CEO Compensation, Performance and Corporate Governance:

An Empirical Investigation of UK Panel Data

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Abstract

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Abstract

This paper 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 to empirically examine the link between CEO pay and performance, and corporate governance mechanisms. Distinct from the previous studies, I use GMM-system estimation method, which controls for both the presence of unobserved firm-specific effects and the endogeneity of explanatory variables. The results show that measures of board and ownership structures explain a significant amount of variation in the total CEO compensation, which is the sum of cash and equity-based compensation, after controlling other firm-specific variables.

1. Introduction

There has been a widespread public attention and academic 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.

For example, in May 2003 GlaxoSmithKline (GSK) faced a shareholder revolt over the proposals to boost chief executive Jean Pierre Garnier's pay. The proposed deal would hand Mr. Garnier discounted share options and free shares worth about $15 m (£9.6 m), nearly doubling his remuneration. Large shareholders, mainly financial institutions, such as Standard life and Axa, questioned whether Mr. Garnier's track record justifies such a large increase in pay. Then, GSK became the first company in the FTSE 100 index to have its executive pay rejected by its shareholders[2].

Moreover, the Association of British Insurers (ABI) and the National Association of Pension Funds (NAPF), whose members own about half the shares on the London Stock Exchange, have been threatening to vote down hefty pay increases for executives who have been viewed as lame duck bosses. Both the NAPF and ABI have been saying that companies

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[2] During that year, GSK's financial performance faltered, with profits falling by 25 %. At the same time, the company's share price fell 30 % over the 3-year tenure of Mr. Garnier. See, www.bbc.co.uk , business news section.

should draft their chief executives' employment contracts in such a way that salary increases are tied more closely to performance.

The aim of this paper is to investigate whether institutional shareholders provide monitoring for CEO pay packages in the UK companies. I test whether they have a significant impact on CEO pay-for-performance sensitivity and CEO pay level. Although recently institutional shareholders seems to have taken an active approach to the design of CEO compensation packages, the findings from several studies suggest that institutional investors in the UK seem to adopt a passive stance towards monitoring and disciplining firms' management (see Georgen and Renneboog, 2001; Stapledon, 1996)[3]. Starting with Cadbury Report (1992) all UK codes of best practice expressed concern about the passive approach taken by institutional investors in dealing with underperformance in UK companies in which they invest. In addition, there was a regulatory change in 2002 aiming to increase institutional shareholder activism in the UK companies. According to the Company Act of 2002 companies are required to hold annual shareholder votes on executive pay. Recently, anecdotal evidence from the media shows that institutional shareholders as large investors have been willing to voice their opinions about executive compensation packages they consider overly generous. Given this background, it is important to examine how effective the institutional shareholders are in the UK in the design of CEO pay packages and whether they play a significant role in CEO's pay-for-performance sensitivity.

Another important issue that has been a focus of attention in the UK corporate governance reports and codes of best practice is the monitoring role of non-executive directors. For example, the Higgs Report (2003) recommends that UK company boards be composed of a majority of non-executive directors, who would be expected to provide a

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[3] One exception is Ozkan (2006) who find that institutional share ownership has a negative impact on the level of CEO compensation for a sample of 414 UK companies in 2003. However, she does not investigate whether institutional investors influence CEO pay-for-performance sensitivity.

more effective monitoring than executive directors. It has been argued that non-executive directors, similar to executive directors, could be motivated to be more active monitors on behalf of shareholders if they have a significant investment in the company. Thus, I examine whether share ownership by non-executive directors has a significant impact on CEO compensation packages in the UK. Additionally, I test whether higher proportion of non-executive directors can increase pay-for-performance sensitivity and has a significant impact on CEO compensation level.

Finally, I investigate whether other corporate governance mechanisms, such as executive directors' ownership, outside blockholder ownership, number of outside blockholders, CEO age and tenure have an impact on the design of CEO pay packages for the UK companies. CEOs can have substantial influence over their own pay. That is, compensation will be higher and /or less sensitive to performance in firms, in which CEOs have relatively more power[4]. Corporate governance mechanisms could play an important role in disciplining CEO power and have an impact on CEO compensation packages. By examining the influence of a comprehensive set of corporate governance mechanisms on CEO pay, I hope to offer a more complete explanation of CEO pay packages for UK companies.

