measures are firm's sales and total assets.

monitoring in designing CEO compensation packages in the UK companies. Additionally, a positive coefficient estimate for percentage of non-executive directors on the board would be interpreted as non-executive directors' active monitoring in determining the structure of CEO compensation packages.

5. Data

The sample covers the 7-year period 1999-2005 for 390 non-financial companies from the FTSE All Share Index. We have an unbalanced panel with 2304 firm-year observations. We include both cash and equity based compensation components for the sample period. Although disclosure for director compensation in the UK has significantly improved following the Greenbury (1995) and Hampel (1998) reports, the compensation information is still not available in electronic form and must be hand-collected from annual reports. Furthermore, the remuneration information for stock options and LTIP awards is not reported in the same tabular form across different companies, making compensation data collection more challenging.

For each company, we collected compensation information from the remuneration section of the annual reports. CEO compensation data include the British pound values of base salary, cash bonus, stock options and long term incentive plans. For ownership variables, we collected data from the Hemmscott Guru and also annual reports. Data for CEO age and tenure were also collected from Hemmscott Guru and annual reports and data for financial variables were extracted from the Datastream.¹⁶ In order to be included in the sample, a firm is required to have consecutive annual compensation data from published company annual reports for a minimum of 4 years between 1999 and 2005, and also other variables must be available for those years.

[Insert Table 1 (A)]

¹⁶ FTSE All Share Index represents over 95 % of the UK stock market capitalisation.

Table 1 (A) reports descriptive statistics for components of CEO compensation for the sample period. One can observe that there has been an increase in average base salary, bonus, value of LTIPs¹⁷. The largest increase has been in the value of LTIPs. Average value of stock options granted during the sample period has been considerably volatile and one can observe a sharp decline in the average value of stock options granted from the year 2003 to 2005. This decline is consistent with the findings of a report in 2005 by PwC consultants suggesting that in the UK options as a form of executive award may not be totally dead but they are rapidly on the way out. They argue that a significant catalyst is the new international accounting rule that requires option grants to be charged for the first time to profit and loss account, thus removing the accounting advantage they had over the other main form of long-term incentive plans. Thus, average value of stock options reduce from £92,909 in 1999 to £38,031 in 2005 while average value of LTIPs increase from £53,608 in 1999 to £194,768 in 2005. Furthermore, average total compensation increased from £386,902 in 1999 to £700,507 in 2005.

[Insert Table 1 (B)]

Table 1 (B) shows descriptive statistics for control variables; ownership and board structure variables. One can observe that both mean and median for institutional share ownership, 4 largest institutional ownership and blockholder ownership increased from 1999 to 2005. However, average number of blockholders seems to have been stable around 2. While average executive share ownership decreased from 6.535 % in 1999 to 4.184 % in 2005, average non-executive share ownership stayed stable around 2 %. One can also notice that while the average board size was stable over the sample period, the average percentage of non-executive directors has increased from 49.1 % to 57.1 %.

[Insert Table 1 (C)]

The descriptive statistics of the other control variables are shown in Table 1(C). The average firm size (market capitalization) is £1823.93 million and the median is £253.6 million.

¹⁷ Following Conyon and Murphy (2000) we calculate the value of LTIP share grants at the value of the shares on the grant date. We value stock options using the Black-Scholes formula.

Stock return, which is our measure for firm performance and calculated as percentage change in annual stock price, has an average of 16.10 percent with a standard deviation of 64.90 percent. Tobin's Q, a proxy for growth options, average 1.768 and ranges from 0.11 to 12.99¹⁸.

6. Regression results

6a. Firm Performance, Corporate governance and CEO cash compensation

Table 2 reports GMM-system estimation results for CEO cash compensation level, which is measured as the sum of base salary and cash bonus¹⁹. The positive and significant coefficient estimate for the lagged compensation shows that there is a significant persistence in CEO cash compensation. In addition, the regression estimates in Table 2 show that larger firms pay greater CEO compensation, which is consistent with previous studies²⁰. The coefficients for the industry and time dummies are not reported in the tables, as they are not of direct interest for this study. The coefficient on the stock return variable is positive and significant at 10 percent level. Thus, in contrast to the findings by Ozkan (2006) our results show that there is a significant and positive relation between CEO cash pay and performance.

[Insert Table 2]

Tobin's Q does not have significant impact on the level of CEO cash compensation. The results in Table 2 also show that there is a positive and significant association between CEO cash compensation and board size. This positive slope is consistent with an interpretation that problems with coordination, communication, and decision-making can hinder board effectiveness, which might be revealed as higher cash compensation for CEOs as the number of directors increases. Thus, our finding is consistent with previous studies, which argue that larger boards are less effective in monitoring and more susceptible to influence of CEO power.

¹⁸ Tobin's Q is measured as the sum of book value of assets plus market value of common stock minus book value of common stock divided by book value of total assets.

¹⁹ Table 5 in appendix provides a comparison of the findings for different estimation methods.

²⁰ For example, see Conyon and Murphy (2000).

Additionally, the results show that firms with a higher proportion of non-executive directors offer higher cash salaries for CEOs. However, the coefficient is not significant. This result can be considered as consistent with the findings of Franks, Mayer, Renneboog (2001). Their results suggest that non-executive directors do not perform a disciplinary function in the UK companies. They find that non-executive directors tend to entrench management by reducing board turnover in poorly performing companies.

The results demonstrate that the level of CEOs' cash compensation is negatively and significantly related to institutional ownership concentration, which is measured as the sum of institutional shareholdings and also by the sum of four largest institutional shareholdings. This result suggests that institutional shareholders provide monitoring for CEOs' cash compensation level. It is also consistent with the theoretical literature regarding the role of the large shareholder; that is, institutions have greater influence when they have large shareholdings in firms. Our empirical results provide support for the anecdotal evidence that recently institutional investors have become more active in the UK corporations and also they support the results from Ozkan (2007). However, this finding is contrary to the previous empirical evidence reported by Cosh and Hughes (1997) and Franks et al. (2001) that the institutional shareholders in the UK companies are passive. We also find that blockholder ownership and number of blockholders have a negative and significant impact on CEO cash compensation level.

We find that the estimated coefficient for executive directors' ownership is negative but statistically insignificant in column (2) and (3) and there is no significant non-linear relation between CEO compensation and executive ownership. However, we find that share ownership by non-executive directors has a significant non-linear impact on CEO cash compensation level. The stability of estimated coefficients across the four columns lends support to the

conclusion that the relation has a non-linear form. This result may be interpreted as evidence that non-executive board members provide monitoring when they have financial incentives.²¹ As reported in table 1, during the 1999-2005 period for our sample firms share ownership by non-executives was relatively lower than share ownership by executives, but still this level of share ownership by non-executives seems sufficient to give them incentive to have a significant impact on CEO cash compensation.

In addition, the model does not seem to exhibit second order serial correlation (see the M2 statistic). The Sargan test of over-identifying restrictions suggests that the instruments are valid and Sargan Difference statistic validates the extra moment restrictions imposed by the level equations in the GMM-system specification.

6b. Firm performance, Corporate Governance and total CEO compensation

Table 3 reports GMM-system regression results for total CEO compensation, which is the sum of cash compensation and equity-based compensation. The results indicate that the coefficient on the stock return is not statistically significant²². Company size, sales, has a significant and positive impact on the total compensation level. Tobin's Q, the proxy for growth opportunities, has positive, but insignificant impact.

[Insert Table 3]

Additionally, the estimated coefficients for board size and the proportion of non-executives on the board are positive and statistically significant. So the results suggest that board structure matters for the total CEO compensation level and non-executive directors do not seem to provide monitoring for the level of total CEO compensation. Similar to the results for U.S. companies, we find that institutional shareholdings have a negative and significant

²¹ I find that CEO age and tenure do not have a significant impact on CEO cash (and total) compensation level and adding those variables into the analysis does not change our results. Thus, those results with CEO age and tenure are not reported for brevity.

²² Other performance measures, such as industry adjusted stock returns, ROA (return on assets), industry adjusted ROA, have also been used but there has been no change in the results.

impact on the total CEO compensation level. Blockholders also play a significant role in determining the total CEO compensation as their ownership increases, the total CEO compensation declines. The estimated coefficient for block-holder shareholding is also negative and significant. The negative relation is consistent with the argument that blockholders act as a check on the CEO pay level. One would expect that if block ownership is more concentrated, then those blockholders would coordinate their monitoring with relatively greater ease and exert pressure on management. Thus, they can help ensure that management does not expropriate wealth from shareholders in the form of excess pay.