For my analysis, I employ a unique, hand-collected panel data set of 390 UK non-financial firms from the FTSE All share index for the period 1999-2005 and consider both cash and equity-based components of CEO compensation. Distinct from previous studies I use GMM-system estimation method, which controls for the presence of unobserved firm-specific effects and for the endogeneity of explanatory variables. The empirical results indicate that there is a negative and significant relation between institutional ownership and level of CEO compensation. I find that firms with larger board size and a higher proportion

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[4] See, for example, Bebchuk and Fried (2003).

of non-executive directors on their boards pay their CEOs higher compensation, suggesting that non-executive directors are not more efficient in monitoring than executive directors. In addition, the findings show that non-executive director share ownership have a non-linear and significant impact on the level of CEO cash compensation. These results suggest that ownership could provide non-executive directors with an incentive to do monitoring in determining compensation packages for the UK CEOs.

I also find that outside blockholder ownership and number of outside blockholders matter too[5]. I document that blockholder ownership and number of outside blockholders has a significant and negative impact on CEO compensation for our sample. Furthermore, the results show that there is a significant and positive relation between level of cash compensation and firm performance, while there is no significant relation between level of total compensation and firm performance. 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. Additionally, I find that institutional share ownership has a positive and significant impact on CEO pay-for-performance sensitivity of option grants, cash compensation and total compensation. This finding is consistent with the stories from the financial press about institutional investors' influence on CEO compensation packages.

The remainder of the paper is organized as follows: Section 2 presents outlines the extant literature concerning the relation between corporate governance mechanisms and CEO compensation. Section 3 presents an overview of the institutional framework in the UK. Section 4 describes model specification and 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.

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[5] A shareholder with 5% or more share ownership is called blockholder.

2. Literature Review

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, executive and non-executive directors, board characteristics, CEO's age and tenure. In this section, I present an overview of those mechanisms and their potential impact on CEO pay process.

2a. Institutional Investors as Monitors

In many countries including the UK institutional investors have become a dominant shareholder in financial markets. Institutions as large shareholders are expected to have greater incentive to engage in monitoring management since the benefits that they receive could exceed the high cost of monitoring (Shleifer and Vishny, 1986). However, some authors argue that institutional investors rarely take action in corporate monitoring because they view liquidity as more important than building up the concentrated ownership required to have an influence on corporate management (Coffee, 1991; Bhide, 1994). Bhide argues that high liquidity in U.S. stock markets serves as an impediment to effective corporate governance; when dissatisfied with management actions, institutions sell their shares rather than hold on to their investment and use their votes to influence the company to achieve better results.

Maug (1998) investigates the claim that liquid stock markets prevent effective corporate governance and argues that the alleged trade-off between liquidity and control does not exist. Although in a more liquid market it is less costly to sell a large stake, such a market also makes it easier for investors to accumulate large stakes without substantially affecting the stock price and to capitalize on governance-related activities. Liquid stock markets have two opposing effects on corporate governance. On the one hand, liquid markets can facilitate the

exercise of corporate control because they allow large shareholders to emerge to correct

managerial failure. On the other hand, liquid markets also allow large shareholders to dispose

of their shares ahead of an expected fall in stock prices rather than become involved in

management of the company. It is theoretically ambiguous which of these effects dominates.

In the UK, institutional investors hold a considerably large ownership of total corporate

equity. According to the ONS (2004) as of December 2003 institutional investors owned

around 80 percent of UK equity, with the largest holdings being those of insurance companies

17 percent; pension funds 16 percent; unit trusts, investment trusts and other financial

institutions together holding some 15 percent; and overseas investors 32 percent.

Given their substantial ownership, the potential role of institutions in UK corporate

governance is an important area to explore. However there are only a few studies investigating

how effective institutions are in monitoring UK corporations' management. Goergen and

Renneboog (1998) argue that despite the fact that a large percentage of the aggregate UK

market capitalization is held by institutions, these institutional investors are not major players

from a principal-agent perspective. They suggest various explanations for the institutional

investors' passive approach in the UK. For instance, they note that institutions follow low-cost

passive index strategies and they do not spend their resources to actively monitor the large

number of companies in their portfolios.