Finally, both executive and non-executive directors' share ownership have generally insignificant impact on total CEO compensation. In addition, the model does not seem to exhibit second order serial correlation (see the M2 statistic). Moreover, the Sargan test of over-identifying restrictions suggest that the instruments are not correlated with the error term. The Sargan-difference test statistic validates the extra moment restrictions imposed by the level equations in the GMM system specification.

6c. CEO pay-for-performance sensitivity of option grants

The results of the tobit regressions, provided in Table 4, show that the institutional share ownership is important in explaining option-grant pay-for-performance sensitivity. Column (1) and column(2) show that the results hold whether concentration of institutional shareholdings is measured by total institutional share ownership or top 4 institutional share ownership. The finding of the significant relation between CEO compensation structure and institutional share ownership concentration supports the hypothesis that institutional ownership can serve as a monitoring device that influences the structure of the CEO compensation. Additionally, column (3) and column (4) show the results for block-holder share ownership and number of block holders. The evidence of the significant and positive

impact of block-holder ownership and number of block-holders on option-grant sensitivity suggests that block-holders provide monitoring for the structure of CEO compensation.

[Insert Table 4]

The results in Table 4 show that CEO option-grant sensitivity is positively related to Tobin's Q. This finding is consistent with Smith and Watts (1992)'s argument that firms with greater growth opportunities should have more incentive pay. We also find that board size and proportion of non-executive directors on board have a negative impact on CEO option-grant sensitivity. The coefficient for directors' ownership is positive but insignificant. Furthermore, the results show that higher CEO tenure is associated with lower option grant sensitivity suggesting the entrenchment effect of CEO tenure.

7. Conclusion

CEO compensation packages have been viewed as important in mitigating the conflict of interest between managers and shareholders in corporations. It has been widely recognized that compensation packages could potentially play an important role in motivating top managers. Therefore it is important to understand how corporations set the CEO compensation packages and whether there is a link between compensation and performance. This paper provides additional empirical evidence on the relationship between CEO compensation and performance controlling a comprehensive set of corporate governance mechanisms for a sample of 390 UK non-financial companies from FTSE Allshare index for the period 1999-2005.

The results indicate that there is a positive and significant link between CEO cash compensation and performance while the link between total compensation and performance is positive but not significant. Thus, recent corporate governance reports emphasizing the link between CEO pay and corporate performance do not seem to be totally effective in practice. The findings also suggest that larger firms pay their CEOs higher compensation, which one can

interpret as reflecting their demand for higher quality CEO talent. Additionally, firms with larger board size pay their CEOs higher level of total compensation. Our findings also indicate that proportion of non-executive directors on board does not have a significant impact on CEO cash compensation, while non-executive directors' share ownership has a significant impact suggesting that ownership can provide incentives for non-executive directors to be more active in monitoring for CEO compensation packages.

We also document that institutional and blockholder ownership have a significant and negative impact on the level of total CEO and cash compensation, which shows the existence of active monitoring by block-holders and institutional shareholders. Furthermore, we find that institutional share ownership has a positive and significant impact on CEO pay-for-performance sensitivity of option grants. These findings provide empirical support for the stories from the financial press about institutional investors' influence on CEO compensation packages. We also find that longer CEO tenure is associated with lower pay-for-performance sensitivity of option grants suggesting the entrenchment effect of CEO tenure.

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Table 1 (A).

Descriptive statistics of components of CEO compensation (in British pound values) for 390 firms and 2304 firm-year observations over the period from 1999 to 2005. Total compensation is classified as base salary, cash bonus, stock options and long-term incentive plans (LTIPs).

	1999	2000	2001	2002	2003	2004	2005
Base Salary (£000's)							
Mean	256.739	284.163	302.268	318.674	328.625	347.775	371.348
Median	220	243.5	249.3	264.5	275.625	305.0	330.0
S.D.	150.569	183.547	183.94	190.515	182.418	181.483	193.974
Bonus (£000's)							
Mean	95.879	122.280	134.200	142.177	159.141	191.903	228.911
Median	47	58.0	49.0	63.784	80	107.460	136
S.D.	135.842	248.136	383.007	278.519	267.599	267.258	305.277
Stock option (£000's)							
Mean	92.909	196.104	281.029	98.628	318.986	55.477	38.031
Median	0	0	0	0	2.499	0	0
S.D.	592.184	1076.742	2188.103	908.598	4410.682	202.854	129.0803
LTIP (£000's)							
Mean	53.608	60.265	126.106	120.304	125.670	169.973	194.768
Median	0	0	0	0	0	0	0
S.D.	403.852	191.296	566.753	443.693	374.635	391.815	416.269
Total compensation (£000's)							
Mean	386.902	433.213	533.394	516.898	591.216	634.756	700.507
Median	298.0	311.5	313.913	346.0	383.5	430.0	492.0
S.D.	397.494	431.568	984.339	552.735	710.203	658.430	695.797

Table 1 (B)

Descriptive statistics for firm characteristics, ownership and board structure for 390 firms and 2304 firm-year observations over the period from 1999 to 2005.

	1999	2000	2001	2002	2003	2004	2005
Institutional ownership (%)							
Mean	24.806	25.095	25.117	29.222	30.914	33.392	36.478
Median	23.457	22.944	23.121	27.404	29.581	32.113	33.429
S.D.	17.034	17.057	17.447	17.677	18.871	18.556	19.251
4 largest institutional ownership (%)							
Mean	21.261	21.625	21.596	24.405	25.651	27.264	29.432
Median	20.949	21.979	21.109	23.170	25.058	26.375	27.324
S.D.	12.882	13.187	13.750	13.150	13.940	13.814	14.881
Blockholder ownership (%)							
Mean	20.221	21.370	21.660	23.793	25.399	26.914	28.588
Median	17.802	17.677	18.541	20.179	22.680	24.899	25.800
S.D.	15.865	17.054	17.305	17.707	18.823	18.533	19.863
No. of blockholders							
Mean	2.051	2.165	2.175	2.330	2.451	2.604	2.743
Median	2	2	2	2	2	2	3
S.D.	1.551	1.598	1.595	1.598	1.709	1.747	1.756
Executive ownership (%)							
Mean	6.538	6.078	6.685	5.633	5.116	4.501	4.184
Median	0.586	0.567	0.496	0.416	0.367	0.361	0.311
S.D.	12.805	12.430	16.063	12.415	11.680	10.857	10.661
Non-executive ownership(%)							
Mean	2.134	2.349	2.318	2.109	2.001	1.704	1.643
Median	0.063	0.076	0.080	0.059	0.062	0.080	0.070
S.D.	5.983	6.471	7.420	6.957	6.330	6.221	5.428
Board size							
Mean	8.574	8.450	8.347	8.217	8.282	8.270	8.306
Median	8	8	8	8	8	8	8
S.D.	2.557	2.417	2.371	2.364	2.382	2.288	2.347
Proportion of non-executive members (%)							

Mean	0.491	0.504	0.515	0.524	0.546	0.560	0.571
Median	0.500	0.5	0.500	0.500	0.556	0.571	0.571
S.D.	0.136	0.129	0.126	0.134	0.126	0.21	0.123

Block-holder ownership is defined as percentage of total stock held by non-managerial and non-board members having 5% or more equity in firm.

Table 1 (C): Descriptive statistics for firm characteristics for 390 firms and 2304 firm-year observations over the period 1999-2005.

	<i>Mean</i>	<i>Median</i>	<i>Max</i>	<i>Min</i>	<i>Std. Dev.</i>
<i>Market capitalisation (£ millions)</i>	1823.93	253.6	158,542.9	1.34	7243.968
<i>Sales (£ millions)</i>	1,407,819	330937.5	3.04x10 ⁷	22	3,447,829
<i>Stock return</i>	16.1	8.3	495.6	-96.5	64.9
<i>Tobin's Q</i>	1.768	1.424	11.910	0.114	1.180
<i>CEO age</i>	51	52	74	31	6.67
<i>CEO tenure</i>	6	4	40	1	5.46

Return denotes percentage stock return is measured as percentage change in annual stock price, Tobin's Q is measured as the sum of book value of assets plus market value of common stock minus book value of common stock divided by book value of total assets, market capitalization is measured as share price times number of outstanding shares.