The studies by Goergen and Renneboog (2001), and Stapledon (1996) focus on the role

of institutional investors in UK corporate governance. Their results suggest that institutions are

passive investors; monitoring by institutions is not an important governance mechanism for

UK corporate management. Mallin (1995)'s survey results from a sample of 250 large

companies show that 90 % report voting levels of less than 52 %. Plender (1997)'s

findings also provide support for the passive standing of institutional investors in the UK. He

reports that institutional investors do not frequently exercise their voting rights: only about 28

percent of pension funds cast their votes on a regular basis, 21 percent never vote and 32 percent vote only on extraordinary items.

However, one can observe that recently substantial changes have occurred in the practices of institutional investors.   According to a report by the Committee inquiring into U.K. Vote Execution voting levels at U.K. companies moved from 20 % in 1990 to 50 % in 1999[6].   Furthermore, the amendment of the Companies Act in 2002 requires the shareholders' approval of executive compensation packages at the company annual general meeting. Thus one important governance characteristics of the UK is that in the UK, unlike the US, shareholders vote on CEO and other executive compensation packages. Although the vote is not binding, companies often adhere to them. Institutional investors as large shareholders have been willing to voice their opinions about compensation packages they considered overly generous [7].

Recent statements by the Association of British Insurers (ABI) and National Association of Pension Funds (NAPF) and by the Institutional Shareholders' Committee (ISC) emphasize the role of institutional investors in corporate governance. The ISC (2002) recommended policies on activism, which do not imply micro-managing the affairs of investee companies, but rather ensuring that shareholders derive value from their investments by dealing effectively with issues of under-performance.

A recent study by Ozkan (2006) finds that institutional ownership has a significant and negative impact on the level of CEO compensation for a sample of 414 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 institutional

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[6] However, this is still in substantial contrast to the U.S., where voting turnout can easily reach 70-80 % at many companies (Bethel and Gillan, 2002).
[7] See the article 'Why British CEOs Earn Less Than Their U.S. Counterpart', by Joanna L. Ossinger, The Wall Street Journal online.

ownership and CEO compensation by employing a panel of UK non-financial companies for the period 1999-2005. Furthermore, different from Ozkan(2006), I investigate whether institutional share ownership has an impact on CEO pay-for-performance sensitivity.

2b. Board of Director Characteristics

Economic theory suggests that the board of directors is an important part of corporate governance structure in large corporations (Fama and Jensen, 1983). The board of directors' main function is to serve to resolve conflicts of interest among shareholders and managers. 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. Until recently, the boards of large UK corporations were typically dominated by senior executives from within the organization. As a response to the corporate governance reports, there has been a change in the composition of UK company boards. For example, Peasnell et al. (1998) reports that percentage of non-executive directors on the UK boards increased from 33 percent in 1990 to 45 percent in 1996. For my sample, I observe that proportion of non-executive directors increases from 49 % in 1999 to 57 % in 2005.

One difference between UK and US is that US boards are dominated by outside directors. For example, Bhagat and Black (1998) find an average of 76 percent outside directors on US boards. It appears that US outside directors with a higher percentage of outside directors might be in a better position to monitor management than their UK counterparts. 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 (2006) 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

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non-executive directors would induce them to provide effective monitoring. In this paper, I investigate both the impact of proportion of non-executive directors and share ownership by non-executive and executive directors on CEO compensation packages.

From the corporate governance point of view, another important board characteristic is board size. Previous evidence suggests that smaller boards provide more effective monitoring than large boards. For example, Yermack (1996) argues that smaller boards can mitigate the free rider problem and be more open to dialogue. However, these advantages of smaller size boards can be in conflict with having a more diverse board composition. Hence, Morck (2004) argues that based on the findings in the social psychology literature larger, more diverse boards can be related to more effective monitoring. In this study, I investigate whether board size can play a role in determining CEO pay level and CEO pay-for-performance sensitivity for a sample of 390 non-financial companies in the UK for the period 1999-2005.

2c. 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 I examine separately the impact

of executive and non-executive directors' ownership on CEO compensation. Previously,

Morck et al. (1988) and 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.

2d. CEO age and horizon problem

I control for the CEO's age and tenure, which is defined as the number of years he

has been CEO. 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.