Table 2. Governance effects on CEO's cash compensation level: Dependent variable = $\ln\text{Cash}_t$, GMM-system estimation

	(1)	(2)	(3)	(4)
$\ln\text{Cash}_{t-1}$	0.361*** (5.96)	0.341*** (5.39)	0.365*** (5.72)	0.368*** (5.42)
$\ln\text{Sales}_t$	0.071*** (3.68)	0.080*** (4.20)	0.072*** (3.81)	0.066*** (3.39)
Return_t	0.077* (1.90)	0.070* (1.73)	0.077* (1.93)	0.065 (1.52)
Tobin's Q_t	-0.0002 (-0.04)	0.0002 (0.04)	0.0001 (0.02)	-0.001 (-0.17)
Board size $_{t-1}$	0.055*** (3.08)	0.056*** (2.96)	0.057*** (3.17)	0.061*** (3.29)
Proportion of non-executive directors $_t$	0.458 (1.22)	0.581 (1.52)	0.572 (1.63)	0.375 (1.09)
Total institutional ownership $_t$	-0.005** (-2.73)	-	-	-
4 largest institutional ownership $_t$	-	-0.005** (-2.05)	-	-
Blockholder ownership $_t$	-	-	-0.004** (-2.08)	-
No of blockholders $_t$	-	-	-	-0.052** (-2.20)
Executive directors' ownership $_t$	-0.006* (-1.86)	-0.006 (-1.46)	-0.005 (-1.38)	-0.007* (-1.98)
(Executive directors' ownership $_t$) ²	0.000 (0.39)	0.000 (0.41)	0.000 (0.48)	0.000 (0.64)
Non-executive directors' ownership	-0.023*** (-3.11)	-0.024*** (-3.09)	-0.020*** (-2.62)	-0.018*** (-2.29)
(Non-executive directors' ownership $_t$) ²	0.0003** (2.31)	0.0003** (2.31)	0.0003*** (2.00)	0.0002 (1.63)
M1 (p-value)	0.000	0.000	0.000	0.000
M2 (p-value)	0.328	0.351	0.301	0.254
Sargan (p-value)	0.645	0.472	0.468	0.425
Sargan-Difference (p-value)	0.703	0.683	0.656	0.578

This table shows coefficients from the GMM-SYS regression of the CEO cash compensation level against the lagged cash compensation level, firm size (sales), firm performance (stock return), Tobin's Q, board size, proportion of non-executive directors on the board, percentage of total institutional share ownership, percentage of 4 largest institutional share ownership, outside blockholders' ownership, executive and non-executive directors' share ownership. Tobin's Q is measured as the sum of book value of assets plus market value of common stock minus book value of common stock divided by book value of total assets. For the first difference equations, levels lagged at [t-2] are used as instruments.

In the level equations, first differences dated [t-1] are used as instruments. The coefficient of intercept is not reported. Our sample consists 390 firms and 2304 firm-year observations over the period from 1999 to 2005. The GMM results are two-step estimates with heteroskedasticity-consistent errors, which are based on the finite sample adjustment of Windmeijer (2005). The Sargan statistic tests for over-identifying restrictions, and is asymptotically distributed as χ^2 under the null hypothesis of valid instruments. The Sargan-difference test is used to test the additional moment conditions used by GMM-SYS estimator. The M1 and M2 statistics test the absence of first and second-order correlation in residuals. They are asymptotically distributed as N(0,1) under the null hypothesis of no serial correlation. T-statistics are provided in parenthesis. ***, ** and * indicate coefficient is significant at the 1, 5 and 10 percent level, respectively. All equations include time dummies.

Table 3. Governance effects on CEO's total compensation level: Dependent variable = $\ln\text{Total}_t$, GMM-system estimation

	(1)	(2)	(3)	(4)
$\ln\text{Total}_{t-1}$	0.352*** (5.31)	0.343*** (5.29)	0.325*** (4.70)	0.311*** (4.39)
$\ln\text{Sales}_t$	0.104*** (4.48)	0.108*** (4.78)	0.108*** (4.85)	0.104*** (4.65)
Return_t	0.080 (1.31)	0.069 (1.19)	0.083 (1.40)	0.067 (1.07)
$\text{Tobin's } Q_t$	0.027 (1.08)	0.026 (1.04)	0.030 (1.13)	0.028 (1.21)
Board size_{t-1}	0.070*** (2.93)	0.065*** (2.71)	0.077*** (3.22)	0.089*** (3.51)
$\text{Proportion of non-executive directors}_t$	0.845* (1.94)	0.881** (2.02)	0.959** (2.09)	1.041** (2.14)
$\text{Total institutional ownership}_t$	-0.006** (-2.31)	-	-	-
$\text{4 largest institutional ownership}_t$	-	-0.007** (-2.08)	-	-
$\text{Blockholder ownership}_t$	-	-	-0.004* (-1.64)	-
$\text{No of blockholders}_t$	-	-	-	-0.060** (-2.10)
$\text{Executive directors' ownership}_t$	-0.007* (-1.65)	-0.005 (-1.25)	-0.005 (-1.08)	-0.007 (-1.56)
$(\text{Executive directors' ownership}_t)^2$	0.000 (0.27)	0.000 (0.03)	-0.000 (-0.05)	0.000 (0.30)
$\text{Non-executive directors' ownership}_t$	-0.024* (-1.81)	-0.023* (-1.64)	-0.018 (-1.46)	-0.016 (-1.55)
$(\text{Non-executive directors' ownership}_t)^2$	0.0003 (1.49)	0.0003 (1.35)	0.0003 (1.13)	0.000 (1.01)
M1	0.000	0.000	0.000	0.000
M2	0.653	0.662	0.646	0.663
Sargan	0.666	0.784	0.711	0.573
Sargan-difference	0.844	0.923	0.809	0.502

This table shows coefficients from the GMM-SYS regression of the CEO total compensation level against the lagged total compensation level, firm size (sales), firm performance (stock return), Tobin's Q, board size, proportion of non-executive directors on the board, percentage of total institutional share ownership, percentage of 4 largest institutional share ownership, outside blockholders' ownership, executive and non-executive directors' share ownership. Tobin's Q is measured as the sum of book value of assets plus market value of common stock minus book value of common stock

divided by book value of total assets. For the first difference equations, levels lagged at [t-2] are used as instruments. In the level equations, first differences dated [t-1] are used as instruments. The coefficient of intercept is not reported. Our sample consists 390 firms and 2304 firm-year observations over the period from 1999 to 2005. The GMM results are two-step estimates with heteroskedasticity-consistent errors, which are based on the finite sample adjustment of Windmeijer (2005). The Sargan statistic tests for over-identifying restrictions, and is asymptotically distributed as χ^2 under the null hypothesis of valid instruments. The Sargan-difference test is used to test the additional moment conditions used by GMM-SYS estimator. The M1 and M2 statistics test the absence of first and second-order correlation in residuals. They are asymptotically distributed as $N(0,1)$ under the null hypothesis of no serial correlation. T-statistics are provided in parenthesis. ***, ** and * indicate coefficient is significant at the 1, 5 and 10 percent level, respectively. All equations include time dummies.

Table 4. Tobit analysis: Governance effects on CEO pay-performance sensitivity of option grants

Dependent Variable: Change in the value of options granted a manager per £1 change in shareholder wealth

Independent variables	(1)	(2)	(3)	(4)
Δ (Shareholder wealth _t)	0.005 (0.16)	0.004 (0.14)	0.006 (0.19)	0.005 (0.15)
Δ (Shareholder wealth _{t-1})	0.008 (0.27)	0.007 (0.25)	0.009 (0.32)	0.008 (0.29)
Tobin's Q _{t-1}	0.050** (2.07)	0.048** (1.99)	0.049** (2.07)	0.050** (2.09)
Market capitalisation _{t-1}	0.006 (0.49)	0.006 (0.45)	0.007 (0.61)	0.006 (0.56)
Board size _{t-1}	-0.137*** (-3.99)	-0.131*** (-3.82)	-0.127*** (-3.73)	-0.136*** (-4.03)
Proportion of non-executive directors _{t-1}	-0.840 (-1.43)	-0.941 (-1.61)	-1.089* (-1.87)	-0.824 (-1.41)
Total institutional ownership _{t-1}	0.013*** (3.16)	-	-	-
4 largest institutional ownership _{t-1}	-	0.020*** (3.56)	-	-
Blockholder ownership _{t-1}	-	-	0.019*** (4.77)	-
No of blockholders _{t-1}	-	-	-	0.191*** (4.33)
CEO age	-0.0001 (-0.01)	0.0001 (0.01)	-0.001 (-0.04)	-0.001 (-0.05)
CEO tenure	-0.031** (-2.27)	-0.031** (-2.21)	-0.030** (-2.17)	-0.031** (-2.20)
Directors' ownership _{t-1}	0.008 (1.24)	0.008 (1.25)	0.005 (0.71)	0.006 (0.96)