3. 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 included recommendations on the structure and responsibilities of corporate

boards of directors. The two key recommendations were that boards of publicly traded

companies include at least three non-executive (i.e., outside) directors and that the positions of

chief executive officer (CEO) and chairman of the board of these companies be held by two

different individuals. It was also recommended that companies should establish remuneration

committees. The reasoning underlying those recommendations was that greater independence could improve board oversight. 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. In response to those recommendations most of the publicly traded companies introduced goals for earnings per share (EPS) and total shareholder return (TSR) for the firms to achieve before long term incentive plans (LTIPs) would be vested. 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.[8]

The Hampel Committee (1998) investigated the corporate governance recommendations in force in the UK. Both the Greenbury (1995) report and Hampel (1998) report have 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 (1993) report also emphasized that UK companies should establish a transparent procedure for developing policy on executive

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[8] See, Conyon et al (2000).

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.

To date, research on executive compensation in the UK has concentrated mainly on cash component of compensation, which is available in electronic form[9]. For example, Conyon (1997) use only cash compensation 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.

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 annual 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

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[9] 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.

differences in the extent to which the cash and equity-based components of compensation are affected by firm performance.

One exception (in the UK literature) is a study by Main, Bruce, and Buck (1996), which considers both cash and equity-based components of executive compensation 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 small[10]. 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. 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 tha n in the UK based on their sample for the fiscal year 1997. Ozkan (2006) 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 performanc e 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.

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

Murphy (1985) argues convincingly how cross-sectional strategies would provide limited explanation to assess the relationship between compensation and performance. This paper uses panel data of UK non-financial firms to investigate the relationship between CEO compensation, performance and corporate governance mechanisms. Panel estimation technique makes it possible to control for time-invariant firm-specific effects, thus eliminating a potential source of omitted variable bias.

4. Model Specification and Estimation

To examine the relation between CEO pay and performance, and corporate governance mechanisms I employ two regression analyses, one that seeks to explain the level of CEO compensation and another one that seeks to explain changes in CEO compensation. First, I describe the components of CEO compensation packages.

4a. Measuring the components of CEO compensation

CEOs in the UK receive base salaries and are eligible for annual bonuses, which are based on accounting performance. They also receive share options, normally issued at the current share price. In the UK, options are generally exercisable at the holder's discretion after three to seven years, subject to the achievement of a performance target, such as growth in earnings per share. Many companies use long-term incentive plans (LTIPs) in addition to or instead of an option scheme. Thus, LTIPs are grants of shares of stock that become vested (i.e., ownership is transferred to the CEO) if certain performance targets are achieved. It is notable that while the most common performance condition on options is the achievement of a certain level of growth in earnings per share, for long-term incentive plans the most common measure is total shareholder return, the combined dividend and capital gain return to shareholders over a period of time. CEOs are rewarded for their relative total shareholder return compared to an index or a group of peers. The advantage of using total shareholder return as a performance measure is that it is aligned with shareholder return, and is perceived

to be outside the immediate control of the executives. Recently, institutional investor pressures have led to performance targets being increased[11].

Following the literature, I define cash compensation as the sum of base salary and annual bonus, while total compensation is defined as the sum of base salary, annual bonus, LTIP awards, and stock options valued at grant date. LTIP share grants are measured at the face value of the shares on the grant date and 20% discount is imposed for the performance contingent grants. Value of LTIP cash awards is calculated as the amount paid during the fiscal year[12]. For measuring the grant-date expected stock option value, I use Black and Scholes (1973) formula, which is adjusted for continuously paid dividends. Thus, the formula for calculating stock option value is as follows:

$$Value\ of\ stock\ option = Pe^{-\ln(1+d)T} N(z) - Xe^{-\ln(1+r)T} N(z - s\sqrt{T})$$

$$z = \frac{\ln(P/X) + [\ln(1+r) - \ln(1+d) + s^2/2]T}{s\sqrt{T}}$$

where P is the grant-date share price, X is the exercise price, T is the time remaining until expiration, d is the annualised dividend yield, s is the stock price volatility, r is the risk-free discount rate, $N()$ is the cumulative normal distribution function. Similar to Conyon and Murphy (2002) and Ozkan (2006) volatility is defined as the standard deviation of monthly continuously compounded returns over the prior 48 months, multiplied by $\sqrt{12}$. The risk free rate is measured as the average yield on 7-year UK treasury bills. Dividend yields are measured as the average of the prior 48 monthly observations on cash dividend per share.

4b. Corporate Governance Mechanisms and the Level of CEO Compensation

A dynamic specification

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[11] Financial Times,'Mastering Corporate Governance'(www.ft.com/sponsored reports).
[12] See Conyon and Murphy (2002).

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

$$compensation_{it} = a \; compensation_{it-1} + h_1 \; performance_{i,t} + \sum_{k=1}^{m} d_k \; corporate \; governance$$

$$variable_{i,t} + \sum_{j=1}^{n} b_j \; control \; variable_{i,t} + q_i + e_{it}$$

where q_i is the firms-specific (or fixed) effect, e_{it} is the error term, and 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 a gives an estimate of the degree of CEO pay persistence. Most previous researchers have usually omitted the lagged variable for compensation in their regression model. Thus, they implicitly imposed the restriction that $a = 0$. I test the validity of such restriction for my sample data.

Firm performance is measured by the stock return[13]. Corporate governance variables 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

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[13] Also the change in shareholder wealth, Δ (*shareholder wealth*)$_{it}$,which is defined as $r_t V_{t-1}$, where r_t is the rate of return on common stock realized in fiscal year t, and V_{t-1} is the firm value at the end of the previous year.

board[14]. Control variables are firm size, which is measured by firm's sales, and growth opportunities (which can be measured by Tobin's q)[15].

Previous researchers have pointed to the potential endogeneity problem in executive compensation models. For example, Hartzell and Starks (2003) use lagged explanatory variables to minimize the endogeneity problem in their OLS pooled regression model. In the CEO compensantion 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. Furthermore, increasing trends in institutional shareholdings and CEO compensation level could lead to a spurious relationship between the two variables. As a result, one would observe an endogeneity in the relationship between institutional share ownership and CEO compensation level.

Another potential source of endogeneity is the presence of unobservable firm-specific effects (fixed effects) that are correlated with the regressors. Failure to control for fixed effects might lead to the omitted variable bias. Finally, the dynamic specification would imply a correlation between lagged dependent variable and the fixed effects. Thus, OLS estimation would give biased and inconsistent estimates. Furthermore, fixed-effects estimation method would provide biased and inconsistent estimates[16].

Thus, I use GMM (generalised method of moments)-system estimation method to solve these problems. This method is a variant of the GMM estimation and it is reported to perform

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[14] 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.

[15] 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)

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

well with highly persistent data like ownership and firm performance.[17] Moreover, the GMM-system estimator controls for the presence of unobserved firm-specific effects and for the endogeneity of the explanatory variables.

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

In this section, I examine the relation between corporate governance variables and pay-for-performance sensitivity. In particular, I focus on the option grant sensitivity. I use Yermack (1995)'s methodology to compute option grant sensitivity. I 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. I 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, I 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 appropriate[18]. The regression model is as follows:

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[17] 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). 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. See also Cheung, A.W.K and Wei, K.C.J (2006) about GMM-system estimation.

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

$$\Delta (\textit{value of options granted per unit £ change in shareholder wealth})_{it} = \textbf{\textit{n}}_1 \Delta (\textit{shareholder}$$

$$\textit{wealth})_{it} + \textbf{\textit{n}}_2 \Delta (\textit{shareholder wealth})_{it-1} + \sum_{k=1}^{m} \textbf{\textit{d}}_k \textit{ corporate governance variable}_{it-1,k} +$$

$$\sum_{j=1}^{n} \textbf{\textit{b}}_j \textit{ control variable}_{it-1}$$

Corporate governance variables include institutional ownership, directors' ownership, board size and percentage of non-executive board members on the board. Control variables are firm size (which can be measured by firm's market capitalisation)[19] and growth opportunities (which can be measured by Tobin's q). Industry-specific effects and time-effects are also included. The model is also similar to Hartzell and Stark (2003), who focus on the impact of institutional ownership on pay for performance sensitivity. However, different from their study I also consider 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 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.

4d. Corporate Governance Mechanisms and Pay-for Performance Sensitivity of Cash Compensation and Total Compensation

In this part, I focus on cash compensation and total compensation in measuring pay for performance sensitivity. I examine the relation between corporate governance mechanisms and this sensitivity using the following regression model:

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[19] Alternative measures are firm's sales and total assets.

$$\Delta (compensation)_{it} = n_1 \Delta (shareholder\ wealth)_{it} + n_2 \Delta (shareholder\ wealth)_{it-1} +$$

$$\sum_{k=1}^{m} d_k\ corporate\ governance\ variable_{it-1,k} + \sum_{j=1}^{n} b_j\ control\ variable_{it-1}$$

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). Corporate governance variables and control variables are defined similar to the regression model in the previous section, 4b. I use change in shareholder wealth as a measure of firm performance.[20] Industry-specific effects and time-effects are also included. In this model, in order to examine whether pay-for-performance sensitivity is associated with institutional shareholdings, I add an interaction term as an explanatory variable, e.g., Δ (*shareholder wealth*)$_{it-1}$ × (institutional ownership concentration), for which a positive coefficient would suggest institutional shareholders play a monitoring role as contributing to an increase in pay-for-performance sensitivity of cash compensation (or total compensation).