This table shows coefficients from the Tobit regression of the CEO compensation against the change and lagged change in shareholder's wealth, firm size (market capitalization), Tobin's Q, board size, proportion of non-executive directors on the board, percentage of total institutional share ownership, percentage of 4 largest institutional share ownership, outside blockholders' ownership. Tobin's Q is measured as the sum of book value of assets plus market value of common stock minus book value of common stock divided by book value of total assets. The coefficient of intercept is not reported. Our sample consists 390 firms and 2304 firm-year observations over the period from 1999 to 2005. T-statistics are provided in parenthesis. ***, ** and * indicate coefficient is significant at the 1, 5 and 10 percent level, respectively. All equations include time and industry dummies.

Appendix:

Table 5 provides a comparison of coefficient estimates from different estimation methods. One can notice that the coefficient estimate for $\ln Cash_{t-1}$ in the OLS model is the largest and those in WG and GMM-Diff are approximately equal (even though, the coefficient estimate in GMM-Diff is not significant). The coefficient estimate in GMM-SYS is closer to the mid point between OLS and WG estimate. These findings are consistent with Bond (2002) argument that the GMM-SYS estimate is less biased than the OLS and WG and GMM-Diff finite sample bias would be in the same direction as that of WG estimate.

Table 5. CEO cash compensation and governance effects: Regression models using OLS, WG, GMM-DIFF and GMM-SYS

	(1) OLS	(2) WG	(3) GMM-Diff	(4) GMM-SYS
$\ln Cash_{t-1}$	0.646*** (21.34)	0.104*** (4.30)	0.070 (0.73)	0.361*** (5.77)
$\ln Sales_t$	0.067*** (7.97)	0.154*** (6.78)	0.289** (2.09)	0.061*** (2.87)
$Return_t$	0.106*** (5.81)	0.062*** (4.59)	0.039 (0.98)	0.085** (2.18)
$Tobin's Q_t$	0.005 (1.36)	0.003 (0.65)	-0.009 (-1.02)	-0.002 (-0.35)
$Board size_{t-1}$	0.022*** (5.31)	0.003 (0.53)	0.029 (0.69)	0.063*** (3.49)
$Proportion of non-executive directors_t$	0.204*** (3.31)	-0.017 (-0.17)	0.065 (0.12)	0.399 (1.37)
$Total institutional ownership_t$	-0.001*** (-2.93)	-0.001 (-1.39)	-0.006* (-1.84)	-0.005** (-2.31)
$Directors' ownership$	-0.002*** (-4.10)	-0.001 (1.23)	-0.013*** (-3.56)	-0.007*** (-2.78)
M1			0.001	0.000
M2			0.915	0.358
Sargan			0.966	0.751
Sargan-Difference				0.410

This table shows coefficients from the regression of the CEO cash compensation level against the lagged cash compensation level, firm size (sales), firm performance (stock return), Tobin's Q, board size, proportion of non-executive directors on the board, percentage of total institutional share ownership, directors' share ownership. Tobin's Q is measured as the sum of book value of assets plus market value of common stock minus book value of common stock divided by book value of total assets. For model (1) OLS estimation in levels is used. Model (2) is estimated using WG method. Model (3) is estimated using GMM-Diff with levels dated [t-2] of all regressors are used as instruments. Model (5) is estimated using GMM-SYS method. For the first difference equations, levels lagged at [t-2] are used as instruments. In the level equations, first differences dated [t-1] are used as instruments. The coefficient of intercept is not reported. Our sample consists 373 firms and 2304 firm-year observations over the period from 1999 to 2005. The GMM results are two-step estimates with heteroskedasticity-consistent errors, which are based on the finite sample adjustment of Windmeijer (2005). The Sargan statistic tests for over-identifying restrictions, and is asymptotically distributed as χ^2 under the null hypothesis of valid instruments. The Sargan-difference test is used to test the additional moment conditions used by GMM-SYS estimator. The M1 and M2 statistics test the absence of first and second-order correlation in residuals. They are asymptotically distributed as N(0,1) under the null hypothesis of no serial correlation. T-statistics are provided in parenthesis. ***, ** and * indicate coefficient is significant at the 1, 5 and 10 percent level, respectively. All equations include time dummies.