5. Data

The sample covers the 7-year period 1999-2005 for 390 non-financial companies from the FTSE All Share Index[21]. I have an unbalanced panel with 2304 firm-year observations. I 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 is not reported in the same tabular form across different companies, making compensation data collection more challenging.

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[20] This model is similar to the model used by Jensen and Murphy (1990) and Hartzell and Starks (2003) to estimate pay-performance sensitivity. They also use change in shareholder wealth as a measure of performance.

[21] FTSE All Share Index represents over 95 % of the UK stock market capitalisation.

For each company, I collected compensation information from the remuneration section of the annual reports. For ownership variables, I 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.

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 LTIPs. 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.

Table 1 (B) shows descriptive statistics for 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 %.

The descriptive statistics of the 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. Stock return, which is a measure for firm performance, 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 12.99[22].

6. Regression results

6a. Corporate governance and CEO level of 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 bonus. 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 studies[23]. 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.

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

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

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[22] 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.
[23] For example, see Conyon and Murphy (2000).

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 (2006). 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. I also find that blockholder ownership and number of blockholders have a negative and significant impact on CEO cash compensation level.

I 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, I 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.[24]

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[24] 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 my results. Thus, those results with CEO age and tenure are not reported for brevity.

As reported in table 1, during the 1999-2005 period for my 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. Corporate governance and level of 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 significant[25]. 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.

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, I find that institutional shareholdings have a negative and significant 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

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[25] 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.

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. Institutional share ownership and 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.

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. I 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.

6d. Institutional share ownership and CEO pay-for-performance sensitivity of cash and total compensation

Column (1) and (2) of Table 5 provide the regression results when the CEO's compensation is defined as salary plus bonus. The two models employ the two different specifications for institutional investor concentration. Column (3) and Column (4) expand the definition of CEO compensation to include equity-based components of CEO compensation.

Consistent with Table 4, the results in Table 5 show that pay-for-performance sensitivity is significantly related to the concentration of institutional share ownership. Thus, my findings indicate that pay-for-performance sensitivity is positively and significantly associated with institutional ownership concentration, even after controlling for growth opportunities, firm size, industry fixed effects, board characteristics, CEO age and tenure. My results are consistent with Black(1992)'s argument that institutional investors could take on a stronger monitoring role by holding larger fraction of shares in companies and teaming up with other institutions to increase their influence. Our findings provide support that such an activity may be occurring.

Furthermore, the positive relationship between pay-for-performance sensitivity and concentration of institutional share ownership suggests that institutional share holders provide a complementary monitoring mechanism to CEO incentive compensation. Thus, my findings are consistent with theoretical arguments that monitoring by large shareholders and incentive compensation play interrelated roles (see, for example, Holmstrom and Tirole (1993)).

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 what factors play an important role in determining the level of compensation. This paper provides additional empirical evidence on the relationship between corporate governance mechanisms and CEO compensation for a sample of 390 UK non-financial companies from FTSE Allshare index for the period 1999-2005.

The results indicate that corporate governance mechanisms influence the level of CEO compensation level. The findings 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 and a higher proportion of non-executive directors pay their CEOs higher level of cash compensation. I also docume nt 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, I find that institutional share ownership has a positive and significant impact on CEO pay-for-performance sensitivity of option grants, cash compensation and total compensation. This finding provides empirical support for the stories from the financial press about institutional investors' influence on CEO compensation packages.

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Table 1 (A).

Descriptive statistics of components of CEO compensation (in British pound values) for 373 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.

	Mean	*Median*	*Max*	*Min*	Std. Dev.
Market capitalisation (£ millions)	1823.93	253.6	158,542.9	1.34	7243.968
Sales (£ millions)	1,407,819	330937.5	3.04×10^7	22	3,447,829
Stock return	16.1	8.3	495.6	-96.5	64.9
Tobin's Q	1.768	1.424	11.910	0.114	1.180
CEO age	51	52	74	31	6.67
CEO tenure	6	4	40	1	5.46

Return denotes percentage stock return, 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 = lnCash, GMM-system estimation

	(1)	(2)	(3)	(4)
$lnCash_{t-1}$	0.361***	0.341***	0.365***	0.368***
	(5.96)	(5.39)	(5.72)	(5.42)
$lnSales_t$	0.071***	0.080***	0.072***	0.066***
	(3.68)	(4.20)	(3.81)	(3.39)
$Return_t$	0.077*	0.070*	0.077*	0.065
	(1.90)	(1.73)	(1.93)	(1.52)
Tobin's Q_t	-0.0002	0.0002	0.0001	-0.001
	(-0.04)	(0.04)	(0.02)	(-0.17)
Board size $_{t-1}$	0.055***	0.056***	0.057***	0.061***
	(3.08)	(2.96)	(3.17)	(3.29)
Proportion of non-executive directors $_t$	0.458	0.581	0.572	0.375
	(1.22)	(1.52)	(1.63)	(1.09)
Total institutional ownership $_t$	-0.005**	-	-	-
	(-2.73)			
4 largest institutional ownership $_t$	-	-0.005**	-	-
		(-2.05)		
Block holder ownership $_t$	-	-	-0.004**	-
			(-2.08)	
No of blockholders $_t$	-	-	-	-0.052**
				(-2.20)
Executive directors' ownership $_t$	-0.006*	-0.006	-0.005	-0.007*
	(-1.86)	(-1.46)	(-1.38)	(-1.98)
(Executive directors' ownership $_t)^2$	0.000	0.000	0.000	0.000
	(0.39)	(0.41)	(0.48)	(0.64)
Non-executive directors' ownership	-0.023***	-0.024***	-0.020***	-0.018***
	(-3.11)	(-3.09)	(-2.62)	(-2.29)
(Non-executive directors' ownership$)^2$	0.0003**	0.0003**	0.0003***	0.0002
	(2.31)	(2.31)	(2.00)	(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

c^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 = lnTotal, GMM-system estimation

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

c^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)
? (Shareholder wealth$_t$)	0.005 (0.16)	0.004 (0.14)	0.006 (0.19)	0.005 (0.15)
? (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)	-	-
Block holder 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.

Table 5. Effects of institutional share ownership on CEO pay-performance sensitivity of cash and total compensation

Independent variables	Dependent variable: $\Delta(cash_t)$		Dependent variable: $\Delta(total_t)$	
	(1)	(2)	(3)	(4)
? (Shareholder wealth$_{t-1}$)	0.013* (1.96)	0.013* (1.96)	0.030* (1.69)	0.029* (1.69)
? (Shareholder wealth$_t$)*Total Instl. Ownership$_{t-1}$	0.001** (2.03)	0.001** (2.02)	0.002** (2.13)	0.002** (2.13)
Tobin's Q$_{t-1}$	1.600 (0.55)	1.496 (0.51)	3.569 (0.17)	3.640 (0.17)
Market capitalisation$_{t-1}$	0.008*** (3.11)	0.008*** (3.11)	0.018*** (2.79)	0.018*** (2.80)
Board size $_{t-1}$	-1.645 (-0.42)	-1.577 (-0.40)	5.981 (0.51)	6.054 (0.53)
Proportion of non-executive directors $_{t-1}$	68.707** (2.02)	68.492** (1.95)	69.492 (0.63)	67.432 (0.61)
Total institutional ownership $_{t-1}$	-0.949 (-0.40)	-	-0.973 (-0.91)	-
4 largest institutional ownership $_{t-1}$	-	-0.043 (-0.12)	-	-1.23 (-0.82)
CEO age	-0.639 (-1.03)	-0.683 (-1.04)	-0.942 (-0.20)	-0.898 (-0.19)
CEO tenure	1.071 (1.59)	1.111* (1.64)	2.170 (0.35)	2.073 (0.34)
R^2	0.22	0.25	0.23	0.26

This table shows coefficients from the OLS pooled regression of the change in 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. The standard errors of the coefficients in columns 1 through 5 are corrected for serial correlation on a firm level and for heteroskedasticity using the Huber-White-Sandwich estimator